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MONITORING THE SDGs IN PIEDMONT REGION

ITALY

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STAMOS, I. (Ed.)

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ABSTRACT

The Piemonte Region is among the 10 European Regions participating in the pilot project "Regions2030: monitoring the SDGs in the EU regions - filling the data gaps", published by the Joint Research Centre (JRC) of the European Commission on September 1, 2022, with an invitation addressed to the Regions of the Member States.

The Piemonte Region, in particular the *Directorate for Environment, Energy and Land Planning*, in agreement with the *Directorate for the Coordination of European Policies and Funds - Tourism and Sport*, expressed its interest in participating in the project with a Determination on October 7, 2022, with the aim of finalising and consolidating a set of common indicators at the European scale for the monitoring of the 2030 Agenda Sustainable Development Goals (SDGs).

The goals targeted by the Piemonte Region through its participation in the project are: to develop, test and improve a framework of indicators, in collaboration with JRC experts, to monitor the achievement of the SDGs at the regional level in Europe; they are fundamental for designing and implementing on the different EU territories sustainability policies that are comparable and consistent with the plan of action of the 2030 Agenda; to strengthen relations with national authorities and other Italian regions through the Ministry of Ecological Transition (MITE, now Ministry of Environment and Energy Security – MASE) Coordination Table with the aim of guaranteeing proper scalability of knowledge from the national to the local level and the consequent comparability with other Italian regions and with similar European situations.

This report illustrates the methodological approach and the data analysis for the development of a regional monitoring indicator set for the SDGs within the framework of the Regions2030 pilot project. From the analyses of the indicators proposed by the JRC – Joint Research Centre of the European Commission in relation to the SDG Targets, the Piemonte Region selected a set of additional indicators, in coherence with the national monitoring system and in relation to the strategic priorities of the Regional Sustainable Development Strategy. These indicators were chosen in relation to the Piemonte's socio-economic and environmental features, which can be useful for monitoring Piemonte's potential but also its critical issues and can, therefore, be of support in targeting regional policies and actions.

This work is not isolated but constitutes an important stepstone not only in relation to the pilot study, but also towards the setting up of the regional monitoring system, which will be implemented and consolidated over time, with the support of the *Centre for the Sustainable Development of Piemonte - observe, connect, share and orient*.

FOREWORD

In 2017 Italy approved the **National Sustainable Development Strategy (NSDS)**⁽¹⁾, transposing the 2030 Agenda and its SDGs into the national system, and providing the strategic programmatic document for coordinating the implementation at the national and local level. Within the 2017 NSDS implementation process, a dedicated Panel was created by the Ministry of Ecological Transition (MITE in Italian), now Ministry of Environment and Energy Security (MASE in Italian), to focus on the territorialization of the SDGs as well as on integrated multi-level monitoring, strengthening of the dialogue with the Regions and the Metropolitan Cities (MASE, Regions and Metropolitan Cities Panel) on aligning the NSDS with the Regional Sustainable Development Strategy (RSDS) and the Metropolitan Agendas. After three years of implementation, the 2017 NSDS has undergone a review process, leading to the 2022 NSDS proposal which has already been validated by the Permanent Conference between the State and the Regions and is about to be approved at the national level.

The Piemonte Region, in coherence with the National Sustainable Development Strategy and the objectives of the 2030 Agenda, approved its own **Regional Sustainable Development Strategy (RSDS)** with DGR no. 2-5313 of July 8, 2022 ⁽²⁾. The process of building the Piemonte Strategy (RSDS), starting in 2018, was initiated and developed as part of the work path built by the Ministry of Ecological Transition with all Italian Regions and Metropolitan Cities to ensure a concrete territorialization of the National Sustainable Development Strategy (NSDS). The work was designed and chaired by (and in coordination between) the Directorate for Environment, Energy and Land Planning and the Policies and EU Funds Coordination Directorate; the RSDS was finalised after a long and complex process, which involved all the other Directorates and Departments of the Piemonte Region authority and the engagement of several stakeholders from the institutional context, the production system and more generally civil society (including several actors, at both the institutional and non-institutional level, among which the Piemonte Institute for Economic and Social Research - IRES Piemonte).

The RSDS is structured in Macro-Areas and in Strategic Objectives with targets and indicators associated to them. A “coherence matrix” connects the RSDS measures to the core economic programming tools as well as to the NSDS and the 2030 Agenda. The Strategy document is accompanied by a document-annex **"Tools for monitoring the SRSVs - Methodology and Indicators"** (Annex 2 of the RSDS) ⁽³⁾, in which the indicators, selected on a regional scale for monitoring the sustainability goals that the Region itself has set through its Strategy, are analyzed and described. For the writing of the RSDS document and for the selection of the monitoring indicators, joint work was carried out by the Directorate for Environment, Energy and Land Planning (in charge of the RSDS preparation process) and the other regional Directorates, including the Regional Statistical Office, which plays an active part in the National Statistical System (SISTAN) as a hub linking national and supranational statistics with regional and subregional ones. The regional observatories and IRES Piemonte (providing socio-economic data), as well as ARPA Piemonte - Regional Agency for Environmental Protection (providing environmental data) were also involved in the indicator selection phase. More specifically, the *Sustainable Development, Biodiversity and Natural Areas Department* of the Directorate for Environment, Energy and Land Planning is the main contact point for the activities concerning the RSDS, its monitoring and implementation, and will manage the activities within the REGIONS2030 Project.

IRES Piemonte has been working alongside the Piemonte Region since 2018, in an ongoing and cooperative manner, in the work process for the design and drafting of the RSDS, as well as for the identification and analysis of indicators for monitoring the regional sustainability goals. The collaborative relations, in particular between the *Sustainable Development Department* of the Piemonte Region and the *Sustainable Growth and Territorial Development Area* of IRES Piemonte, which have been consolidated for some time now, have made it possible to work in a joint and integrated manner and in close synergy. This has allowed continuity in the work process, from the planning to the implementation phase of the Strategy.

Participation in the REGIONS2030 Project confirms and gives continuity to the joint Region-IRES Piemonte work, regarding what has been done in the past and future projects, such as the setting up of the *Centre for the Sustainable Development of Piemonte - observe, connect, share and orient*.

⁽¹⁾ National Sustainable Development Strategy of Italy

⁽²⁾ Regional Sustainable Development Strategy of Piemonte

⁽³⁾ Tools for monitoring the SRSVs - Methodology and Indicators – Annex 2 RSDS 2022

Piemonte considers it crucial to move towards measuring the impact of policies in an integrated way, consistent with the interrelated and multi-level nature of the SDGs, as reflected in the NSDS and the RSDS. Extra efforts are needed to understand to which extent enacted policies and measures have been successful in implementing the RSDS' objectives. The Pilot Project and the collaboration with the JRC is taking place in the context of Piemonte's ongoing work dedicated to the setting up of its *Centre for the Sustainable Development of Piemonte*, aiming to gather and monitor data as well as to provide scenarios; the implementation of an integrated approach to environmental, social and economic development will thus feed better, fit-for-purpose, Agenda 2030 aligned policies. The Centre will also deliver information, training and communication on the RSDS monitoring and evaluation processes.

ACKNOWLEDGEMENTS

This REGIONS 2030 Pilot Project was made possible thanks to the coordination and collaboration with the Directorate for Environment, Energy and Land Planning of the Piemonte Region.

Special thanks go, in particular, to Elena Porro and Emanuela Elia - Directorate for Environment Energy and Land Planning, Piemonte Region - for their precious collaboration and support during all the project phases, for the joint work at the technical-scientific, institutional and inter-institutional level.

Special thanks also go to the JRC team, in particular to Alice Siragusa, Iraklis Stamos and Margarita Vega Rapun, for their valuable and helpful advice and guidance throughout all the project phases and for supporting and guiding the experts in producing this Report.

AUTHOR

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EXECUTIVE SUMMARY

This report illustrates the work developed in collaboration with the Piemonte Region and experts from the Joint Research Center – JRC (2023) in relation to the pilot project *Regions 2030: monitoring the SDGs in the EU regions - filling the data gaps*. This report illustrates the methodological approach and the data analysis for the development of a regional monitoring indicator set for the SDGs – Sustainable Development Goals, useful for other regions at the European level.

Within the framework of the Regions2030 project, the main objectives of this work were to:

- Understand which of the indicators proposed by JRC were relevant and available for the Piemonte Region;
- Identify regional alternatives or proxy indicators, when possible or useful for Piemonte;
- Propose additional indicators in relation to the needs of the region and in coherence with the regional monitoring system.

POLICY CONTEXT

In order to implement the 2030 Agenda and its Sustainable Development Goals – SDGs (ONU, 2015), in 2017 Italy approved the National Sustainable Development Strategy (NSDS), transposing the 2030 Agenda into the national system, and providing the strategic programmatic document for coordinating its implementation at the national and local level. The Piemonte Region, in coherence with the National Sustainable Development Strategy and the objectives of the 2030 Agenda, approved its own Regional Sustainable Development Strategy (RSDS) with DGR no. 2-5313 of July 8, 2022. The process of building the Piemonte Strategy (RSDS), starting in 2018, was initiated and developed as part of the work path built by the Ministry of Ecological Transition with all Italian Regions and Metropolitan Cities, to ensure a concrete territorialization of the National Sustainable Development Strategy (NSDS).

The Piemonte Region, with other 11 Italian Regions and Metropolitan Cities, participated to the Voluntary National Review – VNR 2022, on the occasion of the High Level Political Forum 2022. The Piemonte Region provided its Voluntary Local Review – VLR in relation to its RSDS. The VLR was designed and drafted jointly with the Metropolitan City of Turin, highlighting connections and guaranteeing the coherence necessary to successfully territorialize, at all levels, the objectives of the 2030 Agenda for sustainable development.

KEY CONCLUSIONS

Participation in the Regions2030 pilot project was a valuable opportunity for the Piemonte Region to deepen studies and obtain knowledge useful for implementing and structuring its SDGs monitoring system at the regional level. An added value of the participation in this EU project is certainly the empowerment in learning how to build a monitoring system for the territorialization of the SDGs at the local level which is well-structured and shared at different scales (from the European scale to the regional scale). This system is the result of a comparison among European regions, and can therefore be used to compare with realities which can be very different from Piemonte.

The indicator set, resulting from the project, consists of 120 indicators (of these, 45 are derived from the Piemonte Region proposal), covering 68 SDG Targets. Despite some critical issues found, e.g., with respect to data availability at the regional level, in general, with this set of indicators we can describe some of the dynamics and trends of Piemonte in relation to the SDGs and identify potentials and critical issues from a socio-economic and environmental perspective, considering European targets set at 2030 and 2050, where Available. Many of the issues raised are addressed in the RSDS –as well as in other strategies (e.g., Climate Change Strategy, Smart Specialization Strategy) or regional plans (waste, mobility, energy and environmental plans, etc.). Monitoring is useful if it can be updated, including to assess whether, as a result of regional interventions (policies, strategies, plans), improvements in trends are seen or not. However, from this set of indicators we do not get to assess the progress and/or achievement of the SDGs, and thus the "degree of sustainability" of the region (whether it is sustainable or not and how sustainable it is) according to an integrated reading from an environmental, economic, or social perspective. For this reason, the Piemonte Region intends to continue to implement and develop the monitoring system so that sustainability readings can also include the qualitative level, starting from data and considering quantitative analysis as the baseline.

MAIN FINDINGS

The total set of indicators was derived from the JRC and the Piemonte Region proposal, and includes 120 indicators in total, which in turn cover 68 SDG Targets. Despite some critical issues encountered (e.g., some indicators proposed by the JRC are not available or not measurable for Piemonte), the overall dataset is very rich and useful in providing a context for monitoring the SDGs. It will be useful, however, to understand the reasons behind the trends and to try to read the data from a sustainability perspective (balance between economic, social and environmental dimensions) in the future, with the support of other experts. This would allow making a greater contribution to direct policies and actions for the sustainable development of the region.

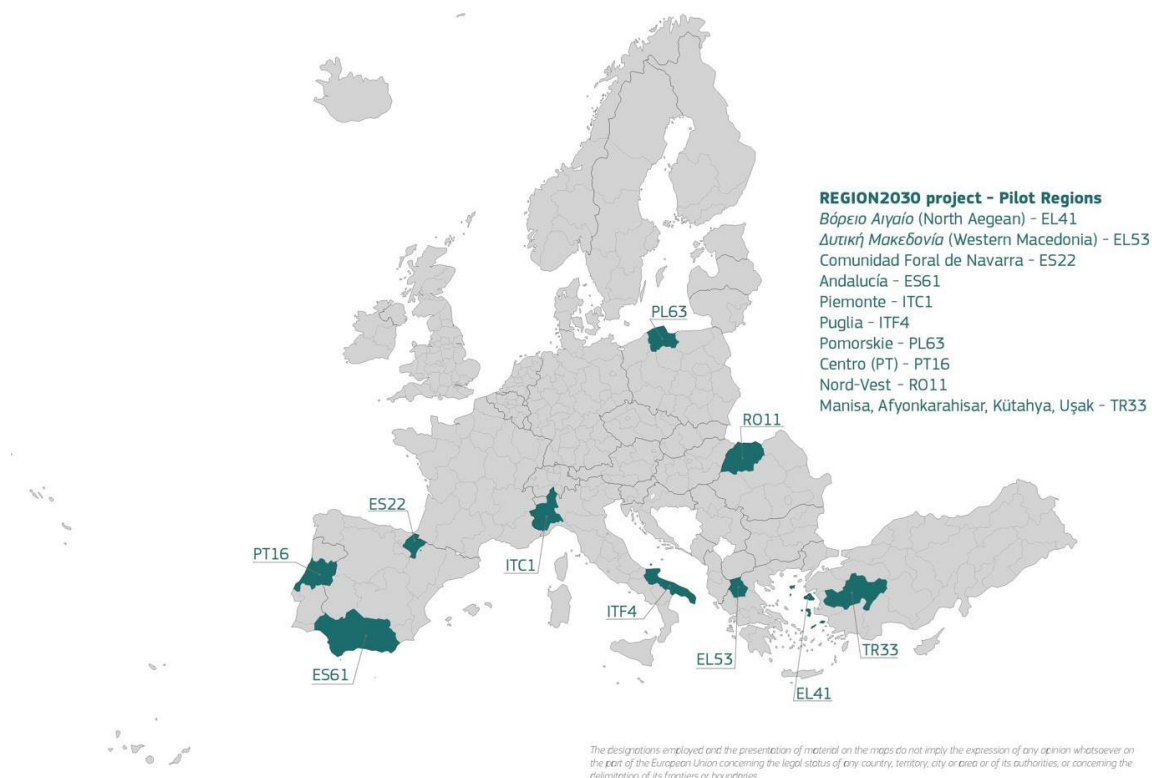
RELATED AND FUTURE JRC WORK

The European Commission's Joint Research Centre (JRC) is developing the REGIONS2030 project with the support of the European Parliament, building on existing work done in the framework of the cooperation with relevant Commission services on the localisation of the SDGs and their local monitoring (URBAN2030 project). At the end of the work of the individual regions, the JRC will publish a final report with input from all project regions to redefine the method and the set of relevant indicators at the NUTS2 level for monitoring the SDGs in Europe (trying to cover, as much as possible, most of the SDG targets).

1. INTRODUCTION

The Piemonte Region is among the 10 European Regions participating in the pilot project **"Regions2030: monitoring the SDGs in the EU regions - filling the data gaps"**, published by the Joint Research Centre (JRC) of the European Commission on September 1, 2022, with an invitation addressed to the Regions of the Member States.

Figure 1 - Pilot regions participating in the REGION2030 project



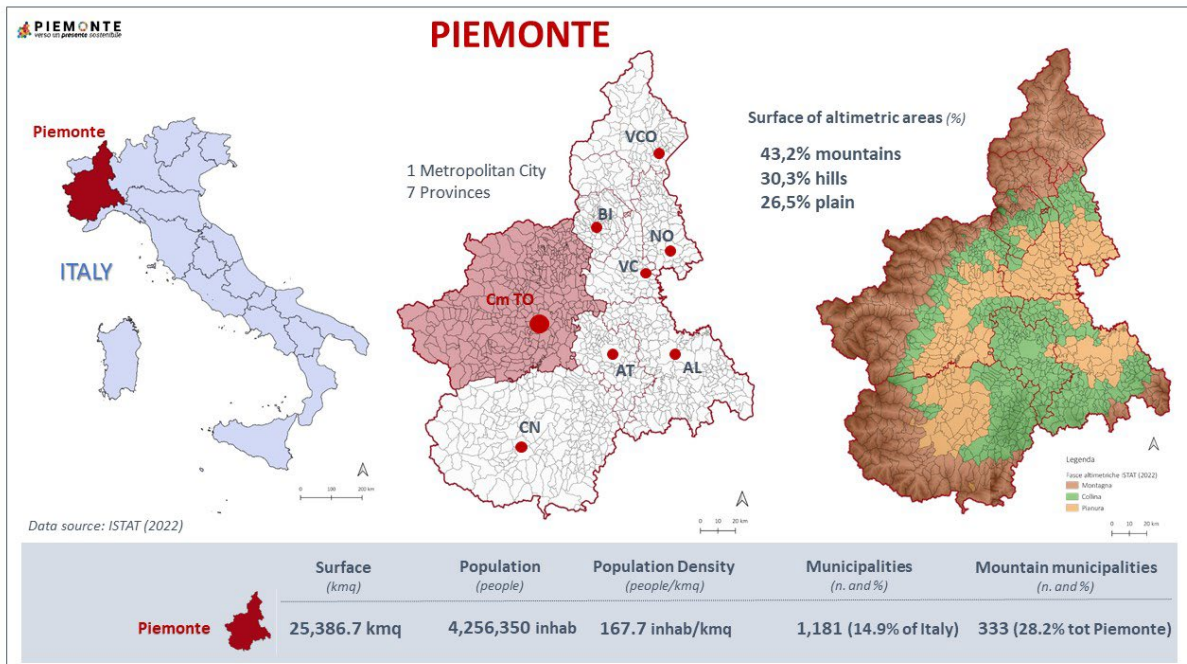
Source: Vega Rapun, M., Stamos, I., Siragusa, A. and Proietti, P., REGIONS2030 - European regional SDG indicators, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/850788, JRC131581

Piemonte is an internal region located in the North-West part of Italy. This is a landlocked area, with no direct access to the sea, adjacent to France and Switzerland.

The region is divided into 7 provinces and 1 metropolitan city (established in 2015); the capital of the region is Torino. The region is characterized by a very high number of municipalities (1.181), 28% of which are located in mountain areas.

The Piemonte landscape is very heterogeneous not only from the morphological point of view (43,2% of the territorial surface is covered by mountains, 30,3% by hills and 26,5% by plain), but also in relation to its socio-economic traits and its environmental features. It is a diversified territory, including urban (with medium and large cities), mountain and rural areas.

Figure 2 - The territorial context of the Piemonte Region



Source: author's own elaboration; Voluntary Local Review, Piemonte Region 2022

In the Annual Report published by Piemonte Institute for Economic and Social Research - IRES Piemonte 2022 ⁽⁴⁾, the socio-economic situation in Piemonte was described by identifying some challenges that the region is addressing and/or for which it is directing its policies to orient the sustainable development toward Piemonte's social, ecological, and digital transition. These analyses are related to the most recent years and thus consider the Covid-19 pandemic crisis and the crisis caused by the Russia-Ukraine war. Some challenges to be faced are:

- **Demographic and job supply contraction**

In 2021, a population reduction of -5% from the previous year is observed: the decline in births continues, as well as the aging of the population and migration flows are not sufficient to offset the negative natural balance. The population decline is not uniform across the regional territory, but it is particularly noticeable in mountain areas, high hill areas, and a strip of Eastern Piemonte. The percentage of employment declined by 2.5% between 2019 and 2021, during the Covid-19 period: this is a significant contraction which is not proportional to the intensity of the shock in recent years.

- **Youth and new skills**

In a region like Piemonte, where the labour force is decreasing and, at the same time, the percentage of NEETs reaches 20% against a European target of 9%, it is necessary to devote special attention to young people and to the educational system which will allow them to meet the demand of the labour market and to avoid a possible situation of social marginality. The pandemic and distance learning have not reduced participation in the Piemonte's education and training system, but they have negatively affected learning levels, as well as the transversal skills of Piemonte's youth (INVALSI surveys, 2021). While the rate of school dropout is relatively low in our region (12% compared to the European objective of 10%), implicit dropout, that is, the share of low performers made up of students who do not achieve sufficient levels of learning for the class attended, is growing. The EU sets the share of people aged 25-34 with a tertiary degree at 40%; Piemonte (like Italy as a whole) still has a significantly lower datum of about 28%. In 2021, 63% of master's degree graduates were found to be employed one year after graduation, a datum that is down sharply from the previous year (69%). Out of every 10 young graduates in Piemonte, about 7 remain working in the region. Those who choose to move go mainly to other Northern regions or abroad, to labour markets that provide better opportunities and higher wage levels.

⁽⁴⁾ Annual Report IRES Piemonte 2022

- **Agri-food system**

Within the ecological transition, another very challenging issue concerns the agri-food system and food security. The EU Farm to Fork Strategy, an articulation of the Green Deal, calls for a drastic reduction in environmental impacts with a 50% cut by 2030 for most chemicals used in agriculture and livestock. However, the European Union, as well as the region, shows a deep dependence on externally sourced raw materials, the availability of which is now being jeopardized by geopolitical shocks; this requires increasing the level of autonomy of the domestic market and therefore, in parallel with input reduction, it will be necessary to sustain productivity through a robust dose of innovation. The new cycle of the Common Agricultural Policy (CAP 2023-27) envisages a strengthening of environmental and technological intervention measures.

- **Energy**

85% of the energy used by the Piemonte Region comes from extra-regional supplies, mainly from fossil energy sources (natural gas in particular). The proposed Energy and Environmental Plan (PEAR) of the Piemonte Region, set before the crisis due to the Russia-Ukraine war, aims toward the target of 30% in final renewable energy consumption by 2030, as initially set by European indications, starting from the current percentage of renewable energy in final consumption of 19%. This target was then raised by the EU in the Fit for 55 measure to 40% and could be further revised to 45%. Finally, the region developed the Hydrogen Strategy and is initiating many investments on hydrogen development and use (e.g., in relation to the transport system).

- **Mobility**

The pandemic has strongly affected the behaviours of the population of Piemonte and the volume of mobility demand - during 2021 and along the first three months of 2022 - while growth has not returned to pre-lockdown levels, thanks to the partial maintenance of smart working, distance learning, and the spread of e-commerce. The mobility system is one of the areas in which the targets set by the European Union appear particularly challenging: according to the Green Deal, emissions by 2050 from the transport sector will have to be reduced by 90% compared to the initial situation in 1990. A proposal under discussion targets a reduction of 100% by 2035 for cars and vans, with the need to get rid of heat engines; these directions have already initiated a major reorganization of the automotive sector. Piemonte is focusing on improving the mobility offer, which should therefore translate into greater use of public transport and a reduction in emissions: from the modernization of regional rail networks, to the implementation of mass rapid transit (second metro line in Turin) to the extension of bicycle paths in urban areas.

- **Digital Divide**

The pandemic has generated a real leap in the widespread use of digital technologies. Thanks to the availability of networks, devices, and digital platforms, it has been possible to keep many workers active, continue educational activities albeit with many problems, and rapidly develop new services to contain the daily difficulties imposed by the virus containment measures. The digital transition has thus accelerated sharply: distance learning and smart working have steadily entered the "new normality" that is taking shape as the pandemic is brought under control and e-commerce has seen further spread. However, this is a haphazard acceleration that now requires consolidation and rationalization, both at the infrastructure, service and skills levels.

The European Union, as part of the European Digital Decade, has stipulated that by 2030 100% of families and enterprises should have access to 1 Gigabit ultrawideband and 5G connectivity should be guaranteed everywhere. These goals in the context of Piemonte seem realistic for urban areas but not for inland and mountain areas. Here comes into play the issue of territorial digital divide, caused by the uneven availability of ultra-wideband (BUL) internet connection, which is especially evident in the region's mountain areas.

- **Healthcare**

Central to the future of Piemonte's public health care is the completion and strengthening of the territorial network. By 2026, the Piemonte Region is to build new Community Homes, Territorial Operating Centres and Community Hospitals. In addition, an essential component of this new organization concerns the investment in Home Care, which aims to increase the volume of patient services delivered at home until, by mid-2026, 10% of the population over the age of 65 is taken care of. Another important aspect is technological innovation in the healthcare system. The pandemic has been a driving factor in the process of digitization of health services, accelerating their development and the spread of telemedicine (monitoring, tele-examinations) allowing for extensive testing of solutions that will be able to reduce costs, environmental impact and improve services, especially in territories with low population density.

These are some of the challenges targeted by regional policies, and are among the priorities of Piemonte's Regional Strategy for Sustainable Development (supporting the transition of the Piemontese productive system towards a model matching competitiveness and sustainability; energy transition and climate change adaptation and mitigation; cultural and environmental heritage and territorial resilience; vocational training and new jobs for green economy and sustainable development; supporting the development and the physical and psychological well-being of people; reducing discrimination, inequalities and illegality; addressing changes in healthcare demand: chronicity, fragility, appropriate performance, equity of distribution – described in the *table 218 – Annex 1*). Many of the indicators analysed in the following chapters are related to these big challenges and, therefore, constitute part of the regional monitoring system. It is very important to develop a system of indicators, which can be constantly updated, useful for analyzing and monitoring the region's potential and critical issues. This can provide a valuable knowledge base to support and guide the regional development policies, in coherence with the sustainability goals.

Participating in the **REGIONS 2030 project** means, for the Piemonte Region, taking into consideration the specific features that localizing and monitoring the SDGs has in Italy, as well as considering the new indicators framework introduced into the 2022 NSDS. The REGIONS2030 activities also match the Piemonte Region current efforts on its Regional Sustainable Development Strategy (RSDS).

The participation to the pilot project aims at:

- (a) testing the activities undertaken so far, sharing methodologies and contributing to the NUTS2 framework;
- (b) improving scalability in smaller context;
- (c) investigating on the identification of process indicators, going beyond statistical and quantitative indicators as included in its RSDS, towards a strengthened capacity in evaluating public policies and actions;
- (d) sharing the Pilot Project results within the dedicated Roundtable MiTE-Regions and Metropolitan Cities.

In this Report we intend to describe the contribution of the Piemonte Region to the REGIONS2030 project, in the framework of the activities related to the monitoring of the SDGs at the Regional scale and, with a specific focus on how to develop, test, analyze and improve the framework of indicators for monitoring the achievement of the Sustainable Development Goals (SDGs) at the regional level; how to contribute to define the method and to identify the relevant indicators at NUTS2 level, which will then be used in the EU for the monitoring of the SDGs. In this context, the contribution of the Region, and of the RSDS, to the REGIONS2030 project is based on the possibility of integrating the set of indicators at the European level (JRC) with what has been developed by the Piemonte Region within its own RSDS and what will be developed in the coming months. More specifically, the contribution of Piemonte will concern: 1) a critical analysis and the evaluation of the availability, at regional scale (Piemonte), of the indicators selected within the European JRC framework and a description of the contextualization of the Piemonte Region into the project (*Chapter 2*); 2) the selection of the additional indicators selected and used in the NSDS and/or in the RSDS of Piemonte to propose a possible integration to the set of indicators selected by the JRC at European level (*Chapter 3*); 3) a description of challenges in data availability and collection (indicator-based) (*Chapter 4*); 4) formulation of recommendations towards the development of a European-wide regional indicator set for monitoring the SDGs (*Chapter 5*).

The work will be carried out in synergy and close collaboration with the Piemonte Region (Sustainable Development Department of the Directorate for Environment, Energy and Land Planning), bearing in mind the joint work with the national NSDS working group (chaired by MASE). Specifically, the collaboration with the Piemonte Region, will concern the verification of the proposed indicators and the analysis of data at the regional level in order to identify additional or alternative indicators to the preliminary set of indicators, and further suggestions for the development of the regional contribution to the REGIONS2030 project. The project activities and the results (that will be analyzed and described in the Final Report) will be communicated and discussed with the MASE and the National Panel of Regions and Metropolitan Cities.

2. ANALYSIS OF INDICATORS IN THE JRC PROPOSED INDICATOR SET

The Piemonte Region (one of the 10 pilot region participating in the REGIONS2030 project) is working, together with the JRC, to develop, test, analyse and improve a framework of indicators for monitoring the achievement of the Sustainable Development Goals (SDGs) at the regional level. This work will contribute to define the method and identify the relevant indicators at NUTS2 level, which will be eventually used in the EU for monitoring the SDGs.

The analyses, developed in this report, start from a JRC study about a “Methodological approach for the creation of an SDG regional monitoring indicator set”. The JRC proposed (at the end of 2022) an indicator set (*Annex 1-table 214*) that includes 83 indicators, covering the entirety of the 17 SDGs and 52 (out of 169) SDG targets of the 2030 Agenda. This initial set will be shared with and tested by the 10 pilot European Regions, including Piemonte, that will verify the quality, availability and accuracy of data, and will suggest the inclusion of additional indicators and, potentially, the replacement of existing ones.

Table 1 - Indicators per SDG in the set

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOT
N. SDG targets	3	3	4	5	4	2	3	6	2	2	4	3	1	2	2	2	4	52
N. of indicators	4	4	5	7	7	4	4	10	5	2	9	3	4	3	4	4	4	83

Source: Vega Rapun, M., Stamos, I., Siragusa, A. and Proietti, P., REGIONS2030 - European regional SDG indicators, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/850788, JRC131581

The indicators are predominantly of **official** nature (57); others are **experimental** indicators (26).

In addition, of these **83 indicators**:

- some (50) can be found from European sources and are available for all European regions, including Piemonte; but some of these are not measurable or useful for Piemonte (in relation to the 14 SDG or indicators with very old or experimental data), so we consider **46** available indicators and we esclude **4** indicators;
- **30** are available from national/regional sources of other European countries (e.g., Spain, Portugal, etc.) or are an elaboration of the JRC;
- **3** are only available at NUTS1 level.

Of the remaining **37** indicators, not available/measurable for Piemonte:

- **16** indicators have been replaced by indicators available from Italian or regional sources;
- **13** are addressed by “proxy” indicators;
- while **8** indicators that are currently not replaceable (with others from the regional level), have been classified as “not Available”.

Finally, SDG 14. This is a particular case, because coastal and marine areas are not present in Piemonte, so we esclude the targets 14.1 (reduce marine pollution) and 14.5 (coastal and marine areas), and the indicators associated with these targets.

Table 2 - Availability of the indicators per SDG and data sources

JRC		EU Available indicators			Piemonte		Available (78%)		Proxy (12%)	Not av (10%)
Availability		Available at NUTS2 for Piemonte	Available for other countries	Available at NUTS1	Availability		Available at NUTS2	Available at NUTS2	Proxy Available NUTS2	Not av for Piemonte
SDG	N. indicators	source: EU	source: EU or other EU countries	source: EU or Italy	SDG	N. indicators	source: EU	source: Piemonte or Italy	source: Piemonte or Italy	
1	4	2	1	1	1	4	2	0	2	0
2	4	2	2	0	2	4	1	2	1	0
3	5	3	1	1	3	5	3	1	1	0
4	7	7	0	0	4	7	7	0	0	0
5	7	3	4	0	5	6	3	3	0	1
6	4	0	4	0	6	4	0	0	4	0
7	4	1	3	0	7	2	0	2	0	2
8	10	8	2	0	8	10	8	2	0	0
9	5	4	1	0	9	5	4	0	1	0
10	2	1	1	0	10	2	1	0	1	0
11	9	6	3	0	11	9	6	2	1	0
12	3	0	2	1	12	2	0	1	1	1
13	4	4	0	0	13	4	4	0	0	0
14	3	1	2	0	14	-	0	0	0	3
15	4	3	1	0	15	4	2	2	0	0
16	4	3	1	0	16	4	3	0	1	0
17	4	2	2	0	17	3	2	1	0	1
TOT	83	50	30	3	TOT	75	46	16	13	8

Source: Vega Rapun, M., Stamos, I., Siragusa, A. and Proietti, P., REGIONS2030 - European regional SDG indicators, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/850788, JRC131581 and ISTAT dashboard SDG indicators, 2022

In summary, for Piemonte, it emerges that:

- Available

62 indicators (75%) are available at the Piemonte regional level (46 from European sources - *Eurostat, Regional Statistics* or *Organisation for Economic Cooperation and Development – OECD* - and 16 from national/regional sources);

13 (16%) are “proxy” indicators available at the regional level (for the SDGs for which the same indicators assigned in the dataset proposed by the JRC are currently not available for Piemonte; some are only available at national level or at NUTS1 level (e.g. 'material and social deprivation' and 'self reported unmet needs for medical examination'; in this case we use two “proxy” indicators available at regional level: 'severe material deprivation' and 'satisfaction with health services: family doctors and public hospital services').

- Non - Available

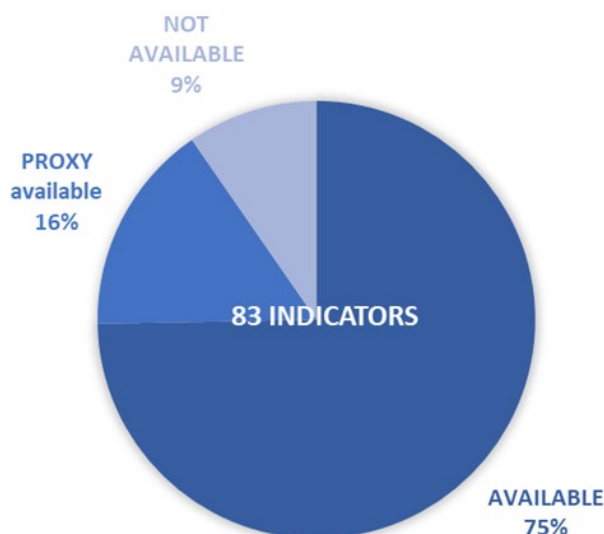
8 (9%) are not measurable/Available, either because they are not relevant to Piemonte (e.g. energy from nuclear power, or indicators of SDG 14 – about coastal and marine areas - because not present in Piemonte) or because they are not available from regional sources in Italy (e.g. food waste, available only at NUTS1 level, and energy poverty).

Table 3 - Availability of the 83 indicators included in the JRC proposed set – number of indicators (Piemonte)

Availability	N. of indicators (and %)
Available at the regional level	62 (75%)
Proxy available at the regional level	13 (16%)
Not available at the regional level	8 (9%)
TOT	83

Source: author's own elaboration

Figure 3 - Availability of the 83 indicators included in the JRC proposed set – percentage of indicators (Piemonte)



Source: author's own elaboration

Table 4 - Availability of the indicators per SDG Targets (JRC and Piemonte Region)

SDG	N. target	Target	N. of indicators (JRC)	N. of indicators (PR)
1	1.1	Eradicate extreme poverty	1	1
1	1.2	Reduce poverty by at least 50%	2	2
1	1.5	Build resilience to environmental, economic and social disasters	1	1
2	2.2	End all forms of malnutrition	1	1
2	2.3	Double the productivity and incomes of small-scale food producers	2	2
2	2.4	Sustainable food production and resilient agricultural practices	1	1
3	3.2	End all preventable deaths under 5 years of age	1	1
3	3.3	Fight communicable diseases	1	1
3	3.8	Achieve universal health coverage	1	1
3	3.c	Increase health financing and support health workforce in developing countries	2	2
4	4.1	Free primary and secondary education	1	1
4	4.2	Equal access to quality pre-primary education	1	1
4	4.3	Equal access to affordable technical, vocational and higher education	3	3
4	4.5	Eliminate all discrimination in education	1	1
4	4.6	Universal literacy and numeracy	1	1
5	5.1	End discrimination against women and girls	1	1
5	5.2	End all violence against and exploitation of women and girls	2	2
5	5.4	Value unpaid care and promote shared domestic responsibilities	2	1
5	5.5	Ensure full participation in leadership and decision-making	2	2
6	6.1	Safe and affordable drinking water	1	1
6	6.3	Improve water quality, wastewater treatment and safe reuse	3	3
7	7.1	Universal access to modern energy	1	
7	7.2	Increase global percentage of renewable energy	2	1
7	7.3	Double the improvement in energy efficiency	1	1
8	8.1	Sustainable economic growth	1	1
8	8.2	Diversify, innovate and upgrade for economic productivity	1	1
8	8.3	Promote policies to support job creation and growing enterprises	1	1
8	8.5	Full employment and decent work with equal pay	5	5
8	8.6	Promote youth employment, education and training	1	1
8	8.8	Protect labour rights and promote safe working environments	1	1
9	9.2	Promote inclusive and sustainable industrialization	1	1

9	9.5	Enhance research and upgrade industrial technologies	4	4
10	10.2	Promote universal social, economic and political inclusion	1	1
10	10.4	Adopt fiscal and social policies that promote equality	1	1
11	11.1	Safe and affordable housing	1	1
11	11.2	Affordable and sustainable transport systems	4	4
11	11.3	Inclusive and sustainable urbanization	2	2
11	11.6	Reduce the environmental impact of cities	2	2
12	12.2	Sustainable management and use of natural resources	1	1
12	12.3	Halve global per capita food waste	1	
12	12.4	Responsible management of chemicals and waste	1	1
13	13.2	Integrate climate change measures into policies and planning	4	4
14	14.1	Reduce marine pollution	1	
14	14.5	Conserve coastal and marine areas	2	
15	15.1	Conserve and restore terrestrial and freshwater ecosystems	2	2
15	15.5	Protect biodiversity and natural habitats	2	2
16	16.5	Substantially reduce corruption and bribery	1	1
16	16.6	Develop effective, accountable and transparent institutions	3	3
17	17.2	Implement all development assistance commitments	1	
17	17.6	Knowledge sharing and cooperation for access to science, technology and innovation	1	1
17	17.8	Strengthen the science, technology and innovation capacity for least developed countries	1	1
17	17.c	Remove trade barriers for least developed countries	1	1
TOT		Targets	52	47
TOT		Indicators	83	75

Source: author's own elaboration

Box 1 - Synthesis of the methodological process

The JRC proposed, to the pilot regions, a set of indicators (*Annex 1- table 214*) that includes **83 indicators**, covering the entirety of the 17 SDGs and 52 (out of 169) SDG targets of the 2030 Agenda

At the regional level, the following steps were taken (summary in 10 steps):

step 1 - verification of **data availability at the regional level**, referring to the 83 indicators;

step 2 - analysis of the **sources of data** available at the regional level;

step 3 - classification of regionally available indicators from datasets (open data) available from **European sources**;

step 4 - data and trend analysis (starting with data from 2000 to evaluate dynamics over the last 20 years) for indicators available from European sources;

step 5 - search for **other indicators** (same or similar, in relation to the SDG targets) available from **national and regional sources** to replace indicators not available for Piemonte from the sources identified in the JRC dataset, in agreement with the Piemonte Region, and selection of **indicators not replaceable, not available or not measurable** for Piemonte;

step 6 - data and trend analysis of replacement or proxy indicators;

step 7 - summary of **analysis results**: brief description of the trend of each indicator; synthesis of trend analysis to get an overview of Piemonte in relation to each indicator (positive, negative or stable trends);

step 8 - brief description of the results in relation to the **national average** and to the **North-Western regions of Italy** (to have a comparison with respect to the last year of analysis) and, where available, with respect to the **targets to 2030/2050** (of 2030 Agenda, EU Green Deal, National/Regional Plan or Strategy, etc.);

step 9 - analysis of **plans, strategies, policies**, that the region has developed or will develop to solve some critical issues (in relation to the analyzed indicators);

step 10 - comparison with Piemonte Region for evaluation of analyzed phenomena, trends and regional policies in relation to trends and SDG targets.

2.1 Contextualization of the Piemonte Region: statistical analysis of available indicators at the regional level

In this Chapter we intend to describe the contribution of the Piemonte Region to the REGIONS2030 project, in the framework of the activities related to the monitoring of the SDGs at the regional scale and, specifically, we present how to develop and analyze the framework of indicators included in the JRC proposed indicator set for monitoring the achievement of the Sustainable Development Goals (SDGs) at the regional level.

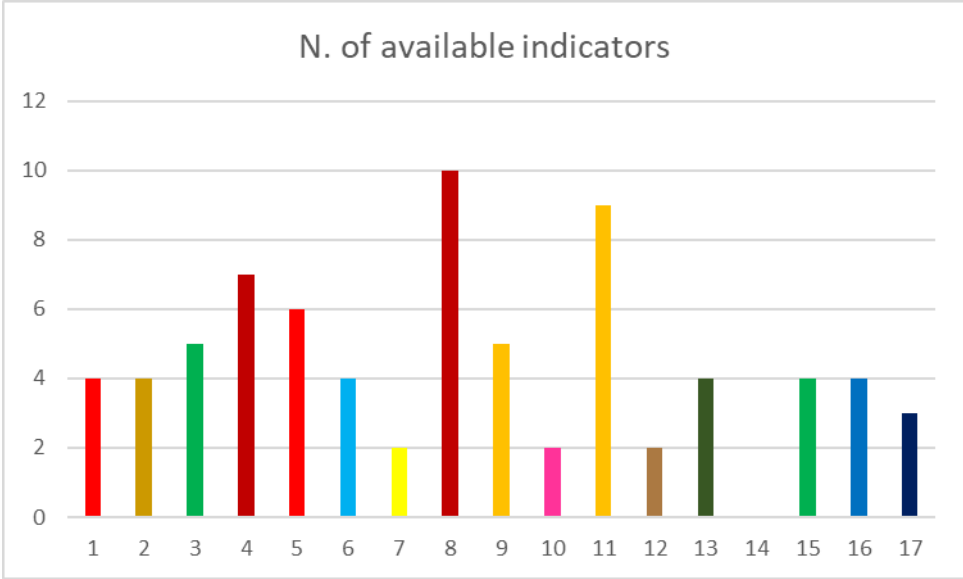
The indicator set, for Piemonte, includes **75 indicators, covering 16 SDGS** (theSDG 14 is excluded, because Piemonte is an inland region without sea coasts) **and 47 (out of 169) SDG targets of the 2030 Agenda.**

Table 5 - Available indicators per SDG at the regional level

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOT
N. SDG targets	3	3	4	5	4	2	2	6	2	2	4	2	1	-	2	2	3	47
N. of available indicators	4	4	5	7	6	4	2	10	5	2	9	2	4	-	4	4	3	75

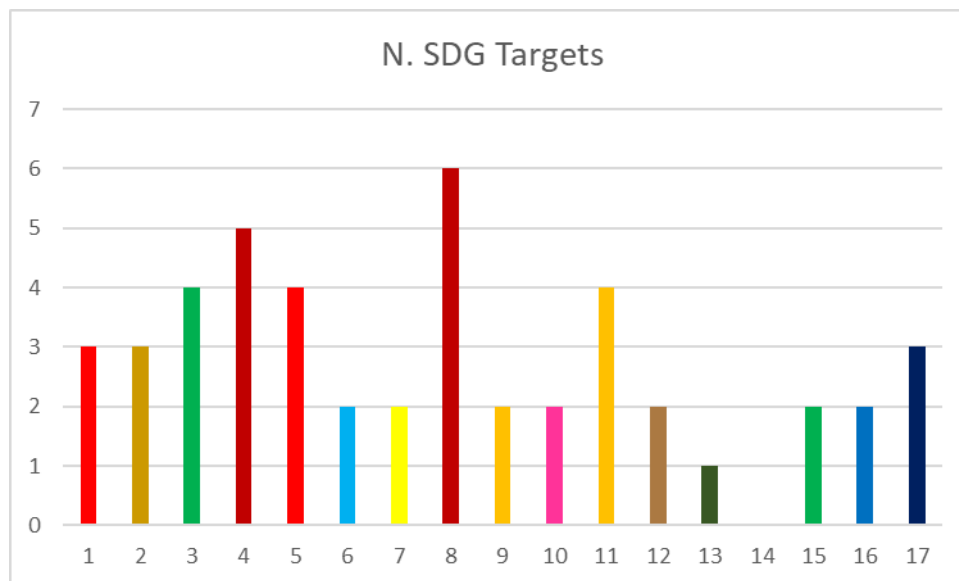
Source: author's own elaboration

Figure 4 - Number of available indicators per SDG at the regional level



Source: author's own elaboration

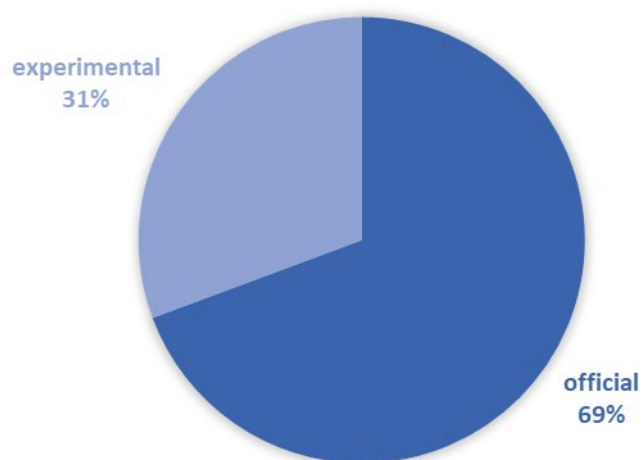
Figure 5 - Number of SDG Targets covered at the regional level



Source: author's own elaboration

The indicators are predominantly of **official** nature (52); others are **experimental** indicators (23).

Figure 6 - Type of indicators (official or experimental)



Source: author's own elaboration

With respect to the set of indicators proposed by the JRC, the data (for the indicators available at the regional level for Piemonte) are described and analysed below, based on the articulation by SDGs and SDG targets.

Table 6 - Summary table of indicators analysed at the regional level: from JRC to regional set

n.	JRC indicators	Fit for purpose (from EU sources)	Non-Fit for purpose	Fit – No data (from EU sources)	1-to-1 replacement with (from IT/Piemonte sources)	Alternative indicator (“proxy”)
1	Persons living in households with very low work intensity	x				
2	Affected people due to disasters			x (experimental)		2.b Population exposed to the risk of floods and landslides
3	Material and social deprivation			x (only NUTS 1)		3.b Severe material deprivation
4	Persons at risk of poverty or social exclusion	x				
5	Gross Value Added (GVA) of agriculture, livestock and fishing			x (only Basque country)	4.a Gross Value Added (GVA) of agriculture, forestry and fishing	
6	Organic farming: areas with different crops	x (old data)				6.b Share of utilised agricultural area (UAA) cultivated with organic crops
7	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	x				
8	Overweight rate			x (only Sweden)	8.a Overweight rate	
9	Deaths due to Covid-19			x (only Spain)	9.a Deaths due to Covid-19	
10	Self reported unmet needs for medical examination			x (only NUTS 1)		10.b Satisfaction with health services (family doctors and public hospital services)
11	Health personnel	x				
12	Hospital beds	x				

13	Infant mortality	x				
14	Women 30-34 years old with higher education level	x				
15	Students enrolled in tertiary education	x				
16	Participation in education	x				
17	Pupils enrolled in early childhood education	x				
18	Early leavers from education and training	x				
19	Participation rates in selected education levels	x				
20	Distribution of pupils and students enrolled in general and vocational programmes	x				
21	Fatal victims of gender-based violence at the hands of their partners or expartners			x (only Spain)	21.a Fatal victims of gender-based violence at the hands of their partners or ex partners	
22	Victims of violence against women			x (only Spain)	22.a Victims of violence against women	
23	Female research and development personnel	x				
24	Inactive population rate due to caregiving responsibilities			x (only Andalusia)	-	-
25	Women in parliament and government			x	25.a Women in parliament	
26	Female achievement/disadvantage index	x				
27	Gender gap in part-time employment incidence	x				
28	Water bodies that exceed a standardized quality rating			x (only Navarra)		28.b Percentage of water bodies achieving the ecological quality objective (high or good)

						out of the total number of surface water bodies (rivers and lakes)
29	Groundwater that exceed a standardized quality rating			x (only Navarra)		29.b Groundwater monitoring
30	Population served by safely managed drinking water supply services			x (only Flanders)		30.b Efficiency of drinking water distribution networks
31	Population connected to wastewater with at least secondary treatment			x (only Navarra)		31.b Urban waste water system with secondary or advanced treatment
32	Electricity production that comes from nuclear power		x		-	-
33	Electricity production that comes from renewable sources	x (experimental)			33.a Electricity production that comes from renewable sources	
34	Energy intensity			x (only Baque country)	34.a Energy intensity	
35	People affected by energy poverty			x (only Spain)	-	-
36	Occupational accidents			x (only Spain)	36.a Fatal accidents and permanent disability	
37	Economic activity	x				
38	Unemployment	x				
39	Firm creation	x				
40	Employment	x				
41	GDP at current market prices	x				
42	GVA at basic prices	x				
43	Long-term unemployment (12 months and more)	x				
44	Compensation of employees	x				

45	Young people neither in employment nor in education and training			x	45.a Young people neither in employment nor in education and training	
46	GVA of the industry with respect to the GVA of the total sectors (current price)			x (only Spain)		46.b Added value of manufacturing industry to total economy
47	Gross Domestic Expenditure on R&D	x				
48	R&D personnel and researchers	x				
49	Employment in high-technology manufacturing as a percentage of total manufacturing employment	x				
50	Patent applications to the EPO	x				
51	Unemployment of people with disabilities			x (only Spain)		51.b Employees with disabilities
52	Gini index of disposable income (after taxes and transfers)	x				
53	Households expenses dedicated to housing costs	x				
54	Transport performance			x (experimental)	54.a Transport performance Seats-km of public transport	
55	Daily accessibility	x				
56	Stock of vehicles (passenger cars)	x				
57	Difference between built-up area growth rate and population growth rate			x (experimental)		57.b Soil sealing per capita
58	Land use	x				
59	PM2.5 Emissions	x				
60	Household and commercial waste generation per inhabitant			x (only Portugal)	60.a Urban waste generation per inhabitant	

61	Victims in road accidents	x				
62	Carbon footprint			x (only Flanders)		62.b CO2 equ per capita
63	Food waste			x (only NUTS 1)	-	-
64	Hazardous Waste			x (only Spain)	64.a Production of special hazardous waste	
65	PM10 Emissions	x				
66	CO2 Emissions	x				
67	Greenhouse Gas Emissions	x				
68	Cooling and heating degree days	x				
69	Estuarine with high/very high water quality		x		-	-
70	Protected coastal area as a percentage of total coastal area		x		-	-
71	Coastal areas with good/very good water quality		x		-	-
72	Terrestrial protected areas as a percentage of total area	x (experimental)			72.a Terrestrial protected areas as a percentage of total area	
73	Estimated soil erosion	x				
74	Land Abandonment	x				
75	Forest area over total surface area			x (only Spain)	75.a Forest area over total surface area	
76	Transparency index			x (experimental)		76.b Index on transparency, participation and collaboration in cohesion policies
77	Participation in the last elections	x				
78	Quality of Government Index	x				
79	Extract from QGI an indicator on corruption	x				
80	Official Development Assistance			x	-	-

81	Imports from developing countries			x	81.a Imports from developing countries	
82	PCT co-patent applications that are done with foreign regions	x				
83	Individuals who used the internet for interaction with public authorities	x				

Source: author's own elaboration

In general, the summary table shows that there are:

- **46 indicators fit for purpose**, available at the regional level, from European sources
- **3 indicators fit for purpose**, available at the regional level, from European sources, but the data are old or experimental, so we use **2** similar indicators (**1-to-1 replacement with**) and **1** proxy indicator (**alternative indicator**) from IT/Piemonte sources
- **4 indicators non fit for purpose**
- **30 indicators fit for purpose but without data (Fit- no data)**

Of those 30 indicators *Fit-no data*, we have:

- 14 cases of *1-to-1 replacement with* other indicators (available from IT/Piemonte sources)
- 12 cases of *alternative indicators*
- 4 cases of *non-replaceable indicators*

In total:

- **46 indicators fit for purpose**, available at the regional level, from European sources
- **16 cases of 1-to-1 replacement with other indicators** (available from IT/Piemonte sources)
- **13 cases of alternative indicators**
- **8 indicators not available: 4 non fit for purpose + 4 cases of non-replaceable indicators**

Table 7 - Summary of general overview (rif. Tab. 2 e 3)

Availability	Fit for purpose (available at NUTS2)	1-to-1 replacement with other indicators (available at NUTS2)	Alternative indicators (Proxy available at NUTS2)	Not available for Piemonte
N. available indicators	source: EU	source: Piemonte or Italy	source: Piemonte or Italy	
75	46	16	13	8

Source: author's own elaboration

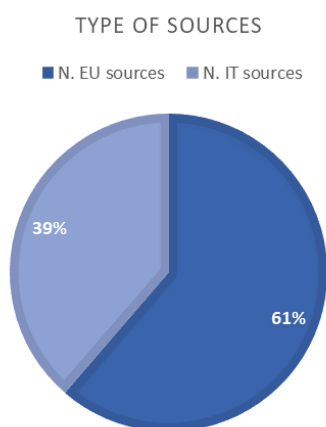
Relative to the source of the data: **61%** of data is from **European source** (in particular Eurostat, OECD, European Commission – JRC) and **39%** from **National source** (predominant source: Istat).

Table 8 - Type of source

Sources	N. of indicators
<i>Eurostat</i>	26
<i>OECD</i>	10
<i>European Commission</i>	8
<i>other EU sources</i>	2
N. EU sources	46
<i>ISTAT</i>	25
<i>other italian sources</i>	4
N. IT sources	29

Source: author's own elaboration

Figure 7 - Type of source of available indicators at the regional level



Source: author's own elaboration

2.1.1 SDG 1 - END POVERTY IN ALL ITS FORMS EVERYWHERE

SDG	1
Number of available indicators (regional level)	4

SDG Target 1.2 REDUCE POVERTY

By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

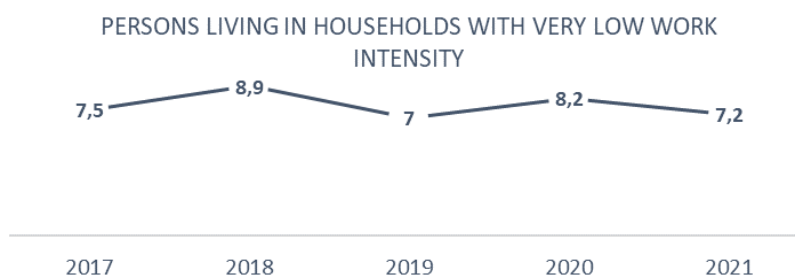
Indicator: Persons living in households with very low work intensity

Table 9 - Persons living in households with very low work intensity

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Persons living in households with very low work intensity	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Percentage	2017-2021	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 8 - Persons living in households with very low work intensity



Source: author's own elaboration, from Eurostat Regional Statistics Database

In Piemonte, the percentage of **people living in households with very low work intensity** has remained unchanged from 2017 to 2021, except a decline in 2019 (Covid-19 period). Despite a slight increase in 2018 (8.9%) and 2020 (8.2%), it now stands at **7.2%**.

Table 10 - Persons living in households with very low work intensity - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
1	Persons living in households with very low work intensity	2021	Eurostat	Percentage	7.2	11.7	6.3

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is better than the Italian average but worse than the average of the North-Western regions.

SDG Target 1.5 EXPOSURE TO VULNERABILITY

By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Indicator: **Affected people due to disasters – floods and landslides risk**

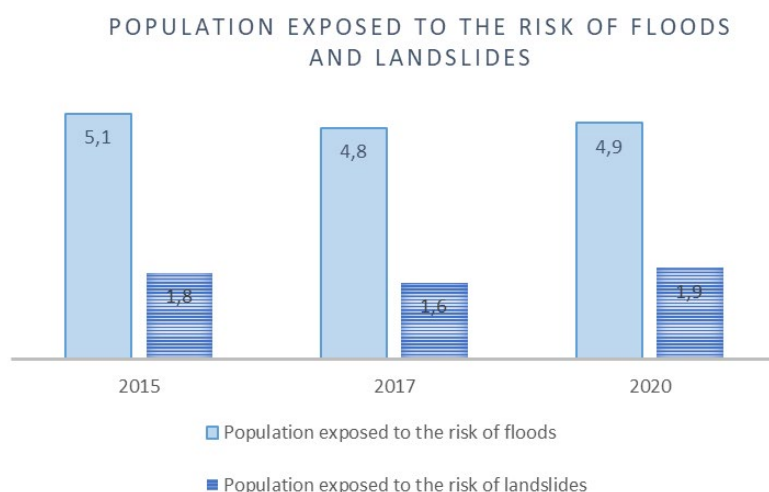
Table 11 - Affected people due to disasters – floods and landslides risk

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Population exposed to the risk of floods	Official	Italian regions	Proxy available (rl)	2020	ISPRA; Istat, Regional Statics	Percentage	2015-2020	2 or 3 years
1	Population exposed to the risk of landslides	Official	Italian regions		2020	ISPRA; Istat, Regional Statics	Percentage	2015-2020	3 or 3 years

Source: author's own elaboration, from Istat Regional Statistics Database from ISPRA data

For Piemonte, there is no single indicator to measure “affected people due to disasters”, but ISPRA provides data on the percentage of the “population exposed to the risk of floods and landslides”.

Figure 9 - Population exposed to the risk of floods and landslides



In Piemonte, the percentage of **people exposed to the risk of floods and landslides** has remained unchanged in the last five years:

from 5.1% (2015) to **4.9%** (2020) of **floods risk**;

from 1.8% (2015) to **1.9%** (2020) of **landslides risk**.

Source: author's own elaboration, from Istat Regional Statistics Database from ISPRA data

Table 12 - Population exposed to the risk of floods and landslides - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
1	Population exposed to the risk of floods	2020	ISPRA; Istat, Regional Statistics	Percentage	4.9	11.5	5.9
	Population exposed to the risk of landslides	2020	ISPRA; Istat, Regional Statistics	Percentage	1,9	2.2	1.5

Source: author's own elaboration, from Istat Regional Statistics Database from ISPRA data

The data for Piemonte, at the latest available year (2020), are better than the Italian average but worse than the average of the North-Western regions.

SDG Target 1.1 EXTREME POVERTY

By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day

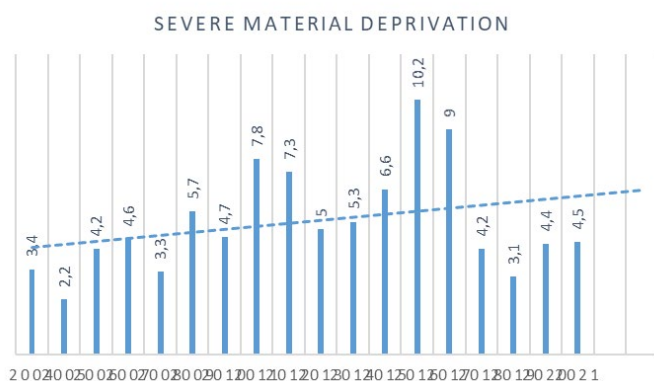
Indicator: **Material deprivation**

Table 13 - Material deprivation

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Severe material deprivation	Official	Italian regions	Proxy available (rl)	2021	Istat, Regional Statistics	Percentage	2004-2021	Annual

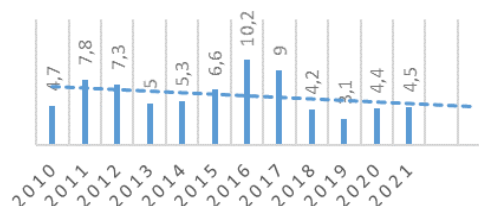
Source: author's own elaboration, from Istat Regional Statistics Database

Figure 10 - Severe material deprivation



People suffering from **severe material deprivation were 4.5% in 2021**. The highest level of poverty was recorded in 2016 with an incidence of 10.2%; the best result in recent years is recorded in 2019 with 3% (Covid-19 period).

Considering data from the last ten years, the trend shows a slight decrease in the coming years.



Source: author's own elaboration, from Istat Regional Statistics Database

Table 14 - Severe material deprivation - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
1	Severe material deprivation	2021	Istat, Regional Statistics	Percentage	4.5	5.6	3.3

Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is better than the Italian average but worse than the average of the North-Western regions.

SDG Target 1.2 REDUCE POVERTY

By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

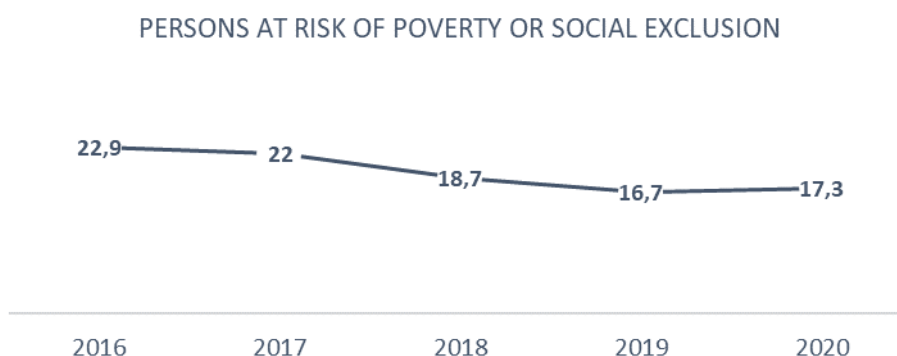
Indicator: **Persons at risk of poverty or social exclusion**

Table 15 - Persons at risk of poverty or social exclusion

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Persons at risk of poverty or social exclusion	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics; and Istat	Rate	2016-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 11 - Persons at risk of poverty or social exclusion



Source: author's own elaboration, from Eurostat Regional Statistics Database

In Piemonte, the percentage of **persons at risk of poverty or social exclusion** decreased from 2016 to 2021 by 5.6 percentage points. However, it is still quite high in Piemonte, at **17.3%**.

From the EU-SILC analysis (source: ISTAT, National and Regional Statistics) in 2021 the percentage the percentage has risen; the most recent datum reached **18.3%** of persons at risk of poverty or social exclusion.

Table 16 - Persons at risk of poverty or social exclusion - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
1	Persons at risk of poverty or social exclusion	2021	Istat, Regional Statistics EU-SILC	Percentage	18.3	25.4	17.1	21.8% (EU)

Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is better than the Italian average but worse than the average of the North-Western regions.

In addition, the percentage of the European target of 21.8%, the maximum acceptable level, of persons at risk of poverty or social exclusion has been achieved and surpassed (18.3%).

2.1.2 SDG 2 - END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

SDG	2
Number of available indicators (regional level)	4

SDG Target 2.3 AGRICULTURAL PRODUCTIVITY

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

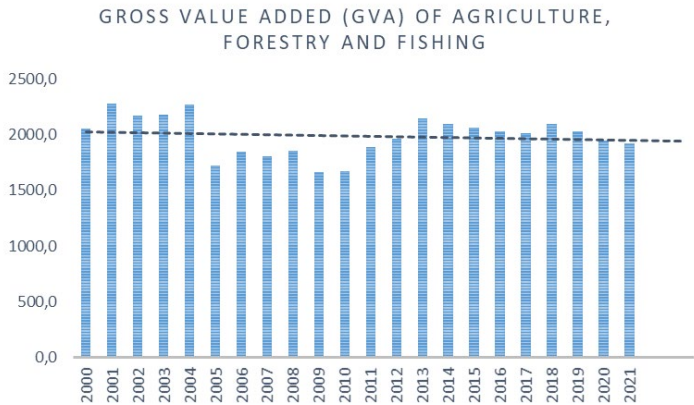
Indicator: **Gross Value Added (GVA) of agriculture, forestry and fishing**

Table 17 - Gross Value Added (GVA) of agriculture, forestry and fishing

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Gross Value Added (GVA) of agriculture, forestry and fishing	Official	Italian regions	available (rl)	2021	Istat, Regional Statistics	Number (Euro millions current prices)	1995-2021	Annual

Source: author’s own elaboration, from Istat Regional Statistics Database

Figure 12 - Gross Value Added (GVA) of agriculture, forestry and fishing



The **Gross Value Added (GVA) of agriculture, livestock and fishing** indicator has been replaced with Gross Value Added (GVA) of agriculture, forestry and fishing.

In 2021 the value for Piemonte Region was **1924.3 million (€)** at national current price.

After the collapse registered between 2005 and 2010, GVA went back to 2000 values.

Source: author’s own elaboration, from Istat Regional Statistics Database

Table 18 - Gross Value Added (GVA) of agriculture, forestry and fishing - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
2	Gross Value Added (GVA) of agriculture, forestry and fishing	2021	Istat, Regional Statistics	Number (Euro millions current prices)	1,924.3	34,384.0	6,281.9

Source: author's own elaboration, from Istat Regional Statistics Database

SDG Target 2.4 SUSTAINABLE FOOD PRODUCTION

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

Indicator: Organic farming: areas with different crops

Table 19 - Share of utilised agricultural area (UAA) cultivated with organic crops

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Organic farming: areas with different crops	Official	EU-27 plus others	available (rl)	2007	Eurostat, Regional Statistics	Number (ha)	2000-2007	Triannual
2	Share of utilised agricultural area (UAA) cultivated with organic crops	Official	Italian regions	Proxy available (rl)	2021	Ministry of Agriculture, Food and Forestry; Istat, Regional Statistics	Number (ha)	2010-2021	Annual

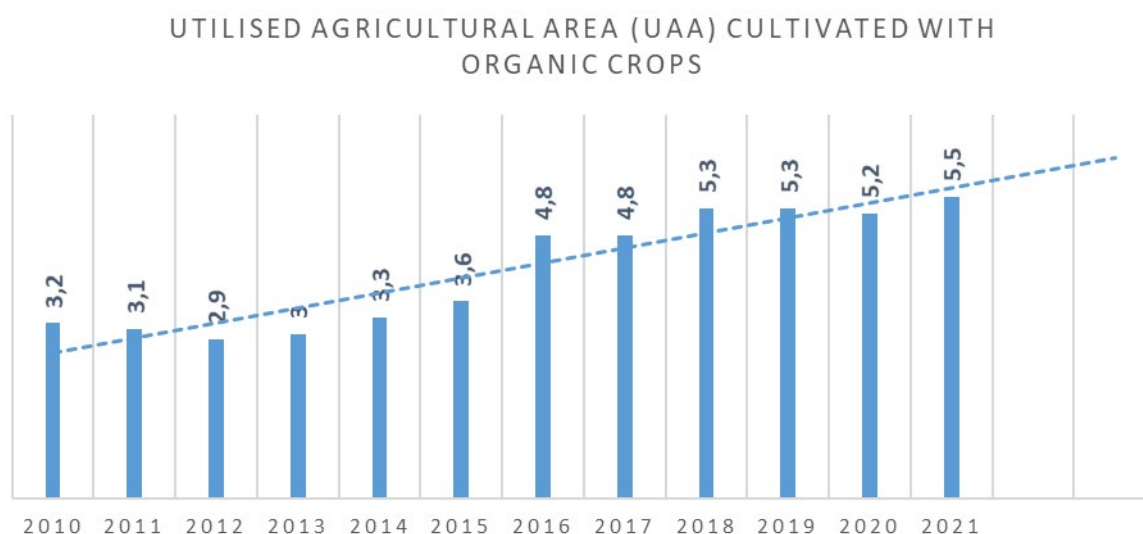
Source: author's own elaboration, from Eurostat Regional Statistics Database and Istat Regional Statistics Database (from data of Ministry of Agriculture, Food and Forestry, Italy)

The indicator "organic farming: areas with different crops", of the European data set, is available at the regional level, but information is only available up to 2007.

Organic farming areas: from 1.068.080 ha (2000) to 1.040.180 ha (2007)

To mitigate this problem, another more up-to-date indicator was chosen, available for Piemonte up to 2021: "utilised agricultural area cultivated with organic crops".

Figure 13 - Share of utilised agricultural area (UAA) cultivated with organic crops



Source: author's own elaboration, from Istat Regional Statistics Database (from data of Ministry of Agriculture, Food and Forestry, Italy)

In Piemonte, the percentage of **agricultural area cultivated with organic crops** is still very low, **5.5%** (especially compared to the EU target of 25% of *Farm to Fork Strategy*).

However, the positive trend recorded since 2014, suggests likely steady growth in the coming years

Table 20 - Share of utilised agricultural area (UAA) cultivated with organic crops - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
2	Share of utilised agricultural area (UAA) cultivated with organic crops	2021	Ministry of Agriculture, Food and Forestry; Istat, Regional Statistics	Percentage	5.5	17.4	5.3	25% (EU)

Source: author's own elaboration, from Istat Regional Statistics Database (from data of Ministry of Agriculture, Food and Forestry, Italy)

The datum for Piemonte, at the latest available year (2021), is worse than the Italian average but worse than the average of the North-Western regions.

In addition, there is a big gap between the percentage of Piemonte (5,5%) and the 2030 European target of 25% (*Farm to Fork Strategy- EU Green Deal*). For now, for Piemonte, the target is unreachable in 9 years.

SDG Target 2.3 AGRICULTURAL PRODUCTIVITY

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

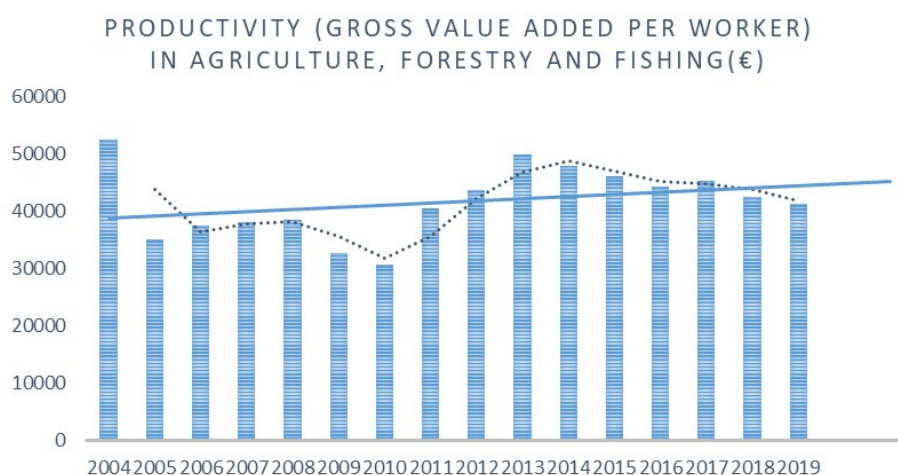
Indicator: Productivity (Gross Value Added per worker) in agriculture, forestry and fishing

Table 21 - Productivity (Gross Value Added per worker) in agriculture, forestry and fishing

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	Experimental	OECD countries other Eu countries	available (rl)	2019	Organisation for Economic Cooperation and Development (OECD)	Number (€)	2004-2019	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 14 - Productivity (Gross Value Added per worker) in agriculture, forestry and fishing



Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The **Gross Value Added per worker in agriculture, forestry and fishing** has fallen sharply between 2005 and 2010 and in recent years. In 2004, it had reached a peak of € 52,392 and in 2013 (49,800). From 2014 to 2019 values have fallen sharply, in particular in 2018 and 2019 (**41,170**), during the Covid-19 period.

Table 22 - Productivity (Gross Value Added per worker) in agriculture, forestry and fishing - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	2019	OECD	Number (€)	41,170	36,964	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The datum for Piemonte, at the latest available year (2019), is better than the Italian datum (41M€/37M€).

SDG Target 2.2 END MALNUTRITION

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

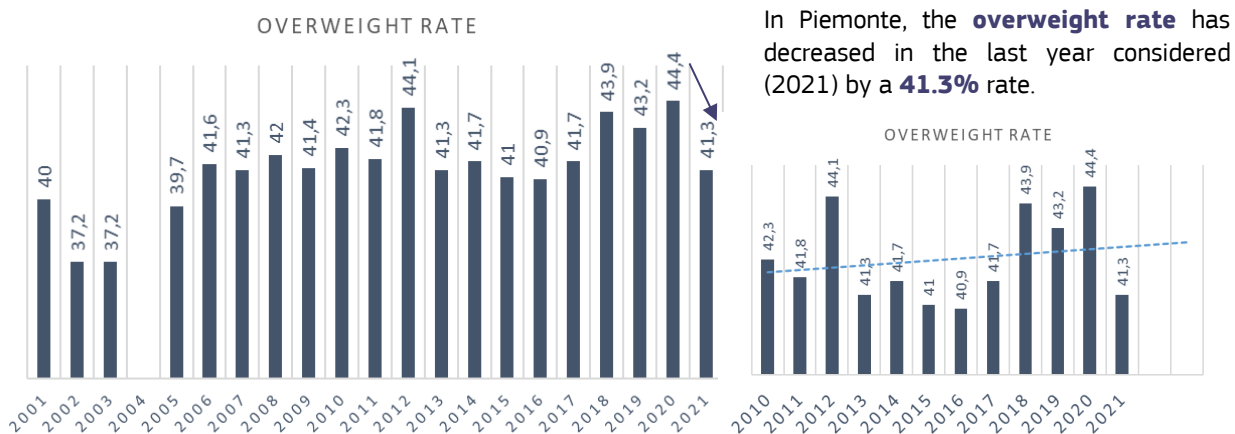
Indicator: **Overweight rate**

Table 23 - Overweight rate

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Overweight rate	Official	Italian regions	available (rl)	2021	Istat, Regional Statistics	Rate (per 100 persone)	2001-2021	Annual

Source: author's own elaboration, from Istat Regional Statistics Database

Figure 15 - Overweight rate



Source: author's own elaboration, from Istat Regional Statistics Database

However, if we look at the trend over the last 10 years, we can see that, on average, the percentage is increasing. This is due to higher values in 2012 (44.1%), 2018 (43.9%), 2019 (43.2%) and 2020 (44.4%).

Table 24 - Overweight rate - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
2	Overweight rate	2021	Istat, Regional Statistics	Rate (per 100 persone)	41.3	46.2	41.6

Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is better than the Italian average (41.3/46.2) and the average of the North-Western regions (although the values are very similar 41.3/41.6).

2.1.3 SDG 3 - ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SDG	3
Number of available indicators (regional level)	5

SDG Target 3.3 EPIDEMICS AND DISEASES

By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

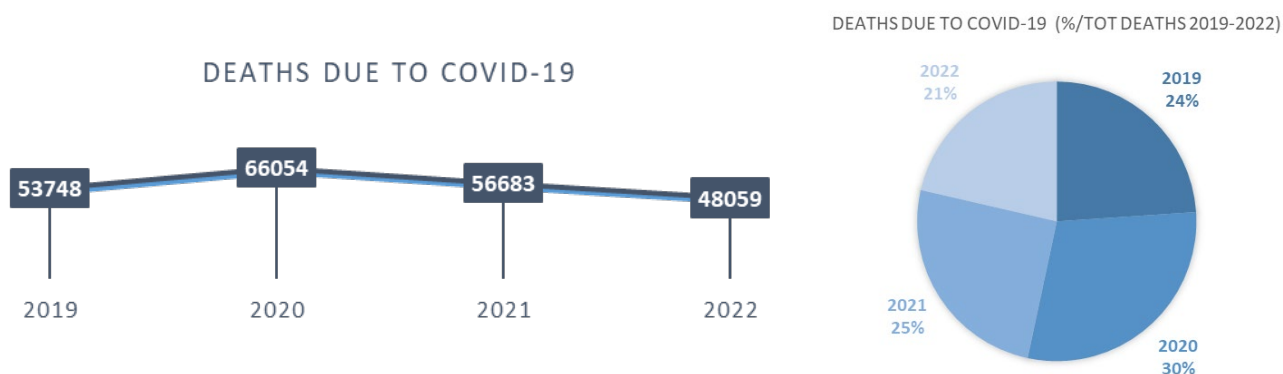
Indicator: **Deaths due to Covid-19**

Table 25 - Deaths due to Covid-19

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
3	Deaths due to Covid-19	Official	Italian regions	available (rl)	2022	Istat, Regional Statistics	Number	2019-2022	Monthly

Source: author's own elaboration, from Istat Regional Statistics Database

Figure 16 - Deaths due to Covid-19 (number and percentage deaths between 2019 and 2022)



Source: author's own elaboration, from Istat Regional Statistics Database

In 2019, **deaths due to Covid-19** were 53748; in 2020, they increased to 66054 (the highest value); by 2021, there was a decrease, with **48,059** deaths registered in 2022.

Out of the total deaths recorded from 2019 to 2022, 30% occurred in 2020, 25% in 2021, 24% in 2019 and 21% during 2022.

Table 26 - Deaths due to Covid-19 - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
3	Deaths due to Covid-19	2022	Istat, Regional Statistics	Number	48,059	584,501	-

Source: author's own elaboration, from Istat Regional Statistics Database

SDG Target 3.c HEALTH FINANCING AND RECRUITMENT

Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States

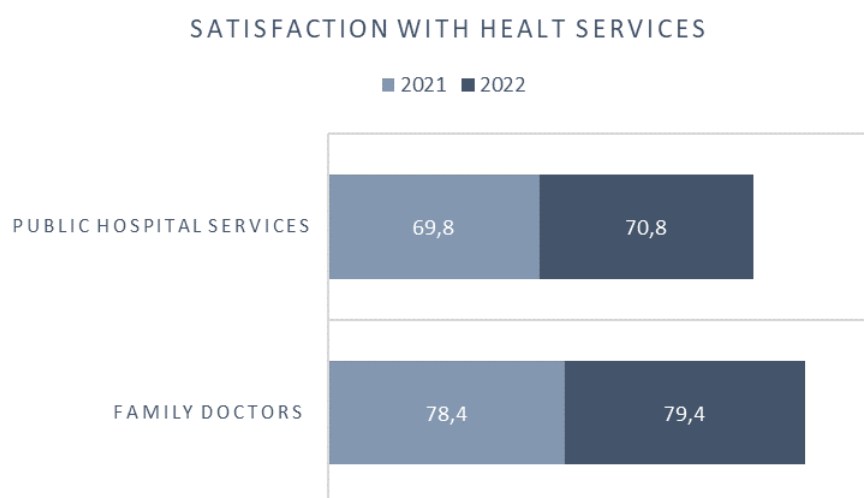
Indicator: **Satisfaction with health services**

Table 27 - Satisfaction with health services

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
3	Satisfaction with health services (family doctors and public hospital services)	Experimental	Piemonte Region	Proxy available (rl)	2022	Opinion Climate Survey - IRES Piemonte	Percentage	2021-2022	Annual

Source: author's own elaboration, from IRES Piemonte (Regional Survey "Opinion Climate Survey")

Figure 17 - Satisfaction with health services (family doctors and public hospital services)



The **satisfaction with health services** indicator includes satisfaction percentages in relation to family doctors and public hospital services in the last two years, 2021 and 2022.

In both cases there was a small increase, of 1 percentage point from 2021 to 2022. In 2022 the satisfaction rate is: **70.8%** for public hospital services and **79.4%** for family doctors.

Source: author's own elaboration, from IRES Piemonte (Regional Survey "Opinion Climate Survey")

Table 28 - Satisfaction with health services - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
3	Satisfaction with health services (family doctors and public hospital services)	2022	IRES Piemonte	Percentage	75.1	-	-

Source: author's own elaboration, from IRES Piemonte (Regional Survey "Opinion Climate Survey")

SDG Target 3.c HEALTH FINANCING AND RECRUITMENT

Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States

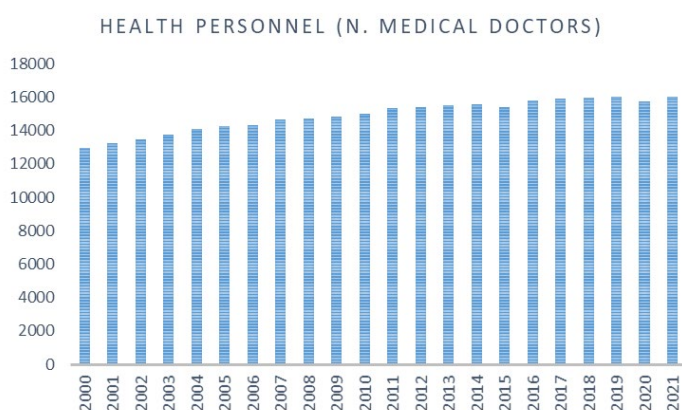
Indicator: Health personnel (medical doctors)

Table 29 - Health personnel (medical doctors)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
3	Health personnel (medical doctors)	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Number	2000-2021	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 18 - Health personnel (medical doctors)



In Piemonte, the number of **medical doctors** increased constantly from 2000 to 2021 (Covid-19 period), from 12,976 (in 2000) to **16,008** (in 2021).

Nevertheless, values have been more or less stable over the last six years.

Source: author's own elaboration, from Eurostat Regional Statistics Database

Table 30 - Health personnel (medical doctors) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
3	Health personnel (medical doctors)	2021	Eurostat, Regional Statistics	Number	16,008	244,441	-

Source: author's own elaboration, from Eurostat Regional Statistics Database

SDG Target 3.8 UNIVERSAL HEALTH COVERAGE

Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

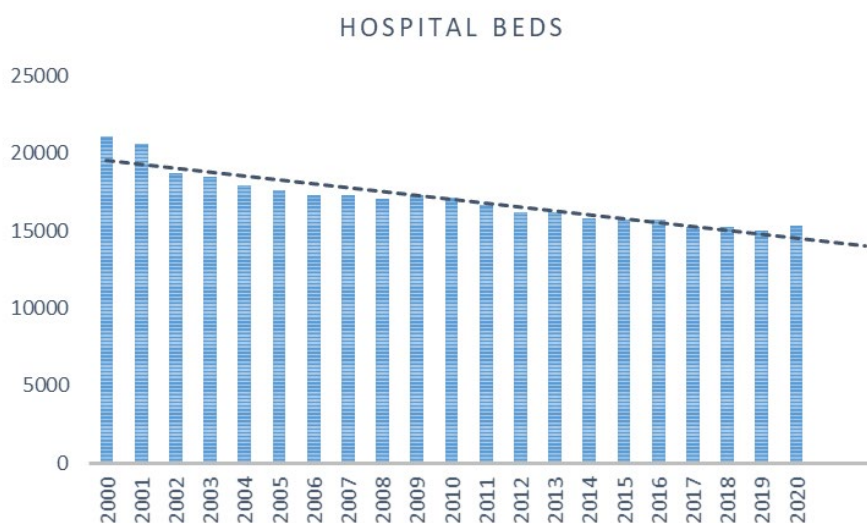
Indicator: **Hospital beds**

Table 31 - Hospital beds

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
3	Hospital beds	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number	1993-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 19 - Hospital beds



Source: author's own elaboration, from Eurostat Regional Statistics Database

Contrary to the increase in the number of medical personnel, the **number of hospital beds** has showed a sharp decline in Piemonte over the last 10 years, registering a loss of about 5,000 beds since 2000.

In 2020 (during Covid-19 period), the total number registered is **15,332 hospital beds**.

Table 32 - Hospital beds - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
3	Hospital beds	2020	Eurostat, Regional Statistics	Number	15,332	189,270	-

Source: author’s own elaboration, from Eurostat Regional Statistics Database

SDG Target 3.2 PREVENTABLE DEATH OF NEWBORNS

By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under -5 mortality to at least as low as 25 per 1,000 live births

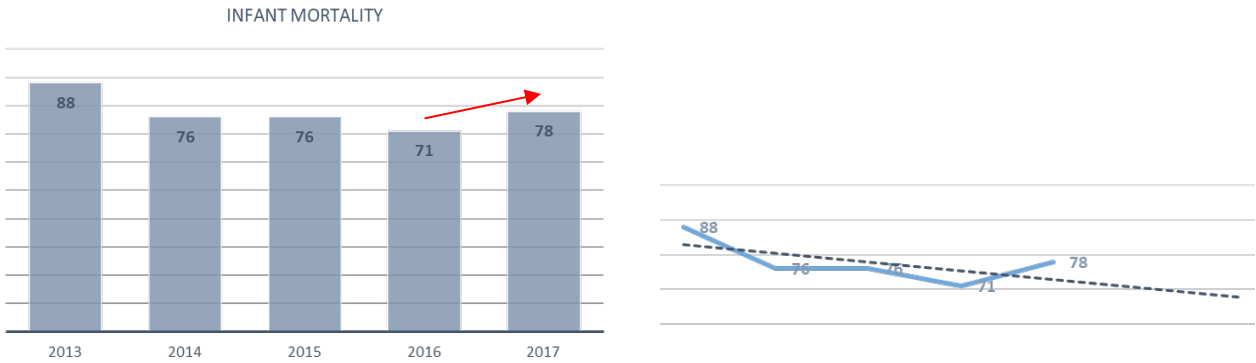
Indicator: **Infant mortality**

Table 33 - Infant mortality

SDG	Indicator name	Type	Cover age	Availabil ity	Year of availa bility	Source	Unit of measure ment	Time cover age	Freque ncy
3	Infant mortality - All deaths of residents in or outside their home country	Offici al	EU-27 plus others	available (rl)	2017	Eurostat, Regional Statistics	Number	2013-2017	Annual

Source: author’s own elaboration, from Eurostat Regional Statistics Database

Figure 20 - Infant mortality



Source: author’s own elaboration, from Eurostat Regional Statistics Database

After a small decline between 2014 and 2016 (compared to the highest values recorded in 2013: 88 deceased children), the number increased in 2017 (**78**), but remains below the worst record of 2013. Unfortunately, the most up-to-date data is not available; however, if one looks at the trend (2013-2017), and not just at the increase in 2017, it is possible to assume that mortalities have decreased over the years.

Table 34 - Infant mortality - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
3	Infant mortality	2017	Eurostat, Regional Statistics	Number	78	1,335	320

Source: author's own elaboration, from Eurostat Regional Statistics Database

2.1.4 SDG 4 - ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

SDG	4
Number of available indicators (regional level)	7

SDG Target 4.5 GENDER AND OTHER DISPARITIES IN EDUCATION, 4.6 YOUTH AND ADULT LITERACY

By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

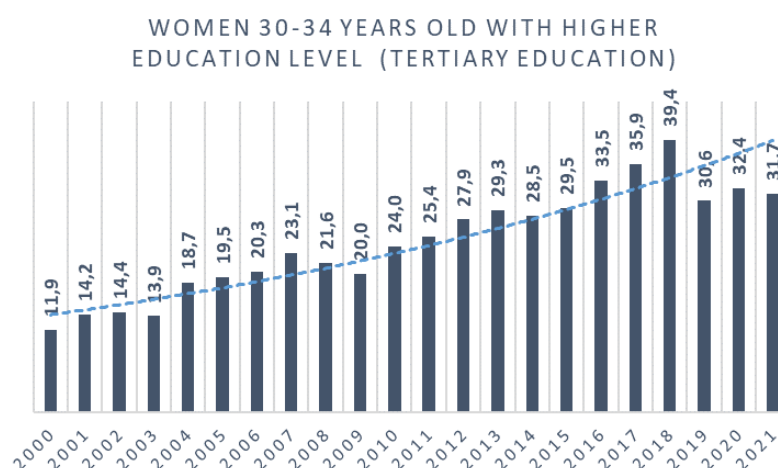
Indicator: Women 30-34 years old with higher education level

Table 35- Women 30-34 years old with higher education level - Tertiary education

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Women 30-34 years old with higher education level - <i>Tertiary education</i>	Official	EU	available (rl)	2021	Eurostat, Regional Statistics	Percentage (levels 5-8)	2000-2021	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 21 - Women 30-34 years old with higher education level (Tertiary education)



Source: author's own elaboration, from Eurostat Regional Statistics Database

In Piemonte, **women (30-34 years old) with tertiary education level**, have increased, especially from 2000 (11.9%) to 2018 (39.4%). However, in 2019 (during Covid-19 period) there was a decrease (-8.8 percentage points from 2018), in 2021 the percentage stands at **31.7%**.

Table 36 - Women 30-34 years old with higher education level - Tertiary education - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
4	Women 30-34 years old with higher education level (Tertiary education)	2021	Eurostat, Regional Statistics	Percentage	31.7	33.3	35.1

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is worse than the Italian average (31.7/33.3) and the average of the North-Western regions (35.1).

SDG Target 4.3 VOCATIONAL AND TERTIARY EDUCATION

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

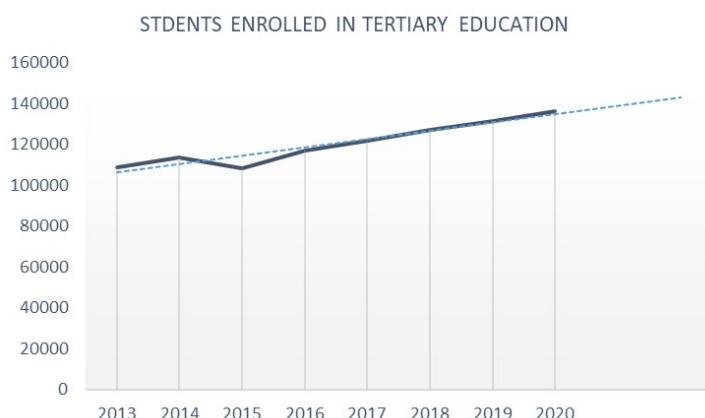
Indicator: **Students enrolled in tertiary education**

Table 37 - Students enrolled in tertiary education

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Students enrolled in tertiary education	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number (levels 5-8)	2013-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 22 - Students enrolled in tertiary education



The number of **students enrolled in tertiary education** has increased, between 2013 and 2020, from 108,743 to **135,997**. The trend suggests a steady increase in the future.

Source: author's own elaboration, from Eurostat Regional Statistics Database

Table 38 - Students enrolled in tertiary education - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
4	Students enrolled in tertiary education	2020	Eurostat, Regional Statistics	Number	135,997	2,030,768	535,381	40% (EU)

Source: author's own elaboration, from Eurostat Regional Statistics Database

SDG Target 4.3 VOCATIONAL AND TERTIARY EDUCATION

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

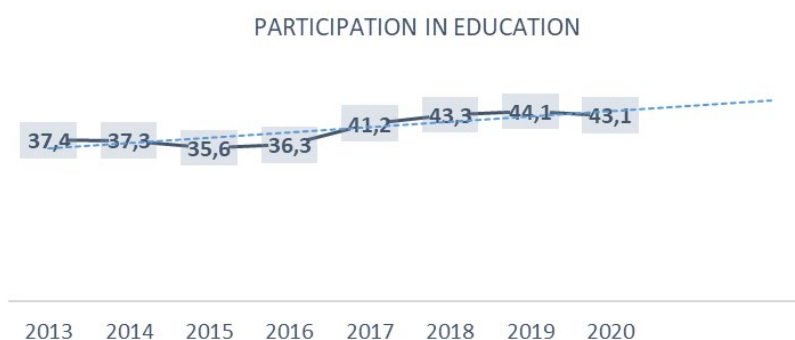
Indicator: **Participation in education**

Table 39 - Participation in education - From 20 to 24 years

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Participation in education - From 20 to 24 years	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Rate	2013-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 23 - Participation in education - From 20 to 24 years



Source: author's own elaboration, from Eurostat Regional Statistics Database

Participation in education, among 20- to 24 year-old students, has remained more or less constant in recent years, especially between 2017 (41%) and 2020 (**43%**), but a slight increase compared to the past (average of 36.7% between 2013-2016) is evident.

Table 40 - Participation in education - From 20 to 24 years - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
4	Participation in education- From 20 to 24 years	2020	Eurostat, Regional Statistics	Rate	43.1	37.4	41.2

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte, at the latest available year (2020), is better than the Italian average and the average of the North-Western regions (although the values are very close, 2 percentage points higher for Piemonte).

SDG Target 4.2 ACCESS TO EARLY CHILDHOOD EDUCATION

By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

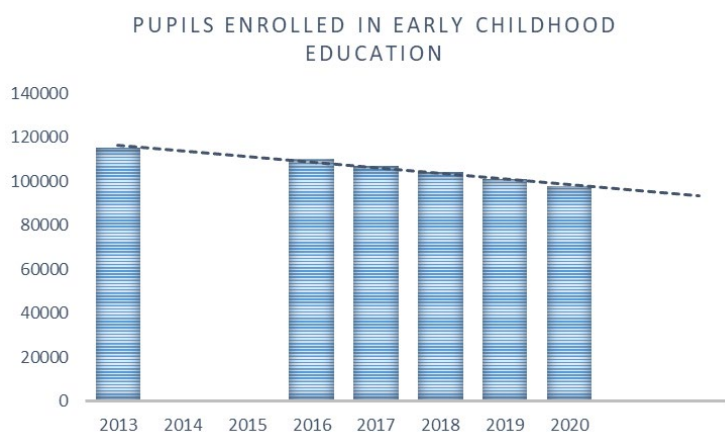
Indicator: **Pupils enrolled in early childhood education**

Table 41 - Pupils enrolled in early childhood education

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Pupils enrolled in early childhood education	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number	2013-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 24 - Pupils enrolled in early childhood education



Pupils enrolled in early childhood education are steadily decreasing. The rate fell by -15%, from 115,484 (in 2013) to **97,599** (in 2020). Probably this is related to a decrease in births.

Source: author's own elaboration, from Eurostat Regional Statistics Database

Table 42 - Pupils enrolled in early childhood education - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
4	Pupils enrolled in early childhood education - Early childhood education	2020	Eurostat, Regional Statistics	Number	97,599	1,415,006	372,019

Source: author's own elaboration, from Eurostat Regional Statistics Database

SDG Target 4.6 YOUTH AND ADULT LITERACY

By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

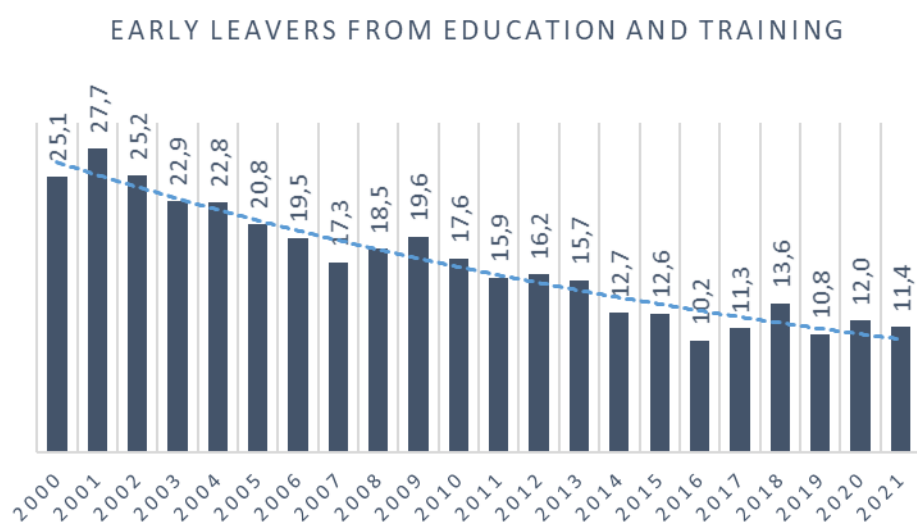
Indicator: **Early leavers from education and training**

Table 43 - Early leavers from education and training

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Early leavers from education and training	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Percentage	2000-2021	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 25 - Early leavers from education and training



In Piemonte, the trend of **early leavers from education and training** is encouraging. Values are steadily decreasing from 2000 to 2021. The highest percentage was recorded in 2001, with 27.7%, while the lowest (and therefore most positive) value is that of 2016, with 10.2%. In 2021, the last year Available, is **11.4%**.

Source: author's own elaboration, from Eurostat Regional Statistics Database

Table 44 - Early leavers from education and training - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
4	Early leavers from education and training	2021	Eurostat, Regional Statistics	Percentage	11.4	12.7	11.5	10% (EU)

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is worse than the Italian average (11.4/12.7) and very similar to the average of the North-Western regions (11.5).

If only slightly, the rate is lower than the European 2030 target of 10% (*EU Commission, European Skills Agenda and the Action Plan for the Digital Education*).

SDG Target 4.1 PRIMARY AND SECONDARY EDUCATION

By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

Indicator: **Participation rates in selected education levels**

Table 45 - Participation rates in selected education levels

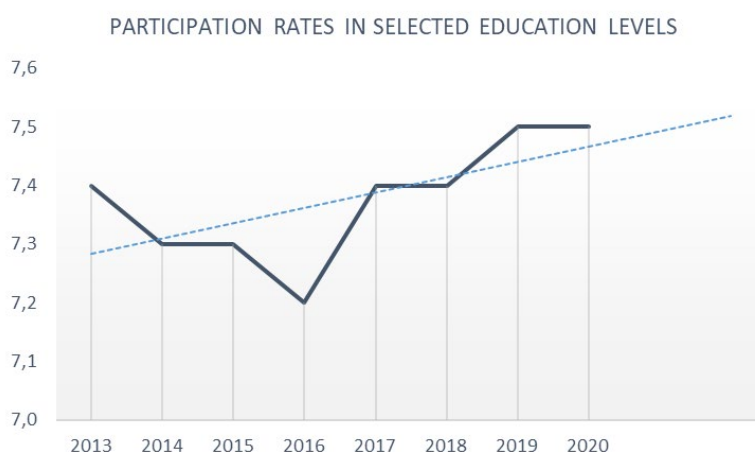
SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Participation rates in selected education levels - <i>Primary and lower secondary education</i>	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Rate	2013-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

Figure 26 - Participation rates in selected education levels (Primary and lower secondary education)

In Piemonte, participation rates in primary and lower secondary education levels have remained, in general, similar since 2013, but have had an unsteady and regular trend.

In 2013 the rate was 7.4 per cent, in 2016 7.2, but increased in 2019 and 2020 to **7.5** per cent. The trend suggests a prospective increase in the coming years.



Source: author's own elaboration, from Eurostat Regional Statistics Database

Table 46 - Participation rates in selected education levels - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
4	Participation rates in selected education levels - Primary and lower secondary education	2020	Eurostat, Regional Statistics	Rate	7.5	7.6	7.6

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte, at the latest available year (2020), is similar to the Italian average and the average of the North-Western regions (7.5-7.6).

SDG Target 4.3 VOCATIONAL AND TERTIARY EDUCATION

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

Indicator: **Distribution of pupils and students enrolled in general and vocational programmes**

Table 47 - Distribution of pupils and students enrolled in general and vocational programmes

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Distribution of pupils and students enrolled in general and vocational programmes – <i>Upper secondary education - general</i>	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Percentage	2013-2020	Annual

Source: author's own elaboration, from Eurostat Regional Statistics Database

In this case, the values are increased during the last 8 years (between 2013 and 2020): from 38.9 in 2013, 42.1 – 41.7 (2014-2017), 43.6 (2018), 43.9 (2020) and 44.4 in 2020.

Table 48 - Distribution of pupils and students enrolled in general and vocational programmes - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
4	Distribution of pupils and students enrolled in general programmes	2020	Eurostat, Regional Statistics	Percentage	44.4	47.5	44.4

Source: author's own elaboration, from Eurostat Regional Statistics Database

The datum for Piemonte and the average of the North-Western regions, at the latest available year (2020), is the same, 44.4%, but is worse than the Italian average (47.5).

2.1.5 SDG 5 - ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SDG	5
Number of available indicators (regional level)	6

SDG Target 5.2 GENDER VIOLENCE

Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

Indicator: Fatal victims of gender-based violence at the hands of their partners or expartners

Table 49 - Fatal victims of gender-based violence at the hands of their partners or expartners

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Fatal victims of gender-based violence at the hands of their partners or expartners	Official	Italian regions	available (rl)	2014	Istat, Regional Statistics	Percentage	2014	Annual

Source: author's own elaboration, from Istat Regional Statistics Database

In this case, only one indicator is available at regional level, for 2014 (very old). In this survey year, the percentage recorded was **13.3%**, a value very similar to the the Italian average and the datum of the North-Western regions. However, the percentage is quite high and should be eliminated in the coming years (*2030Agenda -ONU*).

Table 50 - Fatal victims of gender-based violence at the hands of their partners or expartners - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
5	Fatal victims of gender-based violence at the hands of their partners or expartners	2014	Istat, Regional Statistics	Percentage	13.3	13.6	13.3	0% (ONU)

Source: author's own elaboration, from Istat Regional Statistics Database

SDG Target 5.2 GENDER VIOLENCE

Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

Indicator: Women victims of violence

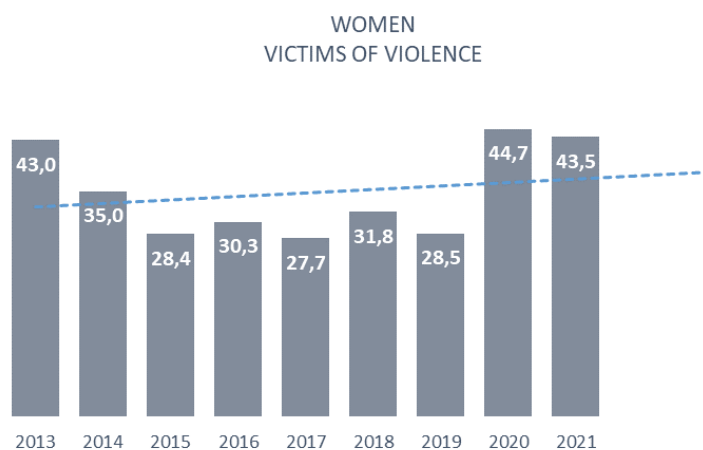
Table 51 - Women victims of violence

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Women victims of violence	Official	Italian regions	available (rl)	2021	Istat, Regional Statistics	Percentage per 100,000 women	2013 - 2021	Annual

Source: author's own elaboration, from Istat Regional Statistics Database

In Piemonte, **women victims of violence** in 2021 are **43.5 per cent** (per 100,000 women). The highest value was reached in 2020, but between 2014 and 2019 the percentage fluctuated between 35% and 28.5%. Despite this, the trend shows an increase in the coming years, due to peaks in 2013 and the last two years.

Figure 27 - Women victims of violence



Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte, at the latest available year (2021), is very high. Although it is better the Italian average, it is very far from the *2030 Agenda target* (0%).

Table 52 - Women victims of violence - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
5	Victims of violence against women	2021	Istat, Regional Statistics	Percentage	43.5	51.9	--	0% (ONU)

Source: author's own elaboration, from Istat Regional Statistics Database

SDG Target 5.5 WOMEN PARTICIPATION AND LEADERSHIP

Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

Indicator: **Female research and development personnel: Share of R&D Female in R&D Total Personnel**

Table 53 - Female research and development personnel: Share of R&D Female in R&D Total Personnel

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Female research and development personnel <i>Share of R&D Female in R&D Total Personnel</i>	Official	Italian Regions	available (rl)	2020	OECD and ISTAT, Regional Statistics OECD data is stopped at 2017, so the analyses were updated with ISTAT data (2020)	Percentage	2003 - 2020	Annual

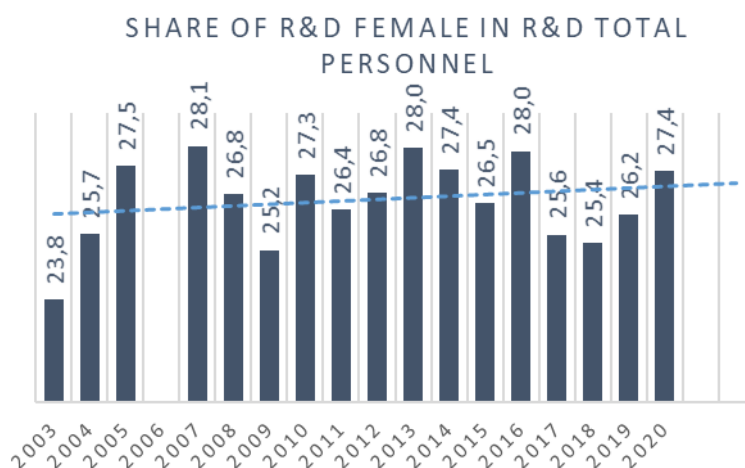
Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 28 -Share of R&D Female in R&D Total Personnel

Female research and development personnel in 2020 was **27.4 per cent**.

The trend was rather uneven from 2003 to 2020; the highest values were reached in 2007, 2013 and 2016. The trend shows a possible stability in the coming years at 26-27%.

The datum for Piemonte, at the latest available year (2020), is worse than the Italian average and the average of the North-Western regions.



Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Table 54 - Female research and development personnel: Share of R&D Female in R&D Total Personnel - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
5	Female research and development personnel- Share of R&D Female in R&D Total Personnel	2020	Istat, Regional Statics	Percentage	27.4	35.2	32.7

Source: author's own elaboration, from Istat Regional Statistics Database

SDG Target 5.5 WOMEN PARTICIPATION AND LEADERSHIP

Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

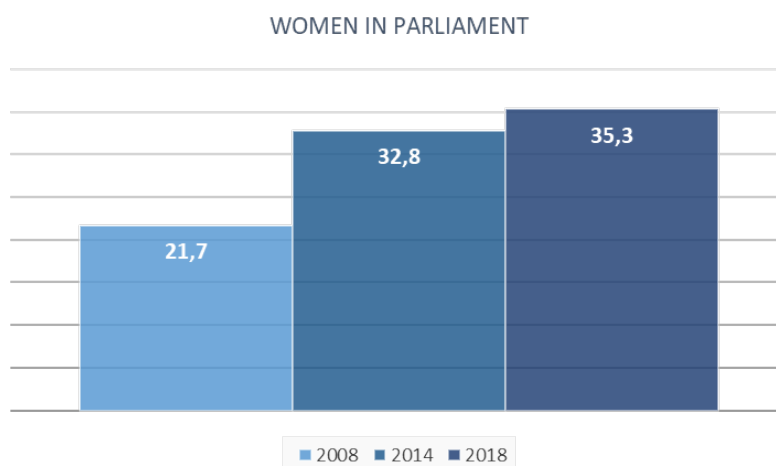
Indicator: **Women in parliament**

Table 55 - Women in parliament

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Women in parliament	Official	Italian regions	available (rl)	2018	Istat, Regional Statistics	Percentage	2008 - 2018	6/4 years

Source: author's own elaboration, from Istat Regional Statistics Database

Figure 29 - Women in parliament



Source: author's own elaboration, from Istat Regional Statistics Database

In Piemonte, **women in Parliament** has steadily increased: from 21.7% in 2008, to 32.8% in 2014 and **35.3%** in 2018.

Table 56 - Women in parliament - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
5	Women in parliament and government	2018	Istat, Regional Statistics	Percentage	35.3	35.4	31.0

Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte and the Italian average, at the latest available year (2020), is the same, 35.3/35.4%, and is better than the average of the North-Western regions (31%).

SDG Target 5.1 GENDER DISCRIMINATION

End all forms of discrimination against all women and girls everywhere

Indicator: **Female achievement/disadvantage index**

Table 57 - Female achievement/disadvantage index

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Female achievement/disadvantage index	Experimental	EU-27	available (rl)	2021	European Commission, DG REGIO	Percentage	2021	-

Source: author's own elaboration, from European Commission, DG REGIO, Norlén H., Papadimitriou E., Dominicis I., Dijkstra L.(2021).

Mapping the glass ceiling: The EU regions where women thrive and where they are held back. Monitoring EU regional gender equality with the female achievement and disadvantage indices. European Commission doi:10.2776/07411

In this case, only one data is available at the regional level, for 2021: the **female achievement index is 33.26%** but the **disadvantage index** is higher, **48.59%**.

Table 58 - Female achievement/disadvantage index - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
5	Female achievement/disadvantage index	2021	European Commission, DG REGIO	Percentage	48.6 A/ 33.3 D	-	-

Source: author's own elaboration, from European Commission, DG REGIO, Norlén H., Papadimitriou E., Dominicis I., Dijkstra L.(2021).

Mapping the glass ceiling: The EU regions where women thrive and where they are held back. Monitoring EU regional gender equality with the female achievement and disadvantage indices. European Commission doi:10.2776/07411

SDG Target 5.4 UNPAID WORK

Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

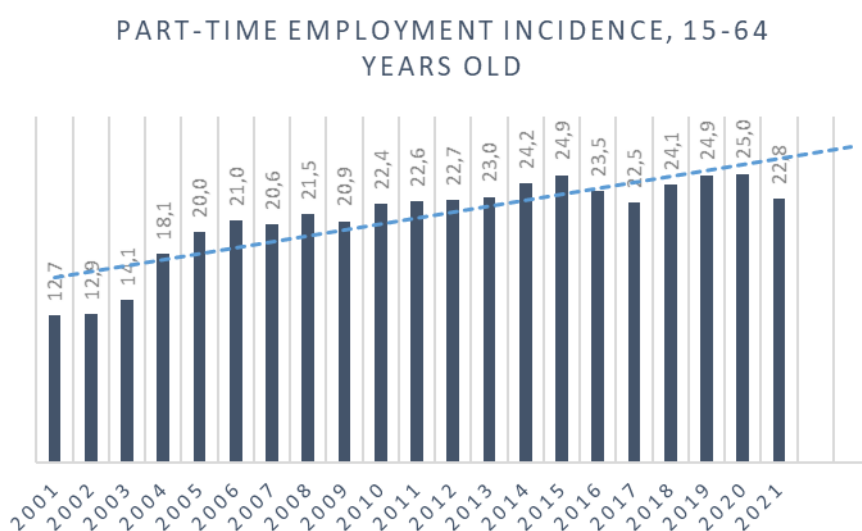
Indicator: **Gender gap in part-time employment incidence: Part-Time employment Incidence, 15-64 years old**

Table 59 - Gender gap in part-time employment incidence

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Gender gap in part-time employment incidence Part-Time employment Incidence, 15-64 years old (% part-time employees over total employment)	Experimental	OECD and other EU countries	available (rl)	2021	Organisation for Economic Cooperation and Development (OECD)	Percentage (% females - %males)	2001 - 2021	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 30 - Part-Time employment incidence, 15-64 years old (% part-time employees over total employment)



Part-time employment incidence, among 15 to 64 year-old employees, has steadily increased since 2001. Nevertheless, in the last year of the analysis (2021), the percentage fell (**22.8**), whereas the two previous years (2019 and 2020) registered the highest percentage (25%).

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Table 60 - Gender gap in part-time employment incidence - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
5	Gender gap in part-time employment incidence- 15-64 years old (% part-time employees over total employment)	2021	Organisation for Economic Cooperation and Development	Percentage (% females - % males)	22.8	23.1	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The datum for Piemonte, at the latest available year (2021), is slightly better than the Italian average (22.8/23.1).

SDG Target 5.4 UNPAID WORK

Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

Indicator: **Inactive population rate due to caregiving responsibilities**

This indicator is not available at the regional level, is only available at national level.

2.1.6 SDG 6 - ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

SDG	6
Number of available indicators (regional level)	4

SDG Target 6.3 WATER QUALITY

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Indicator: Water bodies that exceed a standardized quality rating - water bodies achieving the ecological quality objective

Table 61 - Water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Percentage of water bodies achieving the ecological quality objective (high or good)	Official	Italian regions	Proxy available (rl)	2015	Istat, Regional Statistics	Percentage	2015	-

Source: author's own elaboration, from Istat Regional Statistics Database

In this case, only one data is available at the regional level: in 2015, percentage of water bodies achieving the ecological quality goal (high or good) out of the total number of surface water bodies (rivers and lakes) is 53%.

Table 62 - Water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
6	Percentage of water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes)	2015	Istat, Regional Statistics	Percentage	53	41.7	-	100% (EU)

Source: author's own elaboration, from Istat Regional Statistics Database

The datum for Piemonte, at the latest available year (2015, very old) is better than the Italian average but there is a big gap in relation to the European target (*EU Directive 2000/60/CEE*): Piemonte must double the rate to reach 100% of water bodies achieving the ecological quality objective.

SDG Target 6.3 WATER QUALITY

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Indicator: Groundwater monitoring: chemical status (good or poor status) of groundwater of the surface aquifer system and groundwater in the deep aquifer system

Table 63 - Groundwater monitoring

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Groundwater monitoring - chemical status (good status)	Experimental	Piemonte Region	Proxy available (rl)	2014	Piemonte Region - ARPA	Rate	2009 - 2014	

Source: author's own elaboration, from ARPA Piemonte Database, regional data

In Piemonte, there are 34 groundwater bodies of which 13 are for the surface lowland aquifer system (GWB-S), 4 for the aquifer systems of the main Alpine and Apennine valley bottoms (GWB-F), 6 for the deep lowland aquifer system (GWB-P), and 11 GWB for the hill and mountain aquifer systems.

In the six-year period 2009-2014, the 17 groundwater bodies of the surface aquifer system and the main Alpine and Apennine valley bottoms were 82% in "poor" chemical status while (in groundwater there is no ecological status), 12% in "good" status and 1 (6%) on the borderline between the two classes.

The 6 water bodies in the deep aquifer system, also depending on their naturally more protected condition, showed less impairment, with 4 of them in "good" status (66.7%) and 2 in "poor" status (33%) - (source: Water Protection Plan, Piemonte Region, 2018).

Table 64 - Groundwater monitoring - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
6	Groundwater monitoring - chemical status (good status) of groundwater of the surface aquifer system and groundwater in the deep aquifer system	2014	Piemonte Region - ARPA	Rate	12.0 66.7		

Source: author's own elaboration, from ARPA Piemonte Database, regional data

SDG Target 6.1 UNIVERSAL ACCESS TO WATER

By 2030, achieve universal and equitable access to safe and affordable drinking water for all

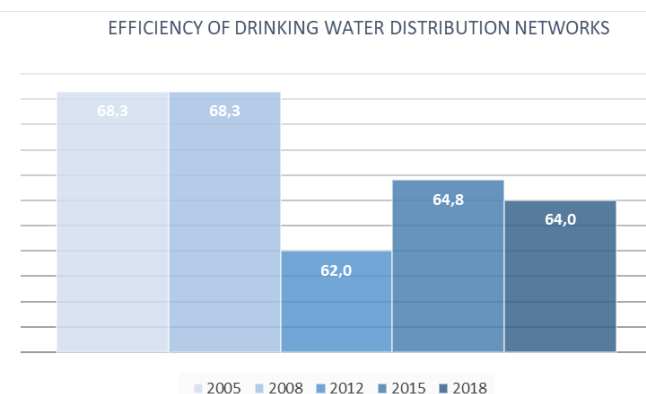
Indicator: **Efficiency of drinking water**

Table 65 - Efficiency of drinking water distribution networks

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Efficiency of drinking water distribution networks	Official	Italian regions	Proxy available (rl)	2018	Istat, Regional Statistics	Percentage	2005 - 2018	Triennial

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 31 - Efficiency of drinking water distribution networks



The percentage of **efficiency of drinking water distribution** networks in 2018 was **64%**. Over the last 3 years, values have been fairly stable. In contrast, between 2005 and 2008 the percentage was 4 points higher (68%). The lowest value was recorded in 2012 (62%).

Source: author's own elaboration, from Istat, Regional Statistics Database

Table 66 - Efficiency of drinking water distribution networks - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
6	Efficiency of drinking water distribution networks	2018	Istat, Regional Statistics	Percentage	64	58	67.5	-20% water dispersion (IT)

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2018, very old) is better than the Italian average but worse than the North-Western regions; if the percentage of efficiency of drinking water distribution networks is 64%, we know also that the region cannot exceed 20% of water dispersion (National target of *Ecological Transition Plan*).

SDG Target 6.3 WATER QUALITY

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

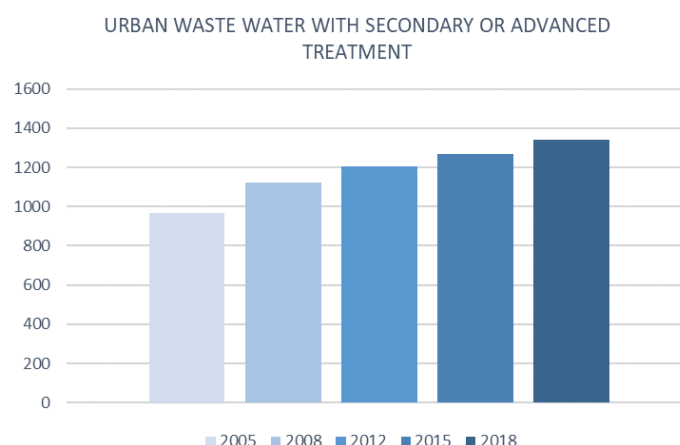
Indicator: **Urban wastewater with secondary or advanced treatment**

Table 67 - Urban waste water system with secondary or advanced treatment

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Urban waste water system with secondary or advanced treatment	Official	Italian regions	Proxy available (rl)	2018	Istat, Regional Statistics	Number	2005 - 2018	Triennial

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 32 - Urban wastewater with secondary or advanced treatment



Source: author's own elaboration, from Istat, Regional Statistics Database

The number of urban wastewater system with secondary or advanced treatment in Piemonte has steadily increased over time: from 969 in 2005 to 1343 in 2018.

Table 68 - Urban waste water system with secondary or advanced treatment - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
6	Urban waste water system with secondary or advanced treatment	2018	Istat, Regional Statistics	Number	1,343	7,781	2,245	100% (EU)

Source: author's own elaboration, from Istat, Regional Statistics Database

According to the European target, 100% of households must be served by secondary treatment plants by 2030 (*EU Directive 2000/60/CEE*).

We don't know the percentage of Piemonte but we know that in the region we have 1,243 urban waste water system with secondary or advanced treatment, a very high number if compared to the total number of these systems in Italy (7,781).

2.1.7 SDG 7 - ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

SDG	7
Number of available indicators (regional level)	2

SDG Target 7.2 SHARE OF RENEWABLE ENERGY

By 2030, increase substantially the share of renewable energy in the global energy mix

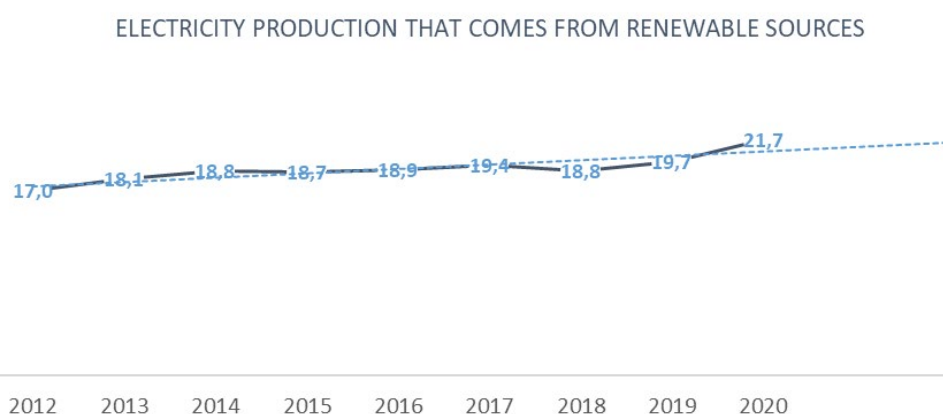
Indicator: **Electricity production that comes from renewable sources**

Table 69 - Electricity production that comes from renewable sources

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Electricity production that comes from renewable sources	Official	Italian regions	available (rl)	2020	GSE S.p.A. - Gestore dei Servizi Energetici; Istat, Regional Statistics	Percentage	2012 - 2020	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database, from GSE S.p.A. (Gestore dei Servizi Energetici) data

Figure 33 - Electricity production that comes from renewable sources



Source: author's own elaboration, from Istat, Regional Statistics Database, from GSE data

Electricity production from renewable energy sources has steadily increased to 21.7% in 2020, 4 percentage points higher than in 2012. The positive trend could continue in the coming years.

Electricity production from **renewable energy sources** has steadily increased to **21.7%** in 2020, 4 percentage points higher than in 2012. The positive trend could continue in the coming years.

Table 70 - Electricity production that comes from renewable sources - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
7	Electricity production that comes from renewable sources	2020	GSE S.p.A.; Istat, Regional Statistics	Percentage	21.7	20.4	18.1	42,5% (EU)

Source: author's own elaboration, from Istat, Regional Statistics Database, from GSE data

The datum for Piemonte, at the latest available year (2020) is better than the Italian average and the North-Western regions; but there is a big gap in relation to the European target to 2030 (*EU Green Deal*): Piemonte should double the rate to reach the level set by Europe (from 22% to 42,5%).

SDG Target 7.3 ENERGY EFFICIENCY

By 2030, double the global rate of improvement in energy efficiency

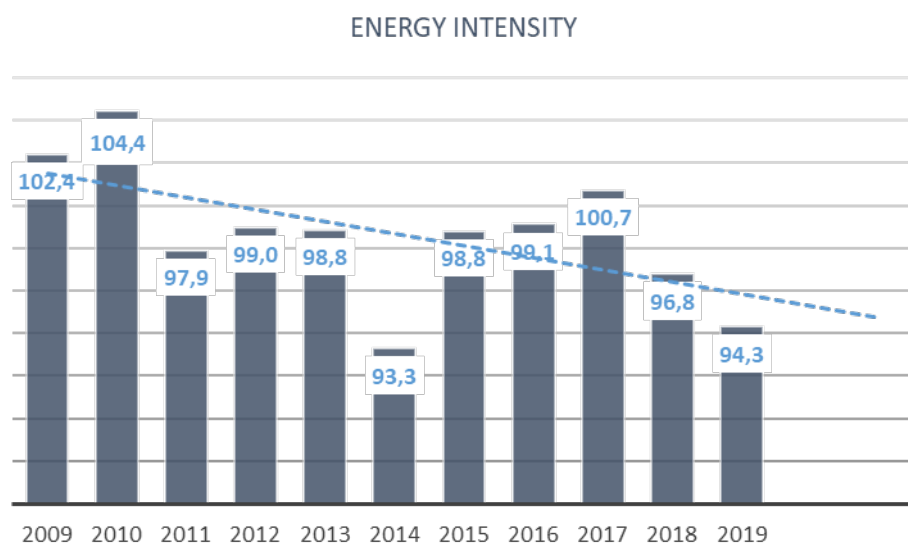
Indicator: **Energy intensity**

Table 71 - Energy intensity

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Energy intensity	Official	Italian regions	available (rl)	2019	Istat, Regional Statistics	Index (tons of oil equivalent per million €)	2009 - 2019	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 34 - Energy intensity



Source: author's own elaboration, from Istat, Regional Statistics Database

The **index of energy intensity** in 2019 was **94.3** tons of oil equivalent per million €.

From 102.4 in 2009 and 104.4 in 2010 (the highest value recorded) there has been a decline, and this suggests that the index will also fall in future years. The lowest values were recorded in 2014 (93.3) and in 2019.

Table 72 - Energy intensity - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
7	Energy intensity	2019	Istat, Regional Statistics	Index (tons of oil equivalent per million €)	94.3	91.4	79.8

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2019) is better than the Italian average and the North-Western regions.

SDG Target 7.2 SHARE OF RENEWABLE ENERGY

By 2030, increase substantially the share of renewable energy in the global energy mix

Indicator: **Electricity production that comes from nuclear power**

Electricity production that comes from nuclear power: This indicator is meaningless for Piemonte, as energy in Italy, by law, cannot be produced from nuclear sources.

SDG Target 7.1 ACCESS TO ENERGY

By 2030, ensure universal access to affordable, reliable and modern energy services

Indicator: **People affected by energy poverty**

People affected by energy poverty: This indicator is not available at the regional level, is only available at the national level.

2.1.8 SDG 8 - PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SDG	8
Number of available indicators (regional level)	10

SDG Target 8.8 LABOUR RIGHTS

Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

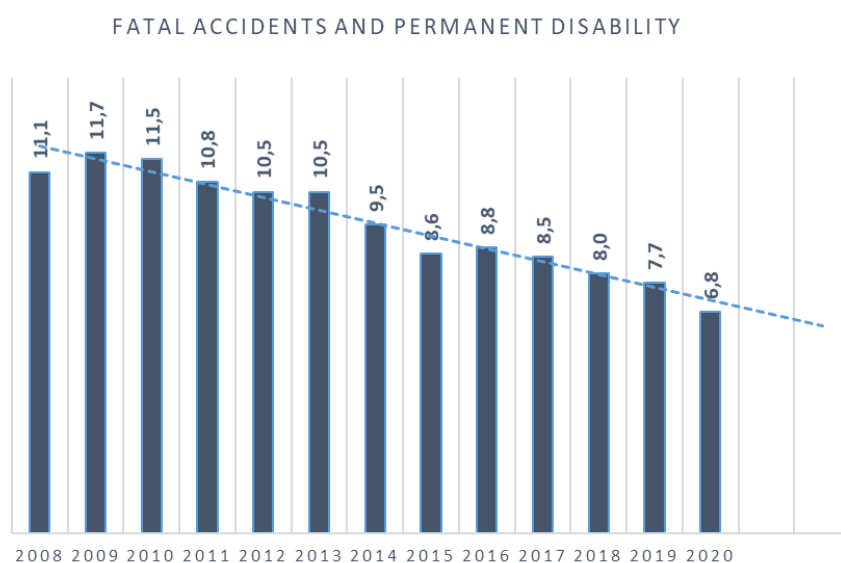
Indicator: Occupational accidents - Fatal accidents and permanent disability

Table 73 - Occupational accidents - Fatal accidents and permanent disability

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Occupational accidents - Fatal accidents and permanent disability	Official	Italian regions	available (rl)	2020	Inail; Istat regional statistics	Rate (per 10.000 employees)	2008 - 2020	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database, from Inail data

Figure 35 - Occupational accidents - Fatal accidents and permanent disability



In Piemonte, the rate of fatal accidents and permanent disability has steadily decreased over time. From 2009 to 2020 it decreased by 5 percentage points (about 1/2): from 11.7% to **6.8%**. The trend is favourable.

The datum for Piemonte, at the latest available year (2020) is better than the Italian average and the North-Western regions

Source: author's own elaboration, from Istat, Regional Statistics Database, from Inail data

Table 74 - Occupational accidents - Fatal accidents and permanent disability - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Occupational accidents Fatal accidents and permanent disability	2020	Inail; Istat regional statistics	Rate	6.8	9.0	7.1

Source: author's own elaboration, from Istat, Regional Statistics Database, from Inail data

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

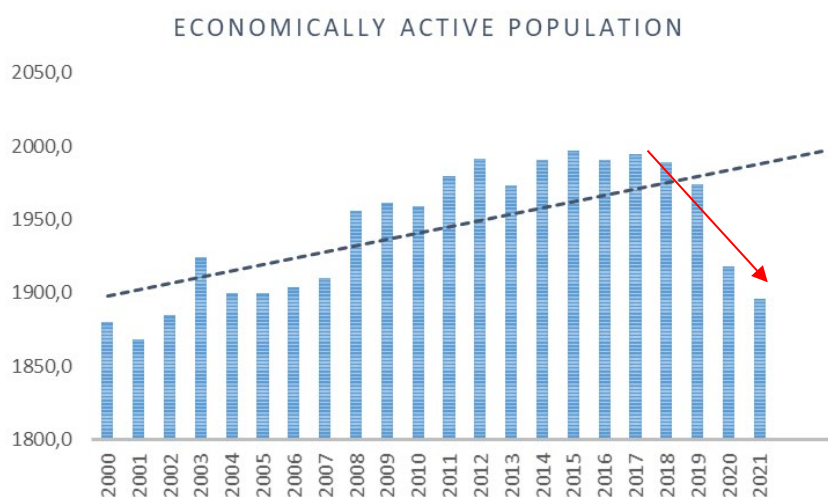
Indicator: **Economic activity**

Table 75 - Economic activity

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Economic activity - Economically active population - From 15 to 74 years	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Rate (Thousand)	1999 - 2021	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 36 - Economically active population (15-74 years old)



The rate of **economically active** population has increased sharply over the years, particularly from 2000 to 2019. Nevertheless, from 2018 to 2021 (Covid-19 period), the rate began to decline, and in 2021 it returned to the values of 20 years earlier (approximately).

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 76 - Economic activity - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Economic activity (Economically active population - from 15 to 74 years)	2021	Eurostat, Regional Statistics	Rate (Thousand [THS])	1,895.8	24,829.5	7,184.9

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

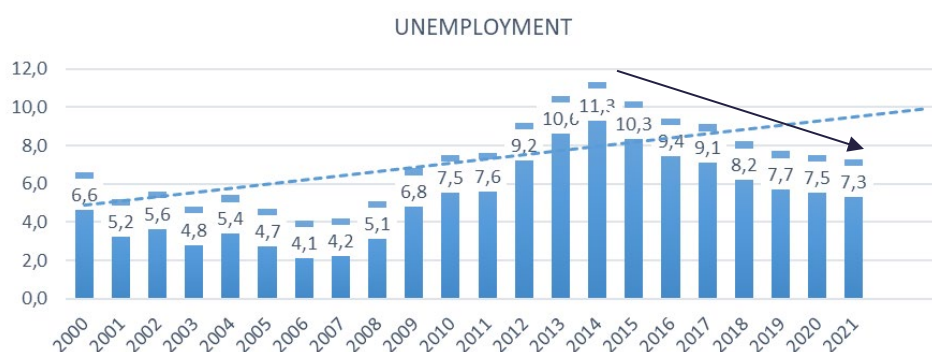
Indicator: **Unemployment**

Table 77 - Unemployment

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Unemployment - From 15 to 74 years	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Rate	1999 - 2021	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 37 - Unemployment (15 – 74 years old)



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Unemployment rate data show an increasing trend. This is because from 2000 to 2014 there was a sharp increase in unemployment in Piemonte.

However, from 2014 to 2021, values are more promising: the rate went back down, from 11.3 to **7.3**.

Table 78 - Unemployment - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Unemployment (from 15 to 74 years)	2021	Eurostat, Regional Statistics	Rate	7.3	9.5	6.5

Source: author's own elaboration, from Eurostat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2021) is better than the Italian average but is worse than the average of the North-Western regions.

SDG Target 8.3 JOB CREATION

Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

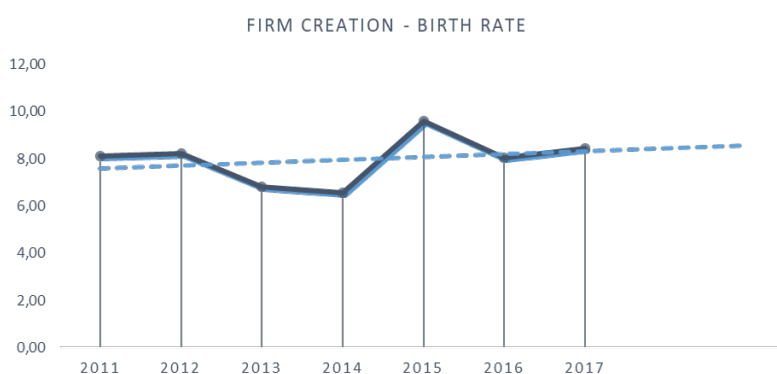
Indicator: **Firm creation - Birth rate (in % of employer firms)**

Table 79 - Firm creation - Birth rate

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Firm creation - Birth rate (in % of employer firms); <i>aggregate 3 (industry, construction and services exc. insurance activities of holding companies)</i>	Experimental	OECD countries, other Eu countries	available (rl)	2017	Organisation for Economic Cooperation and Development (OECD)	Rate	2011-2017	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 38 - Birth rate (in % of employer)



Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The percentage of **new firms** has always showed the same values, between 8 and 9 percent (from 2011 to 2017), except for 2013 and 2014 when the percentage dropped to 6.7 percent. On the other hand, the best result is recorded in 2017 with 9.6.

Table 80 - Firm creation - Birth rate (in % of employer firms) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Firm creation Birth rate (in % of employer firms - same sector, same size class)	2017	OECD	Rate	8.44	9.23	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The datum for Piemonte, at the latest available year (2017, very old) is worse than the Italian average.

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

Indicator: **Employment**

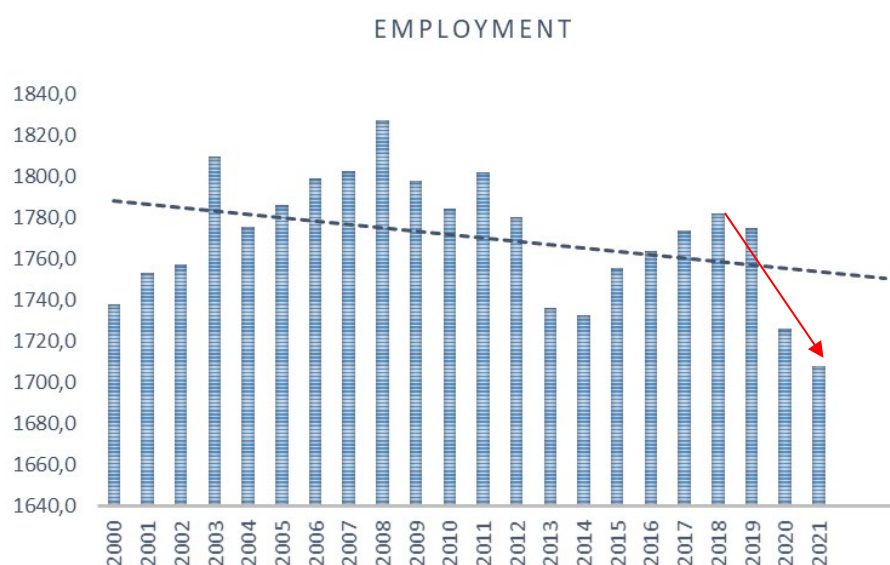
Table 81 - Employment - From 15 to 64 years

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Employment - From 15 to 64 years	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Number	1999 - 2021	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

The numbers related to **employment** in Piemonte had a large increase particularly in 2003 and 2008. After plummeting between 2013 and 2014, the number increased again until 2018. With the pandemic (Covid-19), however, there was a slump again, and in 2021 the lowest number, ever recorded in the past 20 years, is highlighted (1,708). However, the numbers have never dropped below 1700, and the highest value was 1,827 in 2008.

Figure 39 - Employment (15 – 64 years old)



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 82 - Employment - From 15 to 64 years - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
8	Employment (from 15 to 64 years)	2021	Eurostat, Regional Statistics	Number	1,708.2	21,849.2	6,546.3	78% (EU)*

Source: author's own elaboration, from Eurostat, Regional Statistics Database

*EU Commission Action Plan for the Implementation of the European Pillar of Social Rights

SDG Target 8.1 ECONOMIC GROWTH

Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

Indicator: **GDP at current market prices**

Table 83 - GDP at current market prices

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	GDP at current market prices	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number (Million euro)	2000 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 40 - GDP at current market prices



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Gross domestic product (GDP) is growing, just as the positive trend shows.

From 2000 to 2019 it increased from 99,693 to 137,659 M€; in 2020 it slightly decreased from the previous year, but remains high at **126,199 M€**.

Table 84 - GDP at current market prices - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	GDP at current market prices	2020	Eurostat, Regional Statistics	Number (Million euro)	126,199	1,653,577	542,325

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 8.2 ECONOMIC PRODUCTIVITY

Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

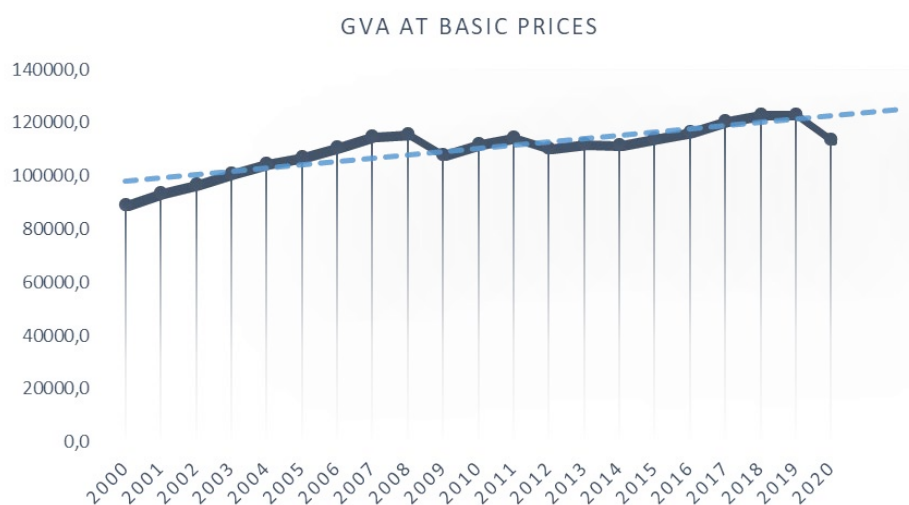
Indicator: **GVA at basic prices**

Table 85 - GVA at basic prices

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	GVA at basic prices	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number (Million euro)	1995 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 41 - GVA at basic prices



Gross value added at basic prices had the same trend as the GDP: from 2000 (89,330 M€) to 2019 (123,450 M€) it increased, pretty consistently, but in 2020 (Covid-19) it slightly decreased from the previous year (**113,953 M€**).

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 86 - GVA at basic prices - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	GVA at basic prices	2020	Eurostat, Regional Statistics	Number (Million euro)	113,952.7	1,493,117	489,699

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

Indicator: **Long-term unemployment (12 months and more)**

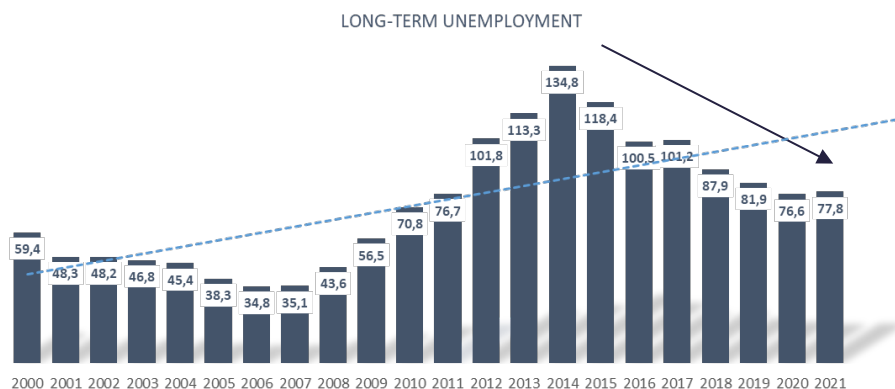
Table 87 - Long-term unemployment (12 months and more) - From 15 to 74 years

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Long-term unemployment (12 months and more) - From 15 to 74 years	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Rate (Thousand)	1999 - 2021	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Long-term unemployment from 2000 to 2014 grew exponentially, from 59.4% to 134.8%. Fortunately, the percentage from 2015 to 2021 has decreased, and in the last year of analysis the percentage is **77.8%**.

Figure 42 - Long-term unemployment (12 months and more; 15 – 74 years old)



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 88 - Long-term unemployment (12 months and more) - From 15 to 74 years - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Long-term unemployment (12 months and more) From 15 to 74 years)	2021	Eurostat, Regional Statistics	Rate Thousand [THS]	77.8	1,344.4	230.2

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

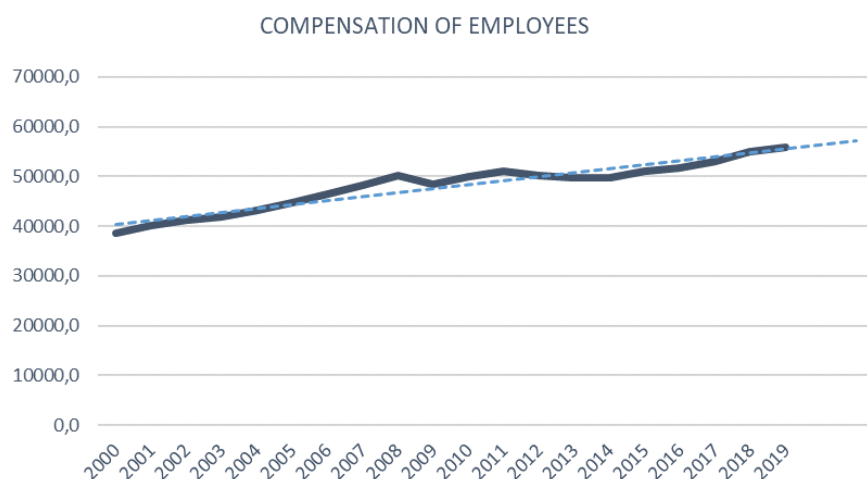
Indicator: **Compensation of employees**

Table 89 - Compensation of employees

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Compensation of employees	Official	EU-27 plus others	available (rl)	2019	Eurostat, Regional Statistics	Number (Million euro)	1995 - 2019	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 43 - Compensation of employees



The trend in **compensation of employees** has been growing since 2000 and shows an increase in the coming years as well. From 38,565 ME in 2000 the compensation of employees went up to **55,969 ME** in 2019.

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 90 - Compensation of employees - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
8	Compensation of employees	2019	Eurostat, regional statistics	Number (Million euro)	55,969.4	721,544	236,850.5

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 8.6 YOUTH NOT IN EMPLOYMENT, EDUCATION OR TRAINING

By 2020, substantially reduce the proportion of youth not in employment, education or training

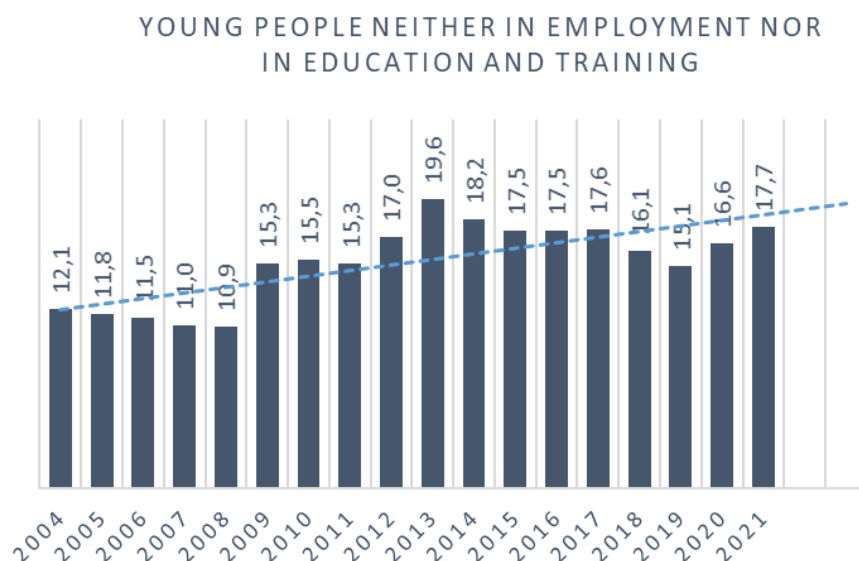
Indicator: Young people neither in employment nor in education and training

Table 91 - Young people neither in employment nor in education and training (15-24 years)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Young people neither in employment nor in education and training (15-24 years)	Official	Italian regions	available (rl)	2021	Istat, Regional Statistics	Percentage	2004 - 2021	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 44 - Young people neither in employment nor in education and training (15 -24 years old)



Source: author's own elaboration, from Istat, Regional Statistics Database

The percentage of **young people neither in employment nor in education and training** is increasing (as shown by the trend based on values recorded from 2004 to 2021). In 2013, the percentage had reached 19.6%, dropped in 2019 to 15%, but has risen again since 2020, and in 2021 it has reached **17.7%**.

Table 92 - Young people neither in employment nor in education and training (15-24 years) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
8	Young people neither in employment nor in education and training (15-24 years)	2021	Istat, Regional Statistics	Percentage	17.7	19.8	17.4	9% (EU)

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2021) is better than the Italian average but is slightly worse than the average of the North-Western regions (17.7/17.4%). However, Piemonte and the North-Western regions, and Italy in general, would have to halve the current share, to reach the European target levels (*EU Commission Action Plan for the Implementation of the European Pillar of Social Rights*), in the next few years (for Piemonte from 17.7 to 9% in 9 years).

2.1.9 SDG 9 - BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

SDG	9
Number of available indicators (regional level)	6

SDG Target 9.2 SUSTAINABLE INDUSTRIALIZATION

Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

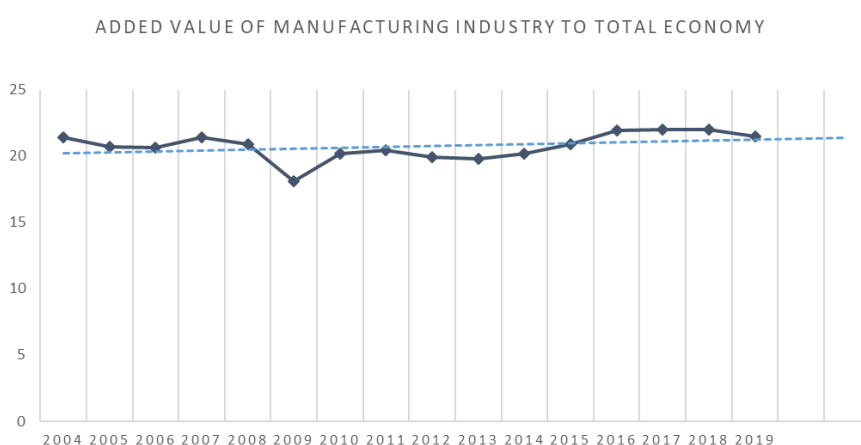
Indicator: GVA of the industry with respect to the GVA of the total sectors (current price)

Table 93 - GVA of the industry with respect to the GVA of the total sectors (current price)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Added value of manufacturing industry to total economy	Official	Italian regions	Proxy available (rl)	2019	Istat, Regional Statistics	Percentage	2004 - 2019	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 45 - Added value of manufacturing industry to total economy



According to ISTAT data, in Piemonte, the share of **added value of manufacturing industry** to total economy remained more or less stable from 2004 to 2019, with values ranging from 18% (lowest value recorded in 2009) to **22%** (recorded between 2016 and 2018). The trend is thus stable at around 21%.

Source: author's own elaboration, from Istat, Regional Statistics Database

Table 94 - GVA of the industry with respect to the GVA of the total sectors (current price) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
9	Added value of manufacturing industry to total economy	2019	Istat, Regional Statistics	Percentage	21.5	16.6	19.5

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2019), in general is better than the Italian average and the average of the North-Western regions.

SDG Target 9.5 PROMOTE INNOVATION

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

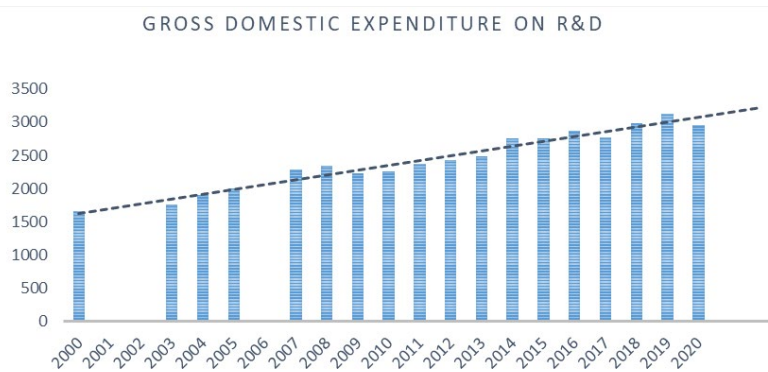
Indicator: Gross Domestic Expenditure on R&D - Gross domestic expenditure on R&D (GERD) by sector of performance -all sectors

Table 95 - Gross Domestic Expenditure on R&D

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Gross Domestic Expenditure on R&D (GERD) by sector of performance - all sectors	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number (Million euro)	1994 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 46 - Gross Domestic Expenditure on R&D



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Gross domestic expenditure on R&D has steadily increased over time, and is probably going to increase, as the positive trend shows. Despite part of the slight decline in the last year (2020, € 2,958), the highest value was recorded in 2019 with spending of € 3,122 million (versus € 1,662 in 2000).

Table 96 - Gross Domestic Expenditure on R&D - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
9	Gross Domestic Expenditure on R&D (GERD) by sector of performance -all sectors	2020	Eurostat, Regional Statistics	Number (Million euro)	2,957.7	25,028.3	8,778.9	3% GDP (IT)

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 9.5 PROMOTE INNOVATION

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

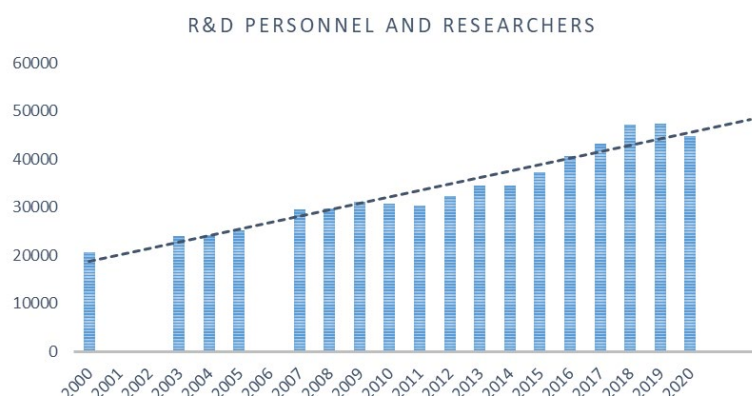
Indicator: **R&D personnel and researchers**

Table 97 - R&D personnel and researchers

SDG	Indicator name	Type	Cover age	Availabili ty	Year of availa bility	Source	Unit of measurem ent	Time cove rage	Freque ncy
9	R&D personnel and researchers	Offici al	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number (Head count)	1980 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 47 - R&D personnel and researchers



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Also R&D personnel and researchers have steadily increased over time, and are going to increase in the future. The highest value was recorded in 2018 and 2019 with with over 47,000 people (personnel and researchers).

In 2020, the number dropped slightly, however, the value remains high, with a total number of **44,725 R&D personnel and researchers**.

Table 98 - R&D personnel and researchers - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
9	R&D personnel and researchers	2020	Eurostat, Regional Statistics	Number (Head count)	44,725	520,750	167,156

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 9.5 PROMOTE INNOVATION

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

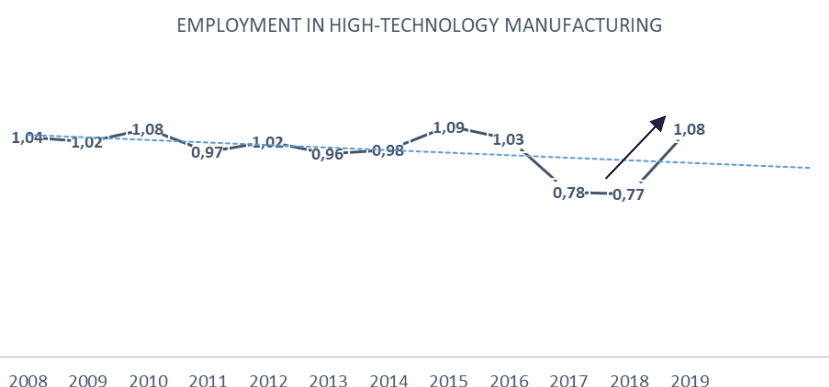
Indicator: **Employment in high-technology manufacturing (in % of total employment)**

Table 99 - Employment in high-technology manufacturing

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Employment in high-technology manufacturing (in % of total employment)	Experimental	OECD and other EU countries	available (rl)	2019	Organisation for Economic Cooperation and Development (OECD)	Percentage	2008-2019	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 48 - Employment in high-technology manufacturing



Employment in high-tech manufacturing (as a % of total employment) declined from 2016 to 2018; however, in 2019 the value went back up (1.09% in 2015, 0.77% in 2018, **1.08%** in 2019). In general, over a period of 10 years, values have remained more or less stable between 0.8 and 1.09%, very similar to the Italian average (1.01%).

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Table 100 - Employment in high-technology manufacturing - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
9	Employment in high-technology manufacturing (in % of total employment)	2019	OECD	Percentage	1.08	1.01	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

SDG Target 9.5 PROMOTE INNOVATION

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

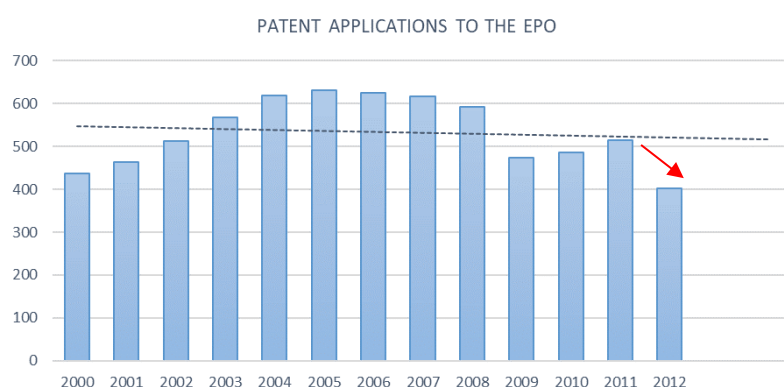
Indicator: **Patent applications to the EPO**

Table 101 - Patent applications to the EPO

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Patent applications to the EPO	Official	EU-27 plus others	available (rl)	2012	Eurostat, Regional Statistics	Number	1977 - 2012	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 49 - Patent applications to the EPO



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 102 - Patent applications to the EPO - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
9	Patent applications to the EPO	2012	Eurostat, Regional Statistics	Number	402	3,576	1,408

Source: author's own elaboration, from Eurostat, Regional Statistics Database

In relation to patent applications to the **EPO - European Patent Office** ⁽⁵⁾ the trend is slightly negative. Despite an increase between 2001 and 2005, the number has been falling again since 2006. There were 436 applications in 2000, 630 in 2005, 473 in 2009, and **402** in 2012 (the latest year Available).

⁽⁵⁾ The European Patent Office EPO examines European patent applications, enabling inventors, researchers and companies from around the world to obtain protection for their inventions in up to 44 countries through a centralised and uniform procedure that requires just one application

2.1.10 SDG 10 - REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

SDG	10
Number of available indicators (regional level)	2

SDG Target 10.2 INCLUSION IRRESPECTIVE OF STATUS

By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

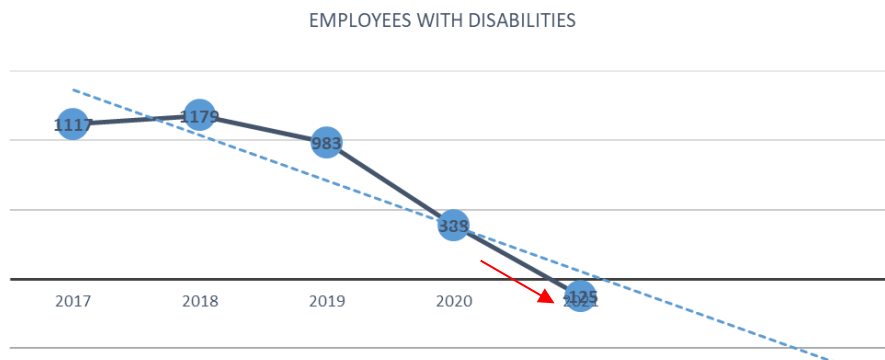
Indicator: **Employees with disabilities**

Table 103 - Employees with disabilities

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
10	Employees with disabilities	Official	Piemonte Region	Proxy available (rl)	2021	Piemonte Region, Report: "Targeted employment"	Number (tot balance = starts - terminations)	2017 - 2021	Annual

Source: author's own elaboration, from Piemonte Region, Report "Targeted employment", 2021

Figure 50 - Employees with disabilities



Source: author's own elaboration, from Piemonte Region, Report "Targeted employment", 2021

The Piemonte Region, with the Piemonte Employment Agency, has been publishing since 2017 a report on "Targeted employment" to monitor the implementation of Law 68/1999 (for the protection of specific disadvantaged categories of workers, defined as protected categories, to facilitate their access to employment), focusing on employment rights of people with disabilities.

The report monitors how many people with disabilities are looking for a job in Piemonte and what their characteristics are, through the databases of the Job Centers and the Region. The data show employment trends from 2017 to 2021, consider the total number of employed people with disabilities and the number of new

employees minus terminations of employment contracts. In Piemonte from 2018 onward, the number has been steadily decreasing, from 1,179 (2018) to 388 (2020). The last year, 2021, was definitely the worst, with a downward trend: the number of contracts terminated was greater than hires (**-125 employees**).

Table 104 - Employees with disabilities - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
10	Employees with disabilities	2021	Piemonte Region, "Targeted employment"	Number (tot = starts - terminations)	-125	-	-

Source: author's own elaboration, from Piemonte Region, Report "Targeted employment", 2021

SDG Target 10.4 GREATER EQUALITY

Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

Indicator: **Gini index of disposable income (after taxes and transfers)**

Table 105 - Gini index of disposable income (after taxes and transfers)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
10	Gini index of disposable income (after taxes and transfers)	Experimental	OECD and other EU countries	available (rl)	2013	OECD	Number	2013	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

In this case, we have only one available datum at the regional level, which does not change since 2013, with a value of **0.28** (similar to the national average).

Table 106 - Gini index of disposable income (after taxes and transfers) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
10	Gini index of disposable income (after taxes and transfers)	2013	OECD	Number	0.28	0.32	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

2.1.11 SDG 11 - MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

SDG	11
Number of available indicators (regional level)	9

SDG Target 11.1 ACCESS TO HOUSING

By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

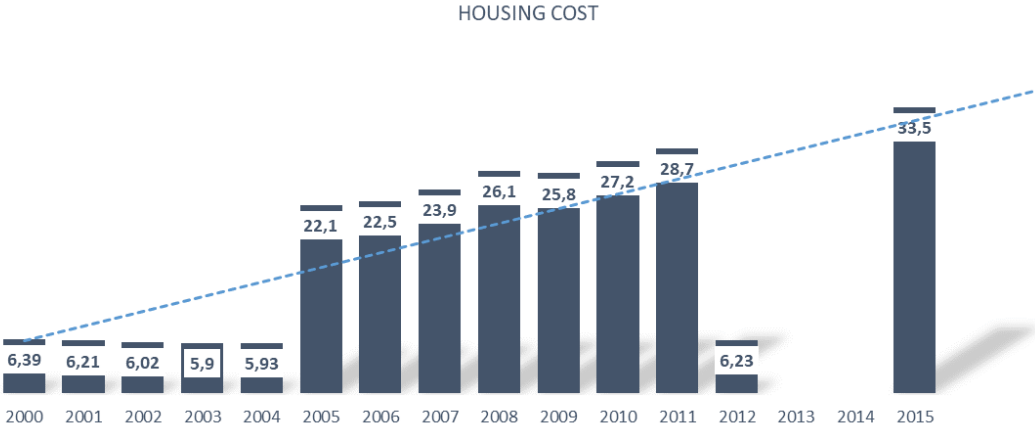
Indicator: **Households expenses dedicated to housing costs - Housing Cost (in % of household disposable income)**

Table 107 - Share of Housing Cost

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Share of Housing Cost (in % of household disposable income)	Experimental	OECD and other European countries	available (rl)	2015	Organisation for Economic Cooperation and Development (OECD)	Percentage	2000 - 2015	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 51 - Housing Cost



Source: author's own elaboration, Organisation for Economic Cooperation and Development (OECD), Regional Database

Share of **housing cost** (as % of disposable household income) is rising steadily. Between 2000 and 2004, values were around 6%; in 2005, they rose to 22% to 28.7% in 2011. After plummeting in 2012 with 6%, in 2015 the value rose again to **33.5%** recording the highest value ever.

Table 108 - Share of Housing Cost - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Households expenses dedicated to housing costs -Share of Housing Cost (in % of household disposable income)	2015	Organisation for Economic Cooperation and Development (OECD)	Percentage	33.5	34.9	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

The datum for Piemonte, at the latest available year (2015, very old), in general is better than the Italian average (33.5/34.9%).

SDG Target 11.2 ACCESS TO TRANSPORT SYSTEMS

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

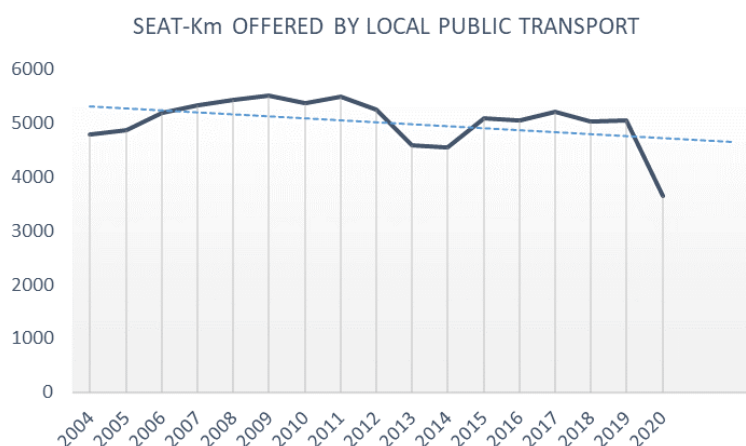
Indicator: Transport performance - Seat-km offered by local public transport

Table 109 - Transport performance

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Transport performance - Seat-km offered by local public transport	Experimental	Piemonte Region	available (rl)	2020	Istat, Regional Statistics	Number per inhabitant	2004 - 2020	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 52 - Transport performance - Seat-km offered by local public transport



Transportation performance measured from the **number of seat-km offered by local public transportation** shows a negative trend, particularly in the last years of analysis (2019-2020 Covid-19 period). There has been an improvement in transportation supply since 2004, but from 2011 to 2014 it worsened, then rose again until 2019 and collapsed again in 2020. The best value recorded is in 2009 (5,510) while the worst value is in 2020, with **3,634 seat-km per inhabitant**.

Source: author's own elaboration, from Istat, Regional Statistics Database

Table 110 - Transport performance - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Transport performance- Seat-km offered by local public transport	2020	Istat, Regional Statistics	Number per inhabitant	3,634	3,622	6,408

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, at the latest available year (2020), is better than the Italian average but worse than the average of the North-Western regions.

SDG Target 11.2 ACCESS TO TRANSPORT SYSTEMS

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

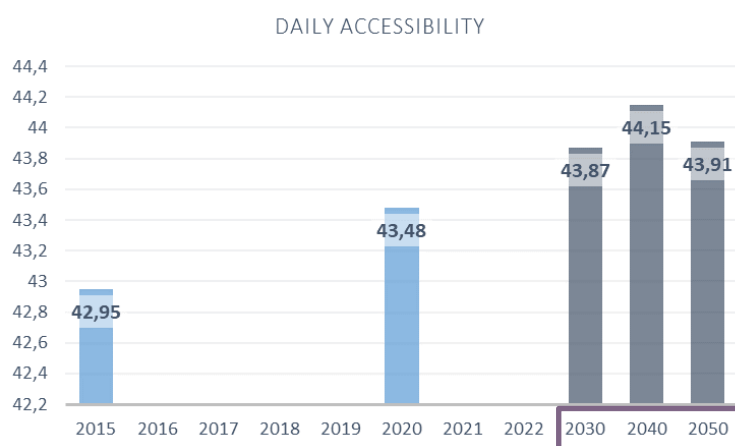
Indicator: **Daily accessibility**

Table 111 - Daily accessibility

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Daily accessibility	Experimental	EU-27	available (rl)	2020	European Commission, JRC	Number (M)	2015 - 2050	Decade

Source: author's own elaboration, from Urban Data Platform Plus European Commission, JRC, from LUISA Modelling Platform

Figure 53 - Daily accessibility



Daily accessibility values, in Piemonte, are more or less constant over the past 5 years (around 43 M in 2015 and 43.5 in 2020). According to statistical forecasts, they will rise to around **44 M** between 2030 and 2050.

Source: author's own elaboration, from Urban Data Platform Plus European Commission, JRC, from LUISA Modelling Platform

Table 112 - Daily accessibility - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Daily accessibility	2020	European Commission, Joint Research Centre	Number (M)	43.5	30.4	44.7

Source: author's own elaboration, from Urban Data Platform Plus European Commission, JRC, from LUISA Modelling Platform

The datum for Piemonte, at the latest available year (2020), is better than the Italian average but worse than the average of the North-Western regions.

SDG Target 11.2 ACCESS TO TRANSPORT SYSTEMS

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

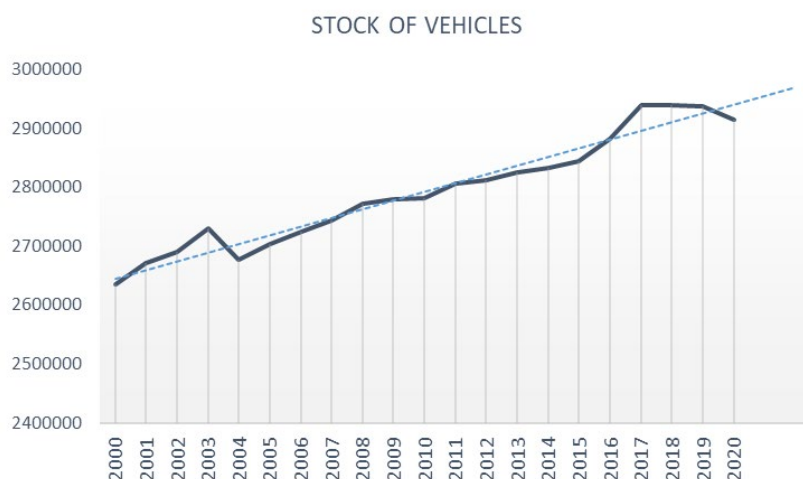
Indicator: **Stock of vehicles (passenger cars)**

Table 113 - Stock of vehicles (passenger cars)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Stock of vehicles (passenger cars)	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number	1990 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 54 - Stock of vehicles (passenger cars)



Stock of vehicles (passenger cars) saw an exponential increase from 2000 to 2017 and, especially between 2017 and 2020, the stock values **exceeded 2,000,000 units**.

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 114 - Stock of vehicles (passenger cars) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Stock of vehicles (passenger cars)	2020	Eurostat, Regional Statistics	Number	2,915,687	39701369	10214821

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 11.3 SUSTAINABLE URBANIZATION

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

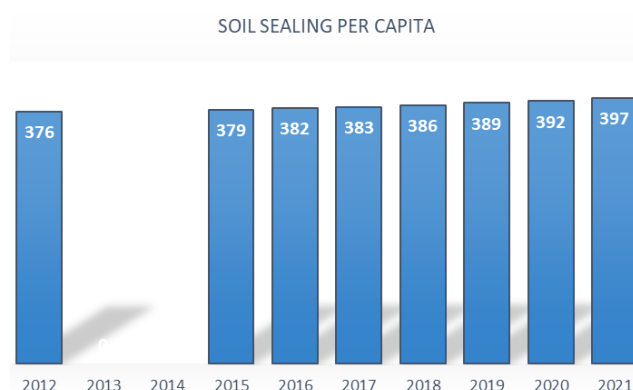
Indicator: Difference between built-up area growth rate and population growth rate

Table 115 - Soil sealing per capita

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Soil sealing per capita	Official	Italian regions	Proxy available (rl)	2021	Istat, Regional Statistics	Rate (M2 per inhabitant)	2012 - 2021	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 55 - Soil sealing per capita



Since we did not have sufficient data to measure the growth rate of built-up area, and relate it to population growth, we used the **soil sealing** indicator, which measures square meters of built-up area relative to the number of inhabitants. In Piemonte, the rate is fairly stable. For over 10 years the values have been around 380 and 397mq per inhab. The highest value is of the one recorded in 2021 (**397m2 per inhab.**) while the lowest is that the one recorded in 2012 (376).

Source: author's own elaboration, from Istat, Regional Statistics Database

Table 116 - Soil sealing per capita - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
11	Soil sealing per capita	2021	Istat, Regional Statistics	Rate (M2 per inhabitant)	397	363	-	0% (EU)

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, and in general for Italy, is still very high. According to the 2050 European target (*EU Commission, EU Soil Strategy for 2030*) we should get to zero land consumption in the next few years.

SDG Target 11.3 SUSTAINABLE URBANIZATION

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

Indicator: **Land use**

Table 117 - Land use

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Land use - URBAN	Experimental	EU-27	available (rl)	2020	LUISA platform; European Commission, JRC	Number (ha)	2020	-
	Land use -TOT		EU-27		2020		Number (ha)	2020	-

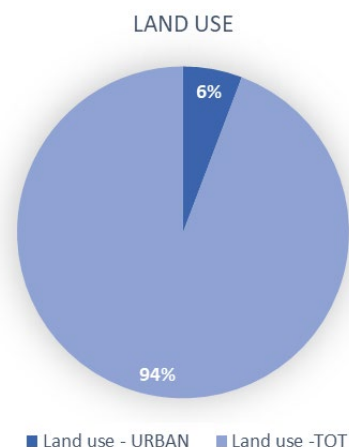
Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Figure 56 - Land use

In this case we have only one datum Available, in relation to 2020.

In general, the total number, in hectares, of utilized land is **2,507,000 ha**;

land in urban use corresponds to 6%, 153,365 ha.



Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Table 118 - Land use - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Land use (urban)	2020	Joint Research Centre JRC - LUISA	Number (ha)	153.37k	1.8M	462.51k

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

SDG Target 11.6 ENVIRONMENTAL IMPACT

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Indicator: **PM2.5 Emissions**

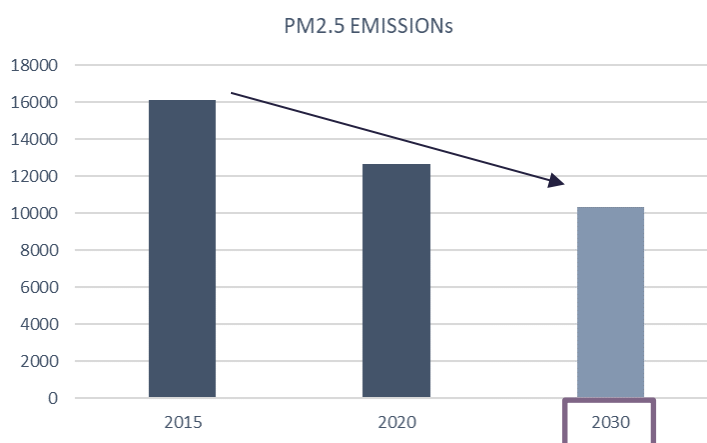
Table 119 - PM2.5 Emissions

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	PM2.5 Emissions	Experimental	EU-27	available (rl)	2020	LUISA platform; European Commission, JRC	Number (Tons)	2015 - 2030	Decade

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Figure 57 - PM2.5 Emissions

Over the past 5 years, **PM 2.5 emissions** have decreased by 3,450 tons. The trend shows a further decrease in 2030 (about 10,000 tons of total emissions). According to the *Italian Ecological Transition Plan*, by 2030, the share of emissions is to be reduced by 40% less the 2005 values.



Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Table 120 - PM2.5 Emissions - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
11	PM2.5 Emissions	2020	LUISA platform; European Commission, JRC	Number (Tons)	12.6k	36.9k	138.6k	-40% from 2005 values (IT)

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

SDG Target 11.6 ENVIRONMENTAL IMPACT

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

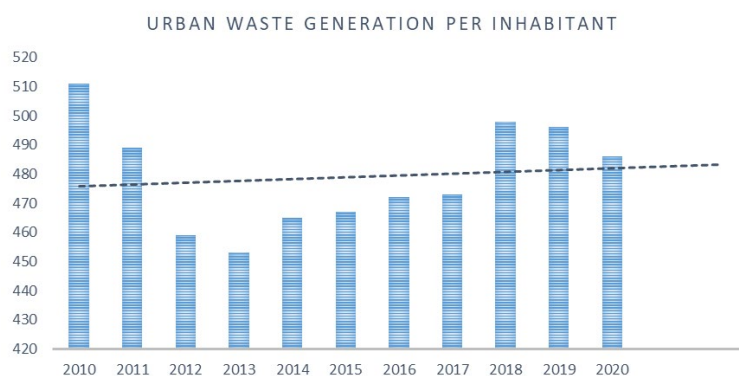
Indicator: Household and commercial waste generation per inhabitant - Urban waste generation per inhabitant

Table 121 - Urban waste generation per inhabitant

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Urban waste generation per inhabitant	Official	Piemonte Region	available (rl)	2020	Istat, Regional Statistics	Rate (Kg per inhabitant)	2010 - 2020	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database

Figure 58 - Urban waste generation per inhabitant



As the graph shows, **urban waste** generation per inhabitant has trended unevenly over time, but the values are fairly stable: from over 500 kg per inhabitant in 2010 to 450 in 2013, and then rising again between 2018 and 2020 to previous values between **490 and 500 kg per inhab.**

Source: author's own elaboration, from Istat, Regional Statistics Database

Table 122 - Urban waste generation per inhabitant - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
11	Urban waste generation per inhabitant	2020	Istat, Regional Statistics	Rate (Kg per inhabitant)	486	487	479	400 (Piemonte)

Source: author's own elaboration, from Istat, Regional Statistics Database

The datum for Piemonte, and in general for North-Western regions, is not very high, according to the regional target. The *Regional Urban Waste Plan* sets a maximum rate of urban waste generation per inhabitant of 400 kg/inhab. per year (by 2030); in 202 Piemonte produces 486 kg tons/inhab.

SDG Target 11.2 ACCESS TO TRANSPORT SYSTEMS

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

Indicator: **Victims in road accidents**

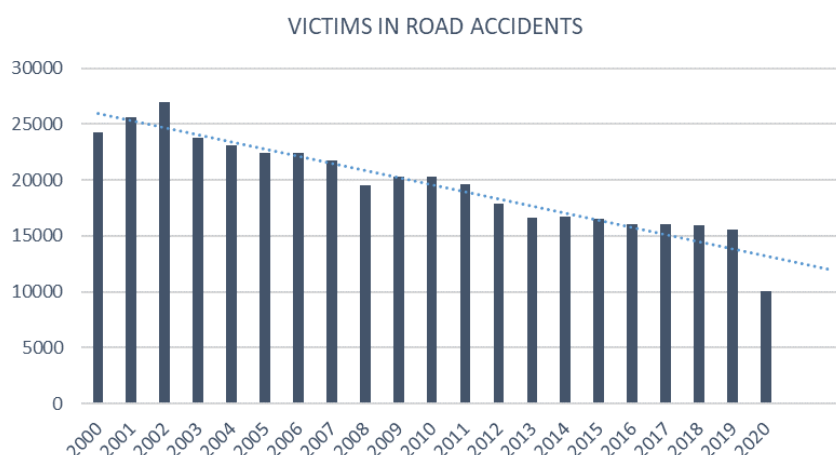
Table 123 - Victims in road accidents (Killed+injured)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Victims in road accidents (Killed+injured)	Official	EU-27 plus others	available (rl)	2020	Eurostat, Regional Statistics	Number	1990 - 2020	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 59 - Victims in road accidents (killed + injured)

Positive trend with respect to the number of victims in road accidents. The number is continuously decreasing, particularly from 2012 (27,000 victims) onward, registering the best value in 2020, around **10,000 victims (killed or injured)**.



Source: author's own elaboration, from Eurostat, Regional Statistics Database

Table 124 - Victims in road accidents (Killed+injured) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
11	Victims in road accidents	2020	Eurostat, Regional Statistics	Number (Killed+injured)	10,019	161,643	43,493

Source: author's own elaboration, from Eurostat, Regional Statistics Database

2.1.12 SDG 12 - ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

SDG	12
Number of available indicators (regional level)	2

SDG Target 12.2 MANAGEMENT OF NATURAL RESOURCES

By 2030, achieve the sustainable management and efficient use of natural resources

Indicator: **CO2 equ per capite**

Table 125 - CO2 equ per capite

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	CO2 equ per capite	Official	Piemonte Region	Proxy available (rl)	2015	Regional Inventory of Emissions to the Atmosphere (IREA)	Rate kiloTons/cap	2015	-

Source: author's own elaboration, from IREA, Regional Inventory of Emissions to the Atmosphere, Piemonte Region

In this case, we have only one available datum at the regional level, which is stable from 2015 at a rate of **9.32 kilo tons of Co2 eq per capita**.

Table 126 - CO2 equ per capite - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
12	CO2 equ per capite - Tons of CO2 equivalents per inhabitant	2015	Regional Inventory of Emissions to the Atmosphere (IREA)	Rate kiloTons/cap	9.3	-	-

Source: author's own elaboration, from IREA, Regional Inventory of Emissions to the Atmosphere, Piemonte Region

SDG Target 12.4 CHEMICAL MANAGEMENT

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

Indicator: **Special hazardous waste**

Table 127 - Production of special hazardous waste

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Production of special hazardous waste	Official	Italian regions	available (rl)	2020	ISPRA; Istat, Regional Statistics	Number (Tons)	2014 - 2020	Annual

Source: author's own elaboration, from Istat, Regional Statistics Database, from ISPRA data

Figure 60 - Production of special hazardous waste



Negative trend for Piemonte, due to the increase in production of **special hazardous waste**. Despite a decline in 2017, production is back up with 1,091,652 tons in 2019 and **1,055,737 tons** in 2020.

Source: author's own elaboration, from Istat, Regional Statistics Database, from ISPRA data

Table 128 - Production of special hazardous waste - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
12	Hazardous Waste - Production of special hazardous waste	2020	ISPRA; Istat, Regional Statistics	Number (Tons)	1,055,737	9,848,216	4,330,042

Source: author's own elaboration, from Istat, Regional Statistics Database, from ISPRA data

SDG Target 12.3 REDUCE FOOD WASTE

By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

Indicator: **Food waste**

This indicator is not available at the regional level it is only available at NUTS 1 level.

For the regions in the North of Italy the value of food waste is around 0.5 Kg per person (2021).

2.1.13 SDG 13 - TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

SDG	13
Number of available indicators (regional level)	4

SDG Target 13.2 CLIMATE CHANGE MEASURES INTO POLICY

Integrate climate change measures into national policies, strategies and planning

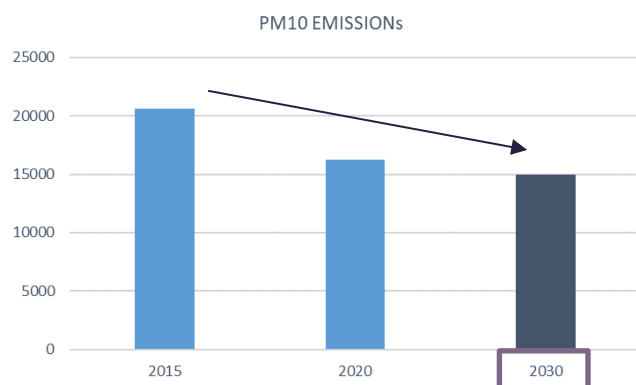
Indicator: **PM10 Emissions**

Table 129 - PM10 Emissions

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	PM10 Emissions	Experimental	EU-27	available (rl)	2020	LUISA platform; European Commission, JRC	Number (Tons)	2015 - 2030	Decade

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Figure 61 - PM10 Emissions



Over the past 5 years, **PM 10 emissions** have decreased by 4,318 tons. The trend shows a further decrease is expected in 2030 (about 15,000 tons of total emissions).

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Table 130 - PM10 Emissions - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
13	PM10 Emissions	2020	LUISA platform; European Commission, JRC	Number (Tons)	16.27k	49.53k	181.25k	Climate neutrality (EU)*

*EU Green Deal and FIT FOR 55 Strategy, 2021

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

SDG Target 13.2 CLIMATE CHANGE MEASURES INTO POLICY

Integrate climate change measures into national policies, strategies and planning

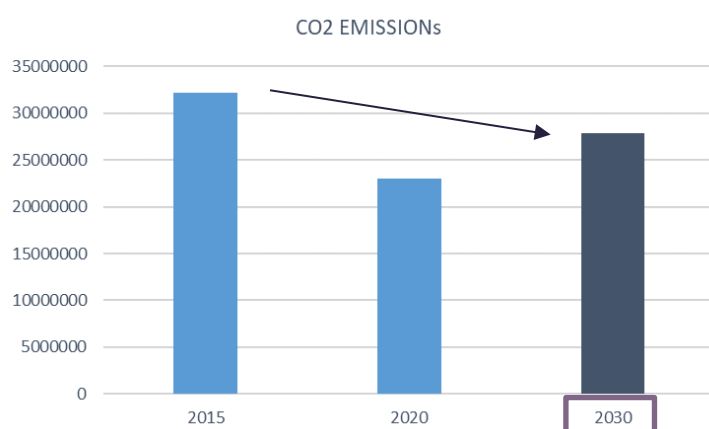
Indicator: **CO2 Emissions**

Table 131 - CO2 Emissions

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	CO2 Emissions	Experimental	EU-27	available (rl)	2020	LUISA platform; European Commission, JRC	Number (M Tons)	2015 - 2030	Decade

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Figure 62 - CO2 Emissions



Over the past 5 years, **CO2 emissions** have decreased: from 32M tons in 2015 to **23M tons** in 2020. In 2030, the trend shows a decrease in emissions from 2015 values but a slight increase from what was recorded in 2020, about 27M tons.

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

Table 132 - CO2 Emissions - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
13	CO2 Emissions	2020	LUISA platform; European Commission, JRC	Number (M Tons)	23.1M	111.5M	467.5M	-51% from 1990 values (IT)*

* Italian Ecological Transition Plan, 2030

Source: author's own elaboration, from European Commission, Joint Research Centre JRC – LUISA Platform

SDG Target 13.2 CLIMATE CHANGE MEASURES INTO POLICY

Integrate climate change measures into national policies, strategies and planning

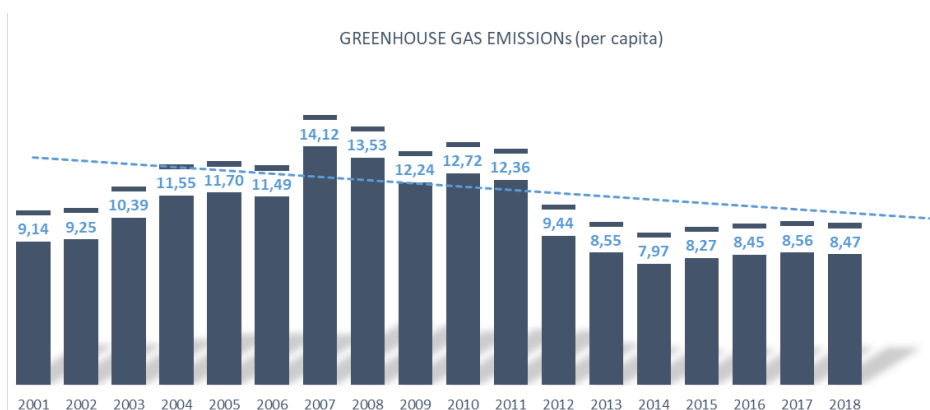
Indicator: **Greenhouse Gas Emissions**

Table 133 - Greenhouse gas emissions per capita

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	Greenhouse gas emissions per capita (in tons of CO2 equivalent per capita)	Official	EU	available (rl)	2018	OECD.Stat; Dataset: Climate and environment in regions	Rate (Tons CO2eq/per capita)	2001 - 2018	Annual

Source: author's own elaboration, from OECD.Stat; Dataset: Climate and environment in regions, Regional Statistics

Figure 63 - Greenhouse gas emissions per capita



Overall, the trend shows a decrease in GHG Emissions per capita (in tons of CO2 equivalent per capita). In particular, from 2007 to 2018, the rate decreased from 14 to 8/8,5 tons per capita.

Source: author's own elaboration, from OECD.Stat; Dataset: Climate and environment in regions, Regional Statistics

Table 134 - Greenhouse gas emissions per capita - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
13	Greenhouse Gas Emissions - Total greenhouse gas emissions per capita (in tons of CO2 equivalent per capita)	2018	Department of Tourism/Economics of the Regional Government	Rate (Tons CO2eq/per capita)	8.5	-	-	-55% (from 1990) (EU)*

*EU Green Deal and FIT FOR 55 Strategy (2021)

Source: author's own elaboration, from OECD.Stat; Dataset: Climate and environment in regions, Regional Statistics

SDG Target 13.2 CLIMATE CHANGE MEASURES INTO POLICY

Integrate climate change measures into national policies, strategies and planning

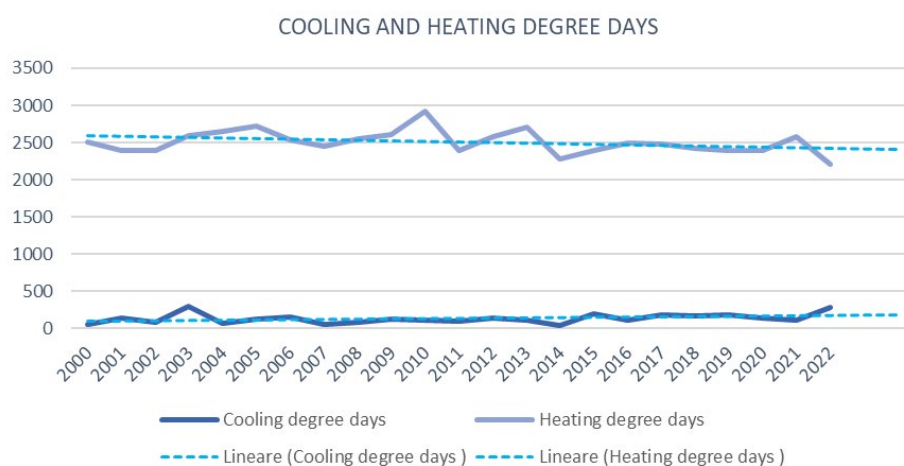
Indicator: **Cooling and Heating degree days**

Table 135 - Cooling and Heating degree days

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	Cooling degree days	Official	EU-27 +others	available (rl)	2022	Eurostat, Regional Statistics	Number	1979 - 2022	Annual
13	Heating degree days	Official	EU-27 +others		2022	Eurostat, Regional Statistics	Number	1979 - 2022	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 64 - Cooling and heating degree days



Source: author's own elaboration, from Eurostat, Regional Statistics Database

In general, while the number of cooling days has remained more or less constant over time, the number of heating degree days has been uneven over time, with higher peaks in 2010 and 2013, and lower numbers in 2001, 2014, and 2022.

In 2022, the last year of analysis, the number of cooling days increased while heating degree days decreased.

Table 136 - Cooling and Heating degree days - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
13	Cooling degree days	2022	Eurostat, Regional Statistics	Number	277.4	375.2	272.5
	Heating degree days	2022	Eurostat, Regional Statistics	Number	2,204.2	1,734.6	2,281.6

Source: author's own elaboration, from Eurostat, Regional Statistics Database

2.1.14 SDG 15 - PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SDG	15
Number of available indicators (regional level)	4

SDG Target 15.5 DEGRADATION OF HABITATS

Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

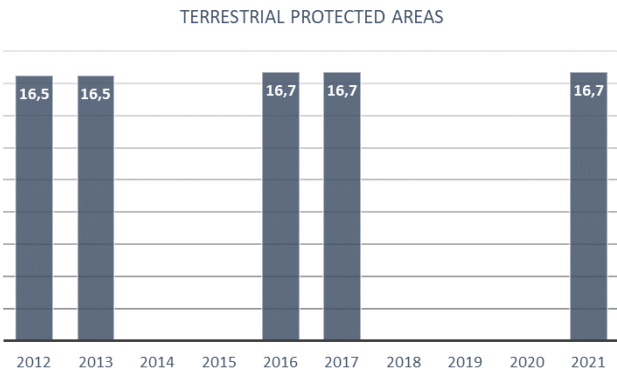
Indicator: **Terrestrial protected areas**

Table 137 - Terrestrial protected areas

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
15	Terrestrial protected areas as a percentage of total area	Official	Italian regions	available (rl)	2021	Istat;Elaboration on Ministry of Ecological Transition data.	Percentage	2012 - 2021	-

Source: author’s own elaboration, from Istat, Regional Statistics Database, Eaboration on Ministry of Ecological Transition data

Figure 65 - Terrestrial protected areas as a percentage of total area



Source: author’s own elaboration, from Istat, Regional Statistics Database, Eaboration on Ministry of Ecological Transition data

The percentage of **terrestrial protected areas** remains stable over time. From 2012 to 2021, the share is **16.5/16.7** percent.

The datum for Piemonte, at the last available year (2021) is worse than the Italian average, but in particularly in relation to the European Target (*EU Biodiversity Strategy*) to 2030: Piemonte, and Italy in general, must achieve a 30% share of terrestrial protected areas as a percentage of total area, in the next years.

Table 138 - Terrestrial protected areas - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
15	Terrestrial protected areas as a percentage of total area	2021	Istat;Elaboration on Ministry of Ecological Transition data.	Percentage	16.7	21.7	18.2	30% (EU)

Source: author's own elaboration, from Istat, Regional Statistics Database, Elaboration on Ministry of Ecological Transition data

SDG Target 15.5 DEGRADATION OF HABITATS

Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

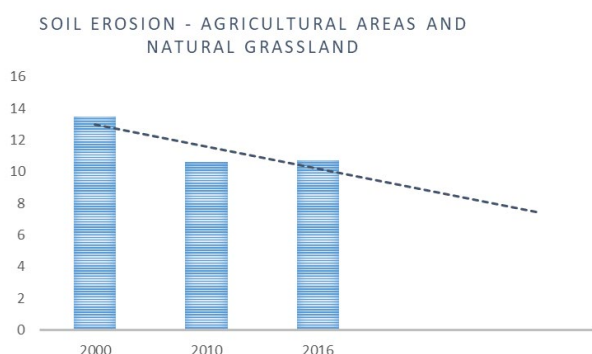
Indicator: **Estimated soil erosion (Agricultural areas and natural grassland)**

Table 139 - Estimated soil erosion - Agricultural areas and natural grasslands

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
15	Estimated soil erosion - Agricultural areas and natural grasslands	Experimental	EU-27	available (rl)	2016	Eurostat, Regional Statistics Database	Rate (Tons per hectare)	2000 - 2016	Annual

Source: author's own elaboration, from Eurostat, Regional Statistics Database

Figure 66 - Estimated soil erosion - Agricultural areas and natural grassland



With respect to the measure of **soil erosion**, we considered the estimate of erosion from agricultural areas and natural grasslands.

The value is stopped at 2016. Estimated soil erosion decreased from 2000 to 2010, from 13.5 percent to 10.6 percent; in 2016 it is around **10.7 percent** (similar but slightly better than the national average).

Table 140 - Estimated soil erosion - Agricultural areas and natural grasslands - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
15	Estimated soil erosion (Agricultural areas and natural grassland)	2016	Eurostat, Regional Statistics Database	Rate (Tons per hectare)	10.7	11.0	-

Source: author's own elaboration, from Eurostat, Regional Statistics Database

SDG Target 15.1 RESTORATION OF ECOSYSTEMS

By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

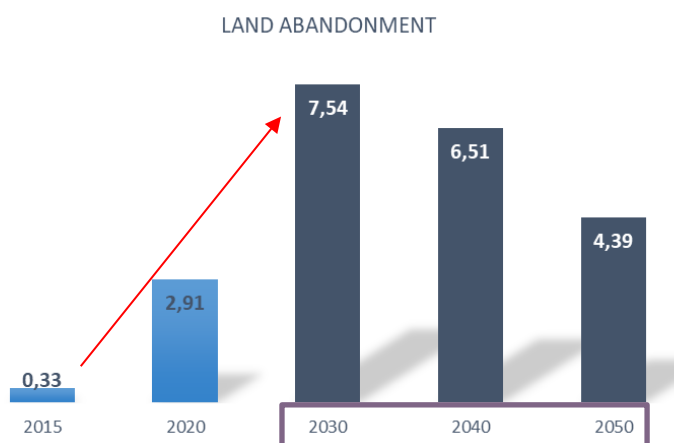
Indicator: **Land Abandonment**

Table 141 - Land Abandonment (Agriculture)

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
15	Land Abandonment (Agriculture)	Experimental	EU-27	available (rl)	2020	LUISA platform; EU- JRC	Percentage	2015 - 2050	Decade

Source: author's own elaboration, from European Commission, JRC, from the LUISA territorial modelling platform at national, regional (NUT2/NUTS3) and grid level for EU28 Member States

Figure 67 - Agricultural Land Abandonment



Source: author's own elaboration, from European Commission, JRC, from the LUISA territorial modelling platform at national, regional (NUT2/NUTS3) and grid level for EU28 Member States

The share of **agricultural land abandonment** increased from 0.33 percent in 2015 to **2.9 percent in 2020**. In the coming years, the percentage is expected to rise to 7.5% in 2030, and then decline in 2040 to 6.5% and in 2050 to 4.4%.

Table 142 - Land Abandonment (Agriculture) - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
15	Land Abandonment	2020	LUISA platform; EC- JRC	Percentage	2.9	-	-

Source: author's own elaboration, from European Commission, JRC, from the LUISA territorial modelling platform at national, regional (NUT2/NUTS3) and grid level for EU28 Member States

SDG Target 15.1 RESTORATION OF ECOSYSTEMS

By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

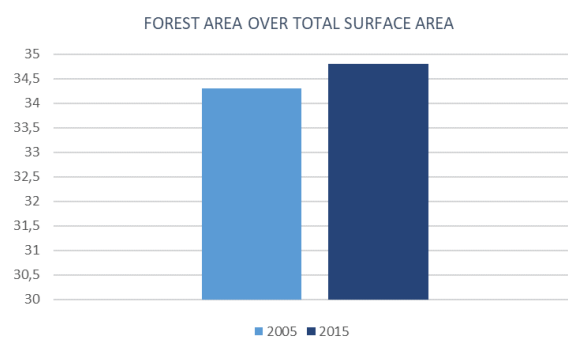
Indicator: **Forest area over total surface area**

Table 143 - Forest area over total surface area

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
15	Forest area over total surface area	Official	Italian regions	available (rl)	2015	FAO-INFC, Global Forest Resources Assessment; Istat, Regional Statistics	Percentage	2005 - 2015	Decade

Source: author's own elaboration, from Istat, Regional Statistics Database, FAO-INFC data

Figure 68 - Forest area over total surface area



Source: author's own elaboration, from Istat, Regional Statistics Database, FAO-INFC data

Forest area as a percentage of total surface area has remained more or less stable over 10 years, around 34.3 and **34.8%** between 2005 and 2015.

The last datum is better than the national average. Unfortunately, no further updated data are Available.

Table 144 - Forest area over total surface area - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
15	Forest area over total surface area	2015	FAO-INFC, Global Forest Resources Assessment; Istat, Regional Statistics	Percentage	34.8	30.8	33.6

Source: author's own elaboration, from Istat, Regional Statistics Database, FAO-INFC data

2.1.15 SDG 16 - PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SDG	16
Number of available indicators (regional level)	4

SDG Target 16.6 EFFECTIVE INSTITUTIONS

Develop effective, accountable and transparent institutions at all levels

Indicator: Cohesion Open Government Index on transparency, participation and collaboration in cohesion policies

Table 145 - Cohesion Open Government Index on transparency, participation and collaboration in cohesion policies

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Cohesion Open Index on transparency, participation and collaboration in cohesion policies	Experimental	Italian regions	Proxy available (rl)	2013	Istat, Regional Statics; Cohesion Open Government Index	Index (base Italy 2013=100)	2013	-

Source: author's own elaboration, from Istat, Regional Statistics Database

It is not possible to describe the trend because the index is only available for 2013; the value for Piemonte is **94.94** (base Italy: 100).

Table 146 - Cohesion Open Government Index on transparency, participation and collaboration in cohesion policies - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
16	Transparency index - Cohesion Open Government Index on transparency, participation and collaboration in cohesion policies	2013	Istat, Regional Statics; Cohesion Open Government Index	Index (base Italy 2013=100)	94.9	100	-

Source: author's own elaboration, from Istat, Regional Statistics Database

SDG Target 16.6 EFFECTIVE INSTITUTIONS

Develop effective, accountable and transparent institutions at all levels

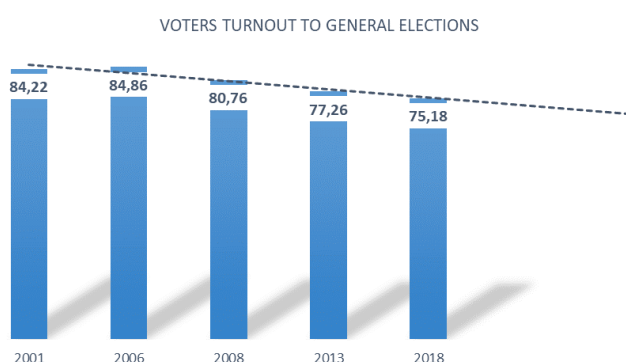
Indicator: **Participation in the last elections - Voters Turnout to General Elections**

Table 147 - Participation in the last elections - Voters Turnout to General Elections

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Participation in the last elections - Voters Turnout to General Elections	Official	EU	available (rl)	2018	OECD, Regional database	Percentage (in % of registered voters who voted)	2001 - 2018	Per election cycle

Source: author's own elaboration, from OECD.Stat Dataset: Regional Social and Environmental indicators

Figure 69 - Participation in the last elections - Voters Turnout to General Elections (in % of registered voters who voted)



The **participation in elections** in Piemonte was quite high between 2000 and 2006, at 84/85 percent. Since 2008, it has started to decline and in the last 10 years (2008-2018) it went below 80%.

The lowest percentage was recorded in 2018, **75%** (the regional percentage is better than the national average).

Source: author's own elaboration, from OECD.Stat Dataset: Regional Social and Environmental indicators

Table 148 - Participation in the last elections - Voters Turnout to General Elections - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
16	Participation in the last elections - Voters Turnout to General Elections (in % of registered voters who voted)	2018	OECD, Regional database	Percentage	75.2	72.9	-

Source: author's own elaboration, from OECD.Stat Dataset: Regional Social and Environmental indicators

SDG Target 16.6 EFFECTIVE INSTITUTIONS

Develop effective, accountable and transparent institutions at all levels

Indicator: **Quality of Government Index (European Quality of Government Index)**

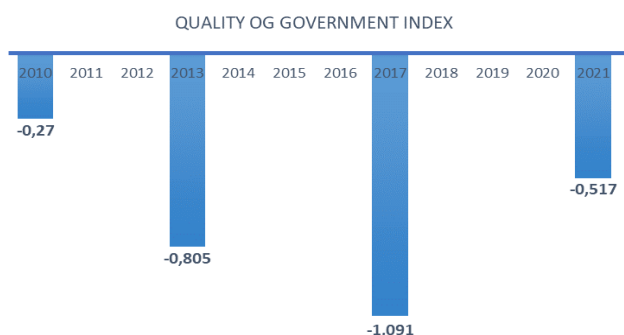
Table 149 - Quality of Government Index

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Quality of Government Index - European Quality of Government Index	Experimental	EU	available (rl)	2021	University of Gothenburg; The QoG Working Paper	Index	2010 - 2021	Triennial

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

The European Quality of Government Index (EQI) reflects the perceptions of the average citizens concerning the quality of government in the EU and experiences with corruption, quality and impartiality of three essential public services – health, education and policing - in their region of residence (the index is based on a survey about the concept of quality of government, consisting of high impartiality and quality of public service delivery, along with low corruption).

Figure 70 - Quality of Government Index



From the European **Quality of Government** index, Piemonte shows negative values. Despite an improvement in 2021 over previous values (2013 and 2017), however, it remains below **-0.5**.

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

Table 150 - Quality of Government Index - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
16	Quality of Government Index	2021	University of Gothenburg	Index	-0.52	-	-

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

SDG Target 16.5 REDUCE CORRUPTION

Substantially reduce corruption and bribery in all their forms

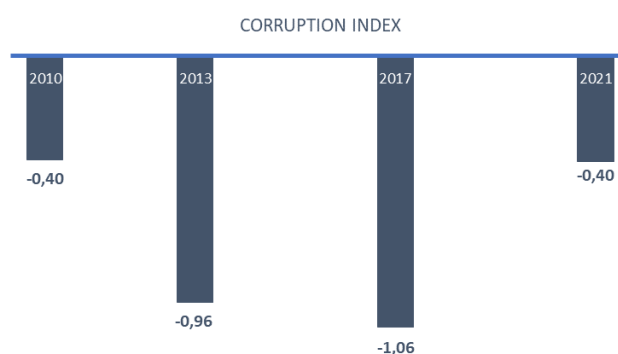
Indicator: **Quality of Government Index (Corruption index)**

Table 151 - Corruption index

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Extract from QGI an indicator on corruption - Quality of Government Index (<i>Corruption index</i>)	Experimental	EU	available (rl)	2021	University of Gothenburg; The QoG Working Paper	Index	2010 - 2021	Triennial

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

Figure 71 - Quality of Government Index - Corruption index



In this case the values are favourable: **Corruption index**, in Piemonte, is negative, **-0.4** in **2021** (in 2013 and 2017 the value was about -1).

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

Table 152 - Corruption index - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
16	Quality of Government Index -Corruption index	2021	University of Gothenburg	Index	-0.40	-	-

Source: author's own elaboration, from European Commission, European Quality of Government Index, from data of the University of Gothenburg: The QoG Working Paper Series 2021:4.

2.1.16 SDG 17 - STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

SDG	17
Number of available indicators (regional level)	4

SDG Target 17.12 IMPORTS FROM LEAST DEVELOPED COUNTRIES

Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries

Indicator: Imports from developing countries

Table 153 - Imports from developing countries

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
17	Imports from developing countries	Experimental	Italian Regions	available (rl)	2022	Istat, Regional Statics	Number B €	2021 - 2022	Annual

Source: author's own elaboration, from Istat, Regional Statics Database

Table 154 - Imports from developing countries - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
17	Imports from developing countries	2022	Istat, Regional Statics	Number B €	1.6	22.2	9.7

Source: author's own elaboration, from Istat, Regional Statics Database

The indicator considers **imports from developing countries**, in billions (B) of euros.

The developing countries considered are 23: Egypt, Nigeria, United Republic of Tanzania, Zimbabwe, South Africa, Mexico, Guatemala, Cuba, Venezuela, Ecuador, Peru, Brazil, Chile, Bolivia, Paraguay, Uruguay, Argentina, Pakistan, India, Thailand, Indonesia, Philippines and China (G20).

Imported goods are: food products and live animals; drinks and tobacco; non-edible raw materials, excluding fuels; mineral fuels lubricants and related products; oils, fats and waxes of animal or vegetable origin; chemicals and related products; finished products classified primarily according to raw material; machinery and transport equipment; sundry finished products; other products.

Piemonte's import data of products from these 23 developing countries corresponds to **1.6 billion euros in 2022**, an increase from 1.3 billion in 2021.

In general, import values in Italy are 22.2 billion and 9.7 in the North-Western regions of Italy.

Piemonte's imports are consequently 6% of total Italian imports (€) and 16% of total imports of the North-Western regions.

SDG Target 17.6 REGIONAL AND INTERNATIONAL COOPERATION

Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

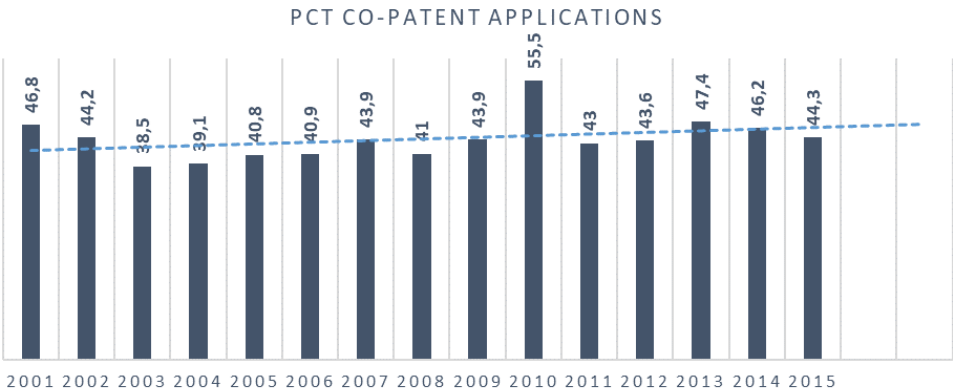
Indicator: **PCT co-patent applications that are done with foreign regions**

Table 155 - PCT co-patent applications that are done with foreign regions

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
17	PCT co-patent applications that are done with foreign regions	Experimental	OECD and other EU countries	available (rl)	2015	Organisation for Economic Cooperation and Development (OECD)	Share (in % of co-patent applications , total count)	2001 - 2015	Annual

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Figure 72 - PCT co-patent applications that are done with foreign regions



Over the past 10 years, PCT co-patent applications done with foreign regions have been increasing slightly. In general, apart from the lowest values between 2003 (38 percent) and 2008 (41 percent), the average from 2001 to 2015 is around 44 percent. Only in 2010 the share did reach 55%.

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

Table 156 - PCT co-patent applications that are done with foreign regions - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
17	PCT co-patent applications that are done with foreign regions	2015	OECD	Share (in % of co-patent applications, total count)	44.3	-	-

Source: author's own elaboration, from Organisation for Economic Cooperation and Development (OECD), Regional Database

SDG Target 17.8 ENABLING TECHNOLOGY

Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

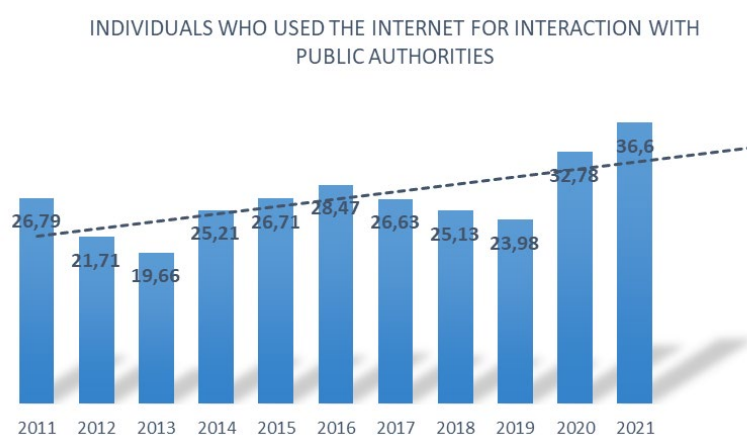
Indicator: Individuals who used the internet for interaction with public authorities

Table 157 - Individuals who used the internet for interaction with public authorities

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
17	Individuals who used the internet for interaction with public authorities	Official	EU-27 plus others	available (rl)	2021	Eurostat, Regional Statistics	Percentage	2011 - 2021	Annual

Source: author's own elaboration, from Eurostat, Regional Statics Database

Figure 73 - Individuals who used the internet for interaction with public authorities



Source: author's own elaboration, from Eurostat, Regional Statics Database

The **use of the Internet for interaction with public authorities** is growing, as the trend shows for the coming years as well. In 2021 the highest values were recorded at **36.6%**, 10 points higher than 10 years earlier (2011). Despite declining between 2012-2013 and then between 2017-2019, the rate increased, particularly between 2014 and 2016 and especially between 2020 and 2021 (Covid-19 period).

In this last year (2021) the percentage for Piemonte is better than the Italian average, but worse than the North-Western regions.

Table 158 - Individuals who used the internet for interaction with public authorities - Data

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy
17	Individuals who used the internet for interaction with public authorities	2021	Eurostat, Regional Statistics	Percentage	36.6	33.9	37.2

Source: author’s own elaboration, from Eurostat, Regional Statics Database

SDG Target 17.2 DEVELOPMENT ASSISTANCE COMMITMENTS

Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries

Indicator: **Official Development Assistance**

Not available for Piemonte

Box 2 – Statistical synthesis of the analysed indicators at the Piemonte regional level

Of these 67 indicator trends (excluding the 8 indicators without trend analysis):

- for **38** indicators the trend is **positive**
- for **20** the trend is **negative**
- for **9** the trend is (approximately) **stable**

Annex 1 – table 216 - Statistical synthesis of the analysed indicators at the Piemonte regional level: positive, negative or stable trend;

Annex 1 – table 217 - Synthesis of the analysed indicators at the Piemonte regional level, at the last year of analysis, in relation to the Itaian/North-West Italy regions average and the Target to 2030/2050 (where possible).

2.2 How are the Piemonte Region's sustainability policies working in relation to these SDGs?

In this part, the purpose is to explore if there are current (or future) plans/strategies/policies/measures that the region is taking to address the issues in relation to trends in the indicators and the SDGs analysed.

In general, with the **Regional Sustainable Development Strategy (RSDS 2022)** the Piemonte Region has chosen to play an active role in the transition process towards more sustainable economies, operating to territorialize the Strategic Choices already made by the National Sustainable Development Strategy NSDS. This is done to guarantee not only the coherence of the local action towards national indications, but also and above all a strong coordination of the territorial policies.



The RSDS's structure identifies 7 **Strategic Macro-Areas (SMAs)** and 6 Transversal Areas of intervention that orientate the processes of governance, knowledge, development of a sustainability culture and the setting up of collaborations and partnerships, which are necessary to make the implementation of the Strategy effective.

In the elaboration of the RSDS, Strategic Priorities and Objectives were defined for each Strategic Macro-Area and constant reference was made to the Areas, Choices and Objectives of the National Strategy (NSDS), which is in line with the SDGs of the 2030 Agenda, as shown in the *table 218 (Annex 1)*.

In coherence with the the sustainability regional goals and for the implementation of the RSDS, Piemonte Region approved two regional Funds Programming documents:

UNIFIED STRATEGIC DOCUMENT (UDS) of the Piemonte Region for Programming Funds 2021-2027 defines the priority directions of intervention for the development of Piemonte over the next decade and constitutes the strategic perimeter within which to make the best use of the resources of the 2021-2027 European programming. The UDS is a multi-year planning document and a preparatory tool to accommodate, within a framework of coherence and synergy, all the main purposes of regional planning for the territorial, economic and social development of our regional community and its instruments, from the Economic and Financial Planning Document to the Regional Strategy for Sustainable Development, from the Strategy for Intelligent Specialization to the Plans for Sustainable Mobility, from the operational programs for industrial development to those for training and social inclusion and for labor policies.

REGIONAL ECONOMIC AND FINANCIAL DOCUMENT (REFD) 2023-2025 defines, from the assessments of the state and trends of the international, national and regional economic and social situation, the framework for the definition of multi-year and annual budgets and for the definition and implementation of the Region's policies.

In the Regional Strategy (RSDS), for each Strategic Macro-Area (SMA), reference is made to the other regional Strategies and Plans or Programs that support the implementation of the sustainability goals outlined in the RSDS. The correlation, between the strategic objectives of RSDS and the other regional Strategies, Plans and Programs, was made with the contribution of the Departments of the Piemonte Region (last updated July 2022).

The regional Strategies, Plans and Programs, shown below, are therefore coherent with the goals and the priorities of the SMAs of the RSDS:

— several Strategies, in recent years, to guide, orient and implement regional sustainability policies, in particular

SMART SPECIALISATION STRATEGY-S3 2021-2027 is the instrument that, since 2014, European regions and countries have adopted to maximize the effects of European structural and investment funds (ESIF) in research and innovation, focusing resources on the areas of specialization characteristic of each territory. The S3 is therefore a strategic tool for planning regional policies and actions in research and innovation, including through sharing with regional system actors. Piemonte Region has embarked on the participatory path to update the 2014-2020 S3 Strategy in view of the start of the 2021-2027 European Funds programming.

STRATEGY FOR THE PIEMONTE MOUNTAINS 2023 in coherence and implementation of the Regional Sustainable Development Strategy of the Piemonte Region, constitutes a tool to support regional (and local) policies with an impact on mountains; it addresses territorial critical issues and environmental, social and economic challenges, defining objectives, processes and instruments to guide regional policies and interventions to counter the marginalization trends and the development of mountain territories in a sustainable way.

REGIONAL CLIMATE CHANGE STRATEGY 2022 The preparation by the Piemonte Region of the Regional Climate Change Strategy (RCCS) is the first component, by the institution, of the implementation of the National Sustainable Development Strategy - and also the Regional Sustainable Development Strategy. The Climate Strategy is the instrument through which Piemonte intends to contribute to actions to combat climate change and cope with the resulting emergency by aligning with the goals of Goal 13 of the 2030 Agenda for Sustainable Development: "Combat climate change."

REGIONAL HYDROGEN STRATEGY 2022 serves as a framework for regional hydrogen actions and policies, identifying policy and investment priorities in this area. On the one hand, the Strategy will enable the enhancement of regional competencies, considering that Piemonte is one of the few European regions to have a complete regional hydrogen ecosystem, in terms of research and development, technology transfer, and an active manufacturing system in the areas of mobility, production, and industrial uses; on the other hand, it aims to seize opportunities in support of hydrogen as a key component of the European Union's energy and industrial decarbonization strategy, in coherence with the main European policy instruments.

— several Plans, in recent years, to guide, orient and implement regional sustainability policies, in particular

ENVIRONMENTAL ENERGY PLAN of PIEMONTE REGION 2022 sets two basic aims: to orient regional policies to those of the Climate Energy Package and the National Integrated Energy and Climate Plan, and to support and promote an entire industrial and research sector that has great opportunities for growth. The strategic planning reflected in the Plan is aimed at further reducing harmful emissions and increasing the share of energy consumption covered by renewable sources, thus reducing consumption by relying less on fossil fuels. This will allow Piemonte to decrease energy consumption by 30% by 2030, but more importantly to reach a share close to 50% of regional electricity generation from renewable energy sources. The Plan assumes a strategic value projected into the next decade, because it endows our territory not only with a planning tool in the energy and environmental sphere, whose guidelines will lead us to achieve the objectives descending from the so-called Clean Energy Package with a view to environmental sustainability, competitiveness and sustainable development, but also because, by enhancing energy and heat from renewable energy sources such as sun, water, biomass, and wind, it puts our region in the conditions to be less dependent on gas and oil supplies and make it as autonomous as possible, to safeguard industrial production and civil electrical use.

THREE-YEAR PLAN FOR THE PREVENTION OF CORRUPTION AND TRANSPARENCY OF THE PIEMONTE REGION 2022-2024

REGIONAL PREVENTION PLAN 2020-2025 sets goals, strategies and actions for health promotion and disease prevention, based on the health status of the Piemonte population, in line with the principles and objectives of the National Prevention Plan. It represents the framework for the main regional public health goals until 2025 and a tool for implementing the essential levels of care of prevention.

DISABILITY PLAN 2021-2024 of interventions dedicated to the employment inclusion of people with disabilities (Regional Disability Fund 2021-2024: 40 million euros allocated for employment of people with disabilities).

REGIONAL WASTE PLAN 2022 – it is the Regional Plan of Urban Waste Management and Polluted Area Reclamation - in the process of strategic environmental evaluation.

— Programs and financial resources - European funds - for the implementation of sustainability goals, in particular

EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF) - RP Piemonte ERDF 2021-2027 - is one of the main financial instruments of the EU's cohesion policy. Its purpose is to contribute to reducing disparities between the levels of development of European regions and to improve living standards in the least-favoured regions. Particular attention is paid to regions which suffer from severe and permanent natural or demographic disadvantages, which have very low population densities, and island, cross-border and mountain regions. Future

Cohesion Policy objective (PO): PO1 - a more competitive and smarter Europe; PO2 - a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe; PO3 - a more connected Europe; PO4 - a more social and inclusive Europe; PO5 - a Europe closer to citizens. At the regional level the priorities are: competitiveness and digital transition (PO1); Ecological transition and resilience (PO2); Sustainable urban mobility (PO3); Infrastructure for skills development (PO4); Cohesion and territorial development (PO5); Technical Assistance.

EUROPEAN SOCIAL FUND plus (ESF+) - RP Piemonte ESF+ 2021-2027 is Europe's main instrument for supporting jobs, helping people get better jobs and ensuring fairer job opportunities for all EU citizens. It works by investing in Europe's human capital – its workers, its young people and all those seeking a job. ESF financing of EUR 10 billion a year is improving job prospects for millions of Europeans, in particular those who find it difficult to get work. At the regional level, consistent with the ESF in previous programming, the ESF+ for 2021-2027 continues to make an important contribution to EU policies on employment, society, education, and skills, including structural reforms in these areas. The 4 Priorities are: employment, education and training, social inclusion and youth employment.

RURAL DEVELOPMENT COMPLEMENT 2023-2027 is the document that makes explicit the regional strategy for rural development, in implementation of the NSPC National Strategic Plan of CAP - Common Agricultural Policy 2023-2027. It contains an analysis of the Piemonte situation, as well as the prioritization of needs and intervention sheets in the NSPC applied to the territory, highlighting the choices made by the Piemonte Managing Authority.

— Specific MEASURES with actions and interventions in relation to the goals of the National **RECOVERY AND RESILIENCE PLAN (NRRP)** 2020, in coherence with the NEXT GENERATION EU PROGRAM (for the country's recovery from the Covid 19 pandemic).

— other regional Plans, less recent, for the implementation of the regional SDGs

- REGIONAL PLAN FOR THE REDUCTION OF HYDROGEOLOGICAL HAZARD (latest updates 2021)
- REGIONAL WATER PROTECTION PLAN (2021)
- ULTRA-BROADBAND STRATEGIC PLAN (2019-2021)
- REGIONAL PLAN FOR AIR QUALITY AIR (2019)
- REGIONAL MOBILITY AND TRANSPORTATION PLAN (2018)
- THREE-YEAR REGIONAL PLAN AGAIN DISCRIMINATION (2018-2020)
- THREE-YEAR REGIONAL PLAN AGAINST GENDER VIOLENCE (2017-2019)
- REGIONAL FORESTRY PLAN (2017)
- REGIONAL LANDSCAPE PLAN (2017)
- REGIONAL TERRITORIAL PLAN (2011, currently in the process of being revised and updated from 2021-2023)

The relationships between themes/phenomena measured by the indicators and regional Strategies/Plans/Programs are shown in *table 219 (Annex 1)*.

3. IDENTIFICATION OF SDGS AND SDG TARGETS THAT REQUIRE A CUSTOMIZED APPROACH

In this Chapter we intend to describe the contribution of Piemonte to the REGIONS2030 project, specifically on how to improve the framework of indicators at the regional level: how to contribute to suggest (in collaboration with the *Sustainable Development Department* of the Piemonte Region) alternative and additional indicators to those proposed by the JRC, to monitor the SDGs and reflect the particularities and specificities of the region; how to contribute, starting from the pilot regions of this project, to define the method to identify the relevant indicators at NUTS2 level, which will then be used in the EU framework for the monitoring of the SDGs.

3.1 Proposal of additional indicators

Based on the experiences that the Piemonte Region has developed over the years and on the expected developments of future research activities (*Annex 2 - Focus 2*), the contribution to this REGION2030 project, is based on the following objectives:

- (e) elaboration of a methodology for the selection of indicators to be proposed and for data analysis;
- (f) proposal of possible indicators and verification of the availability of the additional indicators at the regional scale to be implemented in the set of indicators proposed by the JRC;
- (g) analysis of data towards the proposed indicators at the regional scale, with relevant historical series and statistical analysis of the trends and description of metadata.

3.1.1 The Methodology

During 2018, the Ministry for Ecological Transition (MiTE) established a Working Group on Indicators for the implementation of the National Strategy for Sustainable Development (NSDS) with the aim of defining a narrow and representative core of monitoring indicators, building on statistical measures available in the Istat-Sistan Platform, preferably identical to UN-IAEG-SDGs indicators (*Box 2*) and coherent with the BES indicators (*Benessere equo e sostenibile/ Fair and Sustainable Welfare – Box 3*), so as to ensure that measures respect the requirements of statistical admissibility too. Therefore, the working group adopted criteria of parsimony, feasibility, timeliness, extension and frequency of the time series, sensitivity to public policies, territorial dimension, focusing on statistical measures that had the best available territorial disaggregation, in order to identify a first experimental subset of statistical measures referable to the National Strategy. This approach was shared and implemented in the analyses for the Regional Sustainable Development Strategies and Urban Agendas. It consisted of **43 SDGs statistical measures**, many of which are also included into the BES. In accordance with the OECD PCSD (Policy Coherence for Sustainable Development) recommendation, which indicates the need for the aforementioned institutional mechanisms, coherence is recommended among the budget law (that must also be compliant with environmental constraints), the cohesion policies and the objectives of the NSDS, including also correspondence between the priorities in the National Plan for Recovery and Resilience and in the NSDS, in order to include the long-term impact of new policies as key elements in the progress towards the SDGs.

The 43 indicators selected for NSDS constitute a systemic framework for indicators regarding sustainability and well-being, that includes jointly SDGs, BES, and in particular those indicators included in the Economic and Financial Document. The first selection was carried out in 2019 as a joint collaboration among the MITE, MEF, MAECI, ISTAT, and the Italian Institute for Environmental Protection and Research (ISPRA).

This subset is under revision, in order to benefit from the larger data availability on the current SDGs statistical platform, but also to meet the requirements of the ongoing revision of the NSDS. The strategic framework of the 2022 National Sustainable Development Strategy (2022 NSDS) is broken down into 5 Domains (People,

Planet, Prosperity, Peace, Partnership) one for each pillar of the 2030 Agenda. Each Domain encompasses National Strategic Choices (NSCs) to which National Strategic Objectives (NSOs) correspond. Each NSC is complemented with one or more benchmark indicators. The set of measures associated with NSCs builds on the aforementioned 43 indicators selected in 2018 and constitutes an initial synthetic set of indicators capable of rendering the level of implementation of the 2030 Agenda in Italy and monitoring the progress of the SDGs as well as of the national strategic choices at different territorial level, following the legislative mandate in Italy. For each NSC, indicators were identified on the basis of data availability, territorial disaggregation and recurrence within national strategic planning frameworks: the Italian National Recovery and Resilience Plan – NRRP (Italy’s PNRR), the Economic and Financial Document (Documento di Economia e Finanza – DEF), the Ecological Transition Plan (Piano per la Transizione Ecologica – PTE) and EU development policies related to economic, social and territorial cohesion (VNR – *Voluntary National Review of Italy, 2022*) ⁽⁶⁾.

From this set of UN-IAEG-SDGs indicators (211 total indicators at the regional level), in 2022 the Working Group on Indicators ⁽⁷⁾ proposed an update of the set of indicators and selected **55 ISTAT-SISTAN SDGs indicators** (*Annex 1 – Table 221*). These constituted the reference for the identification of the set of indicators to be used for monitoring the SDGs at the regional level and to implement the set of indicators within the REGION2030 project.

Box 3 - The selection of indicators was made within the indicators that SISTAN (National Static System of Italy) makes available on the ISTAT-SISTAN SDGs platform, functional to monitoring the implementation of the 2030 Agenda at the national and regional level.

ISTAT, like the other National Statistical Institutes, is called upon by the United Nations Statistical Commission to play an active role of national coordination in the production of indicators for measuring sustainable development and monitoring its objectives. Periodically, the Institute presents an update and expansion of the statistical indicators which are useful for monitoring the Sustainable Development Goals of the 2030 Agenda. Every year, ISTAT publishes the SDGs Report. The statistical indicators published are 371 for 138 UN-IAEG-SDGs indicators, 211 at regional scale ⁽⁸⁾ (ISTAT).

Box 4 - The ISTAT-SISTAN SDGs Indicators incorporated also some of the *Fair and Sustainable Welfare (BES – Benessere equo e sostenibile)* indicators that, since 2018, have been integrated into the Economic and Financial Document (DEF) of Italy. This ensured maximum significance at the national level and allowed for greater comparability with the European and international level.

The BES project was set up in 2010 to measure Fair and Sustainable Welfare, with the aim of assessing the progress of society not only from an economic, but also from a social and environmental perspective. To this end, traditional economic indicators were supplemented with measures on people’s quality of life and the environment. Twelve fundamental domains have been identified for the measurement of the well-being in Italy, to each of which a set of indicators is associated, for a total of 153 indicators.

As of 2016, indicators and analyses on well-being are flanked by indicators for monitoring the Sustainable Development Goals of the 2030 Agenda (SDGs), chosen by the global community thanks to a political agreement between the different actors, to represent their values, priorities and objectives. The United Nations Statistical Commission (UNSC) has defined a shared statistical information framework to monitor the progress of individual countries towards the SDGs, identifying about 250 indicators.

The two sets of indicators are only partially overlapping, and show high complementarity ⁽⁹⁾ (ISTAT).

In addition to the indicators from the **National monitoring system** (NSDS), the Piemonte Region also chose to use additional indicators from the national dashboard (ISTAT) to monitor the SDGs, according to the region’s

⁽⁶⁾ VNR Italy Report

⁽⁷⁾ MiTE, now MASE, MAECI, MEF, ISTAT and ISPRA

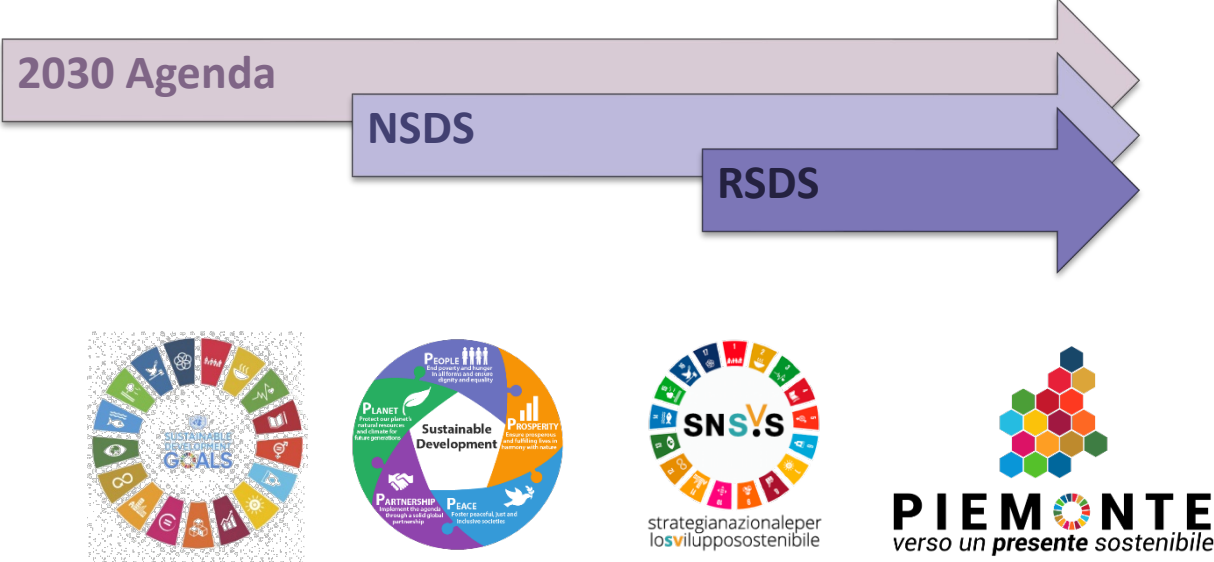
⁽⁸⁾ Indicators SDGs Italy - ISTAT

⁽⁹⁾ Indicators BES Italy - ISTAT

needs and in relation to, and in coherence with, the strategic priorities of the **Regional Strategy for Sustainable Development (RSDS)**.

All this was done in coherence with the SDGs of **2030 Agenda** and the SDG targets.

Figure 74 - From 2030 Agenda to RSDS monitoring system



Source: author's own elaboration from 2030 Agenda, NSDS and RSDS

The next section describes the steps for the selection of the indicators, which led to the final collection of additional indicators.

3.2 Collection of data and metadata for additional indicators

The collection of data for additional indicators takes into consideration:

Step 1: the indicators of the **NSDS monitoring system** for the coherence with what is being developed at the national level, **55 indicators** in total (*Annex 1 - table 222*);

Collection of indicators from the NSDS monitoring system, to evaluate which ones are available and useful for the Piemonte Region. Out of these indicators, 55 in total, not all are available at the regional level; only indicators available for regional analysis will be selected. In addition, similar or replaceable indicators used in previous analyses (*Chapter 2*), in relation to the dataset proposed by the JRC, are excluded (*Annex 1 - table 223*).

Some of the proposed indicators, might seem very similar to those used in the analyses in Chapter 2, but actually contain different information, so we find them useful for the Piemonte analyses:

Overweight or obesity among minors from 3 to 17 years of age: is a very significant indicator, because if the problem of overweight were monitored as early as childhood and among young people, targeted policies could be put in place to reduce the phenomenon among young people and to promote healthier lifestyles from a young age, with positive spillovers into adulthood.

Healthy life expectancy at birth: this is different from the number of deceased children. In Piemonte, the phenomenon of infant mortality is important to monitor, but it is not alarming (because it is limited). It is very important to monitor, at the same time, the state of good health and the healthy life expectancy at birth.

Rate of non-participation in employment: the unemployment rate, which provides a measure of the incidence of unemployment among young people active in the labour market, excluding those who are not seeking employment (e.g., students). The rate of non-participation in employment, on the other hand, also considers all those who are available for work, although in practice they do not carry out job search actions and are not seeking employment. In fact, the indicator of non-participation in employment captures the potential labour force, that is, those who are available for work, but are not looking for work (or are looking for work, but are not immediately Available).

Disposable income per capita: we prefer to use this national indicator to the Gini index, because the indicator is supported by a time series to monitor the phenomenon over time.

Step 2: the indicators of the **NSDS monitoring system** available at the regional level and useful for the Piemonte Region, **22 indicators** in total (*Annex 1 - table 223*);

Out of the 55 indicators, we consider only those available at the regional level and those that are useful for Piemonte Region.

These 22 additional indicators cover **19 SDG Targets**, 7 of which are new (not covered by the previously analysed indicators in Chapter 2) (*Annex 1 - table 224*).

Step 3: some priority indicators of the **RSDS monitoring system** for the coherence with the regional needs and the sustainable development goals that the region has set for **itself**, **23 indicators** in total (*Annex 1 - table 225*).

Collection of further additional indicators in relation to the **strategic priorities of the RSDS** for the coherence with the regional needs and the sustainable development goals that the region has set for itself, for example:

Housing cost overcharge (SDG 1) is the percentage of people living in households where the total cost of the house in which one lives represents more than 40% of net household income. This is a very important indicator, in relation to poverty and income rates, and could be considered in relation to housing policies (and assess the demand for public housing, forms of social housing, etc.). In Piemonte the Public Residential Housing (ERP in Italy) system, more commonly known as public housing, is a social policy that addresses diverse and complex needs: it provides housing for citizens with low incomes or in housing distress and for situations of housing emergency. The ERP housing stock is currently 52 thousand housing units (2022). Today much of the housing stock is at least 40 years old and has received little renovation ⁽¹⁰⁾.

Waiver of health care (SDG 1) is another important indicator, because many people decide to waive care for reasons related to long waiting times and cost of treatment. In Italy, during the health emergency, the share of people who had to forego health services deemed necessary had almost doubled, from 6.3 percent in 2019 to 9.6 percent in 2020, up to 11.1 percent in 2021. When comparing 2022 with the years before the pandemic, an unequivocal barrier to accessing care emerges, due to long waiting lists, which becomes the most frequent reason in 2022 (4.2% of the population), and for economic reasons (3.2% in 2022) ⁽¹¹⁾.

Participation in continuing education, High digital skills, Schools not physically accessible, Schools with pupils with disabilities with presence of adapted computer stations (SDG 4) are all useful indicators for monitoring various phenomena in relation to the quality of education and training, but also accessibility to the educational system, particularly in relation to disabilities.

Thermal energy from renewable sources (SDG 7) (in addition to “electricity from renewable sources”) is a crucial aspect of sustainable energy production. The utilization of renewable sources such as solar, geothermal, and biomass for thermal energy production has the potential to significantly reduce greenhouse gas emissions and mitigate the adverse effects of climate change. The adoption of renewable thermal energy sources is a crucial step towards achieving a low-carbon economy and ensuring a sustainable future for the generations to come.

Consumption of energy from renewable sources in the transport sector (SDG 7) (in addition to “electricity and thermal energy from renewable sources”) is another crucial aspect of sustainable energy production. In particular, the European Commission set a target to increase the use of electric transportation (public and private) to reduce pollution and negative impacts (from emissions generated by the use of cars, buses, etc.) on human health and the environment. With European climate legislation, the EU has set a goal of reducing greenhouse gas emissions by at least 55% by 2030 to make the EU climate neutral by 2050. European targets include: 13% greenhouse gas intensity reduction in transport by 2030 or increase of at least 29% renewable energy within the final consumption of energy in the transport sector by 2030 - *Fit for 55* ⁽¹²⁾.

Value added of small manufacturing enterprises on total manufacturing value added (SDG 9) because, in Piemonte, small manufacturing enterprises are very common and represent a big percentage of the total enterprises.

In Piemonte, where about 50% of the territory is mountainous, there are several problems related to accessibility, usability of services, etc., so some indicators are particularly useful to monitor especially the mountain context, for example:

⁽¹⁰⁾ Source: IRES Piemonte 2022

⁽¹¹⁾ ISTAT 2023

⁽¹²⁾ Fit for 55, EU

Households who report difficulties with public transport connections in the area where they reside (SDG 1)

Households very or fairly satisfied with continuity of electric service (SDG 7)

Number of operational bank branches (SDG 8)

Households with fixed and/or mobile broadband connection (SDG 9), many mountain areas in the region have digital divide problems; many mountain areas are isolated with difficulties in accessing services (e.g., medicine) or employment/business creation, and digitization could solve many critical issues (e.g., telemedicine, smart working, ...).

At the same time, mountains are a valuable asset to the region, due to the presence of natural areas, forests, water resources, etc. That is the reason why we find it useful to add indicators for monitoring water, forests:

Water stress level and Wetlands of international importance (SDG 6)

Impact of forest fires (SDG 13)

Population residing in flood and landslide hazard areas per km² (SDG 13)

Mountain vegetation index (SDG 15)

Piemonte is also a famous region for tourism: there is lowland tourism, historical-cultural tourism (e.g., museums, historic villas, etc.) and landscape-cultural tourism (e.g., UNESCO heritage, Langhe area); and a mountain tourism, naturalistic-hiking tourism (e.g., trekking, biking, lakes, rivers, nature parks, nature reserves, etc.) and sports tourism (e.g., winter skiing). However, this has a great impact on the environment, especially ski-related winter tourism (e.g. huge consumption of water and energy for artificial snow, waste, widespread urbanization, pollution, use of motorized vehicles, etc.).

Incidence of tourism on waste (SDG 12)

Tourist intensity index (SDG 12)

Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments (SDG 12)

These 23 additional indicators cover **17 SDG Targets**, 14 of which are new (not covered by the previously analysed indicators) (*Annex 1 - table 226*).

In total we have **45 additional indicators** (*table 159*), that cover **35 SDGs targets** in total, **21** of these are **new** (*Annex 1 - table 227*).

Finally, overall, we have (*Annex 1 - table 228*):

75 indicators from JRC dataset (Chapter 2)

46 indicators *Fit for purpose*, available at the regional level, from European sources,

16 cases of *1-to-1 replacement* with other indicators (available from IT/Piemonte sources),

13 cases of *Alternative indicators*.

45 additional indicators from the National/regional dataset (Chapter 3)

from the national monitoring system of the NSDS, available at the regional level,
in coherence with regional monitoring system of the RSDS and the regional needs.

Many of these **120 indicators** (75 from JRC dataset + 45 of additional indicators) were used in the monitoring of the RSDS (2022) and in the analyses of Piemonte's positioning in relation to the SDGs of 2030 Agenda (2021) (*Annex 1 - table 229*).

In the future, these 120 indicators, could be the indicators for monitoring the SDGs at the regional level, taking into account the results of the Regions2030 project and the contribution of the other pilot regions.

3.2.1 Horizontal analysis of metadata

The main elements of the analysed data are summarised below: type, year of availability, sources, unit of measure, time series, frequency, SDG targets covered.

Table 159 - Horizontal analysis of metadata

SD G	Additional Indicators	Type	Year of availability	Source	Unit of measurement	Time coverage	Frequency	SDG Target
1	Waiver of health care	Official	2021	ISTAT, Regional Statics	percentage	2017-2021	Annual	1.3
	Housing cost overcharge	Official	2021	ISTAT – EU Silc , Regional Statics	percentage	2004-2021	Annual	1.4
	Households who report difficulties with public transport connections in the area where they reside	Official	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	1.4
2	Overweight or obesity among minors from 3 to 17 years of age	Official	2020	ISTAT, Regional Statics	percentage	2011-2020	Annual	2.2
3	Healthy life expectancy at birth	Official	2021	ISTAT, Regional Statics	average number of years	2009-2021	Annual	3.4
4	Not adequate alphabetical and numerical competence, secondary school	Official	2022	Invalsi, National learning surveys; ISTAT	percentage	2019, 2021-2022		4.1
	Participation in continuing education	Official	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	4.3
	High digital skills	Official	2019	ISTAT, Regional Statics	percentage	2015-2016, 2019		4.4
	Schools not physically accessible	Official	2021	ISTAT, Regional Statics	percentage	2019-2021	Annual	4.8
	Schools with pupils with disabilities with presence of adapted	Official	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	4.8

	computer stations: secondary school							
	Physically accessible schools	Official	2021	ISTAT, Regional Statics	percentage	2019-2021	Annual	4.a
5	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	Official	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	5.4
6	Water stress level: Water withdrawals for drinking purposes/ potable use	Official	2018	ISTAT, Regional Statics	number (million m3)	2005, 2018	3 years	6.4
	Wetlands of international importance	Official	2018	ISPRA	number (hectares)	2013, 2018	5 years	6.6
7	Households very or fairly satisfied with continuity of electric service	Official	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	7.1
	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	Official	2020	GSE S.p.A. - <i>Energy Services Operator</i>	percentage	2012-2020	Annual	7.2
	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	Official	2020	GSE S.p.A.	percentage	2012-2020	Annual	7.2
	Renewable energy share in the gross final energy consumption (excluding transport sector)	Official	2020	GSE S.p.A.	percentage	2012-2020	Annual	7.2
8	Annual growth rate of real GDP per capita	Official	2020	ISTAT, Regional Statics	percentage	2004-2020	Annual	8.1

	Share of employed persons not in regular occupation	Official	2019	ISTAT, Regional Statics	percentage	2004-2019	Annual	8.3
	Rate of non-participation in employment	Official	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	8.5
	Number of operational bank branches	Official	2021	ISTAT, Regional Statics	rate per 100.000 inhabitants	2012-2021	Annual	8.10
9	Value added of small manufacturing enterprises on total manufacturing value added	Official	2019	ISTAT, Regional Statics	percentage	2015-2019	Annual	9.3
	R&D intensity	Official	2020	ISTAT, Regional Statics	percentage	2004-2020	Annual	9.5
	Households with fixed and/or mobile broadband connection	Official	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	9.8
10	Inequality of net income	Official	2020	ISTAT, Regional Statics	number (ratio of incomes)	2004-2020	Annual	10.1
	Disposable income per capita	Official	2020	ISTAT, Regional Statics	number (euro - current prices)	2004-2020	Annual	10.1
11	Urban waste sent to landfill out of total urban waste collected	Official	2020	ISPRA	percentage	2004-2020	Annual	11.6
	Incidence of urban green areas on urbanised area of cities	Official	2020	ISTAT, Regional Statics	rate (m2 per 100 m2 of urbanised areas)	2015-2020	Annual	11.7
	Illegal building	Official	2021	CRESME	rate (per 100 authorized buildings)	2002-2021	Annual	11.3
12	Domestic material consumption per capita	Official	2018	ISTAT, Regional Statics	rate (tons per capita)	2015-2018	Annual	12.2

	Domestic material consumption per GDP	Official	2018	ISTAT, Regional Statics	rate (tons per 1,000 EUR)	2015-2018	Annual	12.2
	Separate collection of urban waste	Official	2020	ISPRA	percentage	2004-2020	Annual	12.5
	Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)	Official	2021	ISPRA	number	2004-2021	Annual	12.6
	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)	Official	2020	ISTAT, Regional Statics	percentage	2015, 2017, 2020		12.7
	Incidence of tourism on waste	Official	2020	ISPRA	rate (Kg per inhabitants equivalent)	2006-2020	Annual	12.b
	Tourist intensity index	Official	2020	ISTAT, Regional Statics	rate (per 1000 Inhabitants)	2007-2020	Annual	12.b
	Presences of open-air accommodation establishments, agritourisms and mountain lodges	Official	2020	ISTAT, Regional Statics	percentage	2007-2020	Annual	12.b
13	Impact of forest fires	Official	2021	ISTAT, Regional Statics	rate (per 1.000 km ²)	2005-2021	Annual	13.1
	Population residing in flood hazard areas per km ²	Official	2020	ISTAT, Regional Statics	rate (inhabitants per km ²)	2015, 2017, 2020		13.1
	Population residing in landslide hazard areas per km ²							
15	Mountain vegetation index	Official	2020	ISPRA	percentage	2012, 2018, 2020		15.4

16	Intentional homicide rate	Official	2020	Ministry of the Interior	rate (per 100,000 inhabitants)	2004-2020	Annual	16.1
	Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	Official	2021	Ministry of Justice – Dep. of prison administration	percentage	2010-2021	Annual	16.3
	Correctional institution crowding	Official	2021	ISTAT, Regional Statics	percentage	2004-2021	Annual	16.3
	Length of civil proceedings	Official	2021	Ministry of Justice – Dep. Judicial organization	number (of days)	2012-2021	Annual	16.6

Source: author's own elaboration from national and regional statistics database

3.3 Statistic analysis of trends

The additional indicators include **45 indicators** in total, **covering 16 SDGs** (the SDG 14 is excluded) **and 35 (out of 169) SDG targets of the 2030 Agenda** (table 160); **21**, out of these 35, **are new** (table 161).

Table 160 - Number of additional indicators per SDGs and number of SDG targets covered

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOT
N. SDG targets	2	1	1	5	1	2	2	4	3	1	3	5	1	-	1	3	0	35
N. additional indicators	3	1	1	6	1	2	4	4	3	2	3	8	2	-	1	4	0	45

Source: author's own elaboration

Considering the JRC dataset and the new dataset (of additional indicators), in total we have:

68 SDG targets covered (47 + 21 – table 161, figure 75)

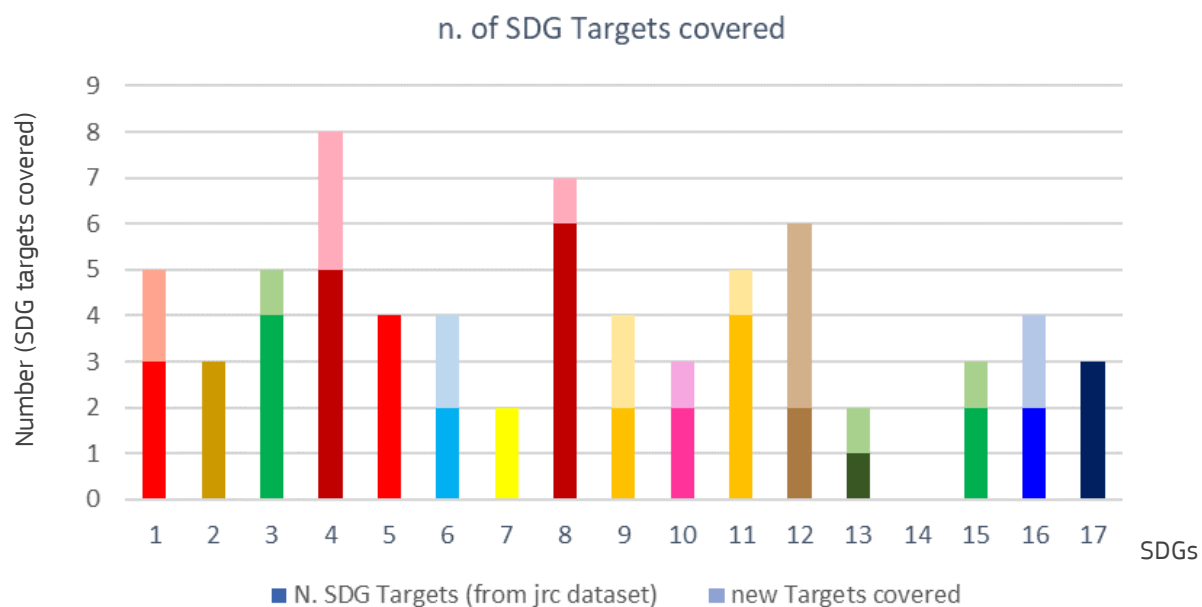
120 indicators (75 + 45 - table 162, figure 76)

Table 161 - Number of SDG targets covered in the dataset from JRC (considering indicators available at the regional level) and in the new dataset

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOT
N. SDG targets (from JRC dataset)	3	3	4	5	4	2	2	6	2	2	4	2	1	-	2	2	3	47
New targets covered	2	0	1	3	0	2	0	1	2	1	1	4	1	-	1	2	0	21

Source: author's own elaboration

Figure 75 - Number of SDG targets covered in the JRC dataset (considering indicators available at the regional level) and in the new dataset



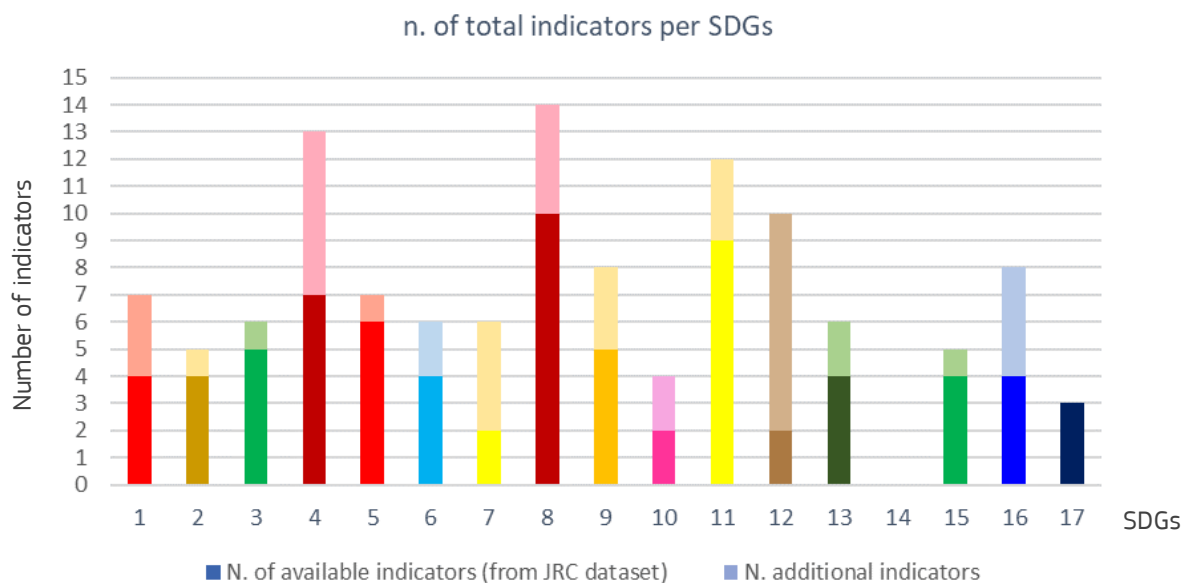
Source: author's own elaboration

Table 162 - Number of indicators in the JRC dataset (considering indicators available at the regional level) and the additional indicators per SDGs

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOT
N. of available indicators (JRC dataset)	4	4	5	7	6	4	2	10	5	2	9	2	4	-	4	4	3	75
N. additional indicators	3	1	1	6	1	2	4	4	3	2	3	8	2	-	1	4	0	45

Source: author's own elaboration

Figure 76 - Number of indicators in the JRC dataset (considering indicators available at the regional level) and the additional indicators per SDGs



Source: author's own elaboration

On the following pages, there is an analysis of the 45 additional indicators, with their trends, for each SDG.

Note:



the indicators of the monitoring system of the National Strategy for Sustainable Development of Piemonte are indicated with the logo of the Strategy

3.3.1 SDG 1 - END POVERTY IN ALL ITS FORMS EVERYWHERE

SDG	1
Number of additional indicators (regional level)	3

SDG Target 1.3 IMPLEMENT SOCIAL PROTECTION SYSTEMS

Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable

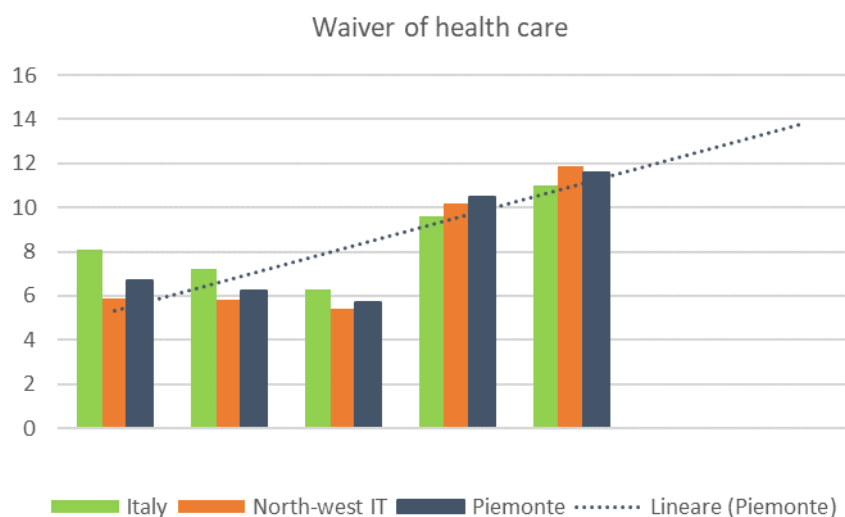
Indicator: **Waiver of health care**

Table 163 - Waiver of health care

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Waiver of health care	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2017-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 77 - Waiver of health care



The percentage of people **waiving health care services** has increased in recent years, particularly in the period of Covid-19. This has been a general phenomenon in Italy, many people have waived health care because of the pandemic.

Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte, the percentage fell between 2017 and 2019 from 6.7% to 5.7% and then increased to **11.6%** in **2021**. The same happened in Italy: 6.3% in 2019, 11% in 2021; in the North-Western regions the percentage rises to 11.9% (2021).

SDG Target 1.4 EQUAL RIGHTS

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

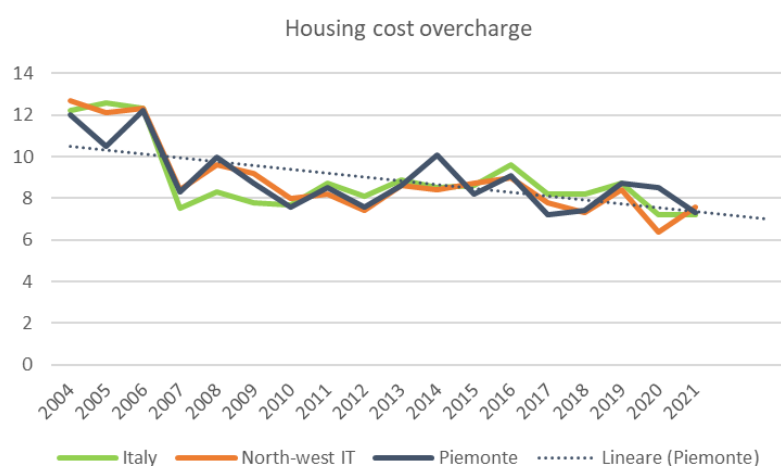
Indicator: **Housing cost overcharge**

Table 164 - Housing cost overcharge

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Housing cost overcharge	Official	Italian regions	2021	ISTAT Regional Statics from EU Silc data	Percentage	2004-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database, EU-Silc data

Figure 78 - Housing cost overcharge



With regard to **housing cost overcharge**, Piemonte recorded a decrease in the last year (**2021**), with a value of **7.3%** (same values recorded in 2010, 2012, 2017 and 2018). The highest values were recorded in 2004, 2005, 2006, 2008 and 2014 (over 10%); in general, a similar trend to the Italian average and to the North-Western regions, but while Piemonte and Italy have seen a decrease between 2019 and 2021, the North-Western regions have seen a decrease between 2019 and 2020 and then an increase in 2021.

Source: author's own elaboration from Istat, Regional Statics Database, EU-Silc data

SDG Target 1.4 EQUAL RIGHTS

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

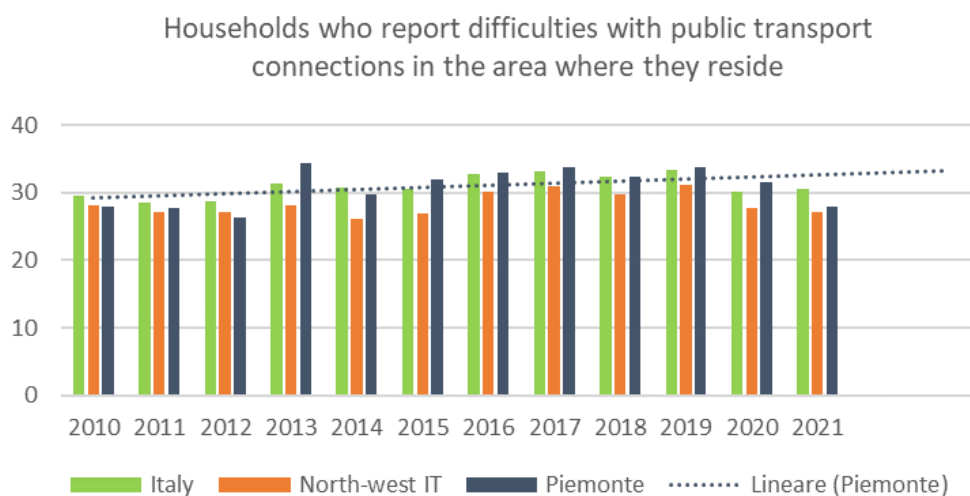
Indicator: Households who report difficulties with public transport connections in the area where they reside

Table 165 - Households who report difficulties with public transport connections

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Households who report difficulties with public transport connections	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2010-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 79 - Households who report difficulties with public transport connections in the area where they reside



Source: author's own elaboration from Istat, Regional Statics Database

The percentage of **households reporting difficulties with public transport connections in the area in which they reside** has decreased slightly in recent years, in Piemonte, in the North-Western regions and in the Italian average in general.

In Piemonte, the value in **2021 is 27.9%**, slightly worse than the North-Western regions (27.1%) but better than the Italian average (30.6%). A fairly high percentage, which for Piemonte is caused, in particular, by the difficulties of many inland mountain areas in terms of transport availability, or accessibility to public transport services.

3.3.2 SDG 2 - END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

SDG	2
Number of additional indicators (regional level)	1

SDG Target 2.2 END MALNUTRITION

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons



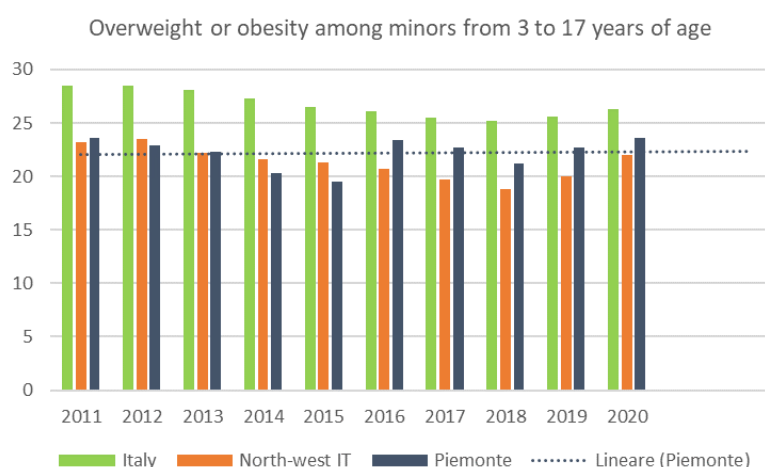
Indicator: **Overweight or obesity among minors from 3 to 17 years of age**

Table 166 - Overweight or obesity among minors from 3 to 17 years of age

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Overweight or obesity among minors from 3 to 17 years of age	Official	Italian regions	2020	ISTAT, Regional Statistics	Percentage	2011-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 80 - Overweight or obesity among minors



Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte, the percentage of **overweight or obesity** among **children and young people** (aged between 3 and 17 years) is an increasing problem, affecting **23.6% of minors in 2020**. Between 2011 and 2020, the average values were approximately 22%, with the highest values in 2011, 2016 and 2020 (23.4 - 23.6%). In

the Italian average, the values are higher (average 26.8% between 2011 and 2020) than in Piemonte, in the North-Western regions are very similar to Piemonte, but slightly lower (average 21.3%). However, while in Italy from 2011 to 2020 the percentage gradually decreased (from 28.5% to 26.3%); in Piemonte (since 2015) and in the North-Western regions (since 2018) the values have increased in the recent years.

3.3.3 SDG 3 - ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SDG	3
Number of additional indicators (regional level)	1

SDG Target 3.4 PREMATURE MORTALITY

By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being



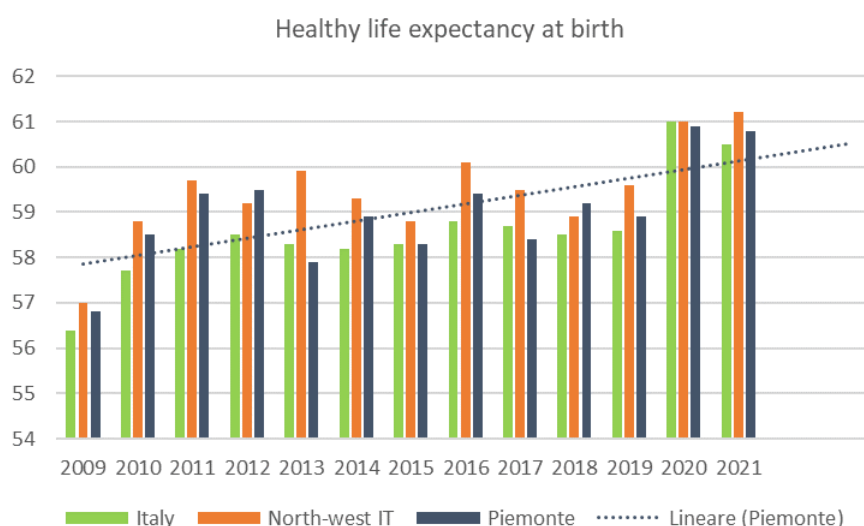
Indicator: **Healthy life expectancy at birth**

Table 167 - Healthy life expectancy at birth

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
3	Healthy life expectancy at birth	Official	Italian regions	2021	ISTAT, Regional Statistics	Average number of years	2009-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 81 - Healthy life expectancy at birth



Source: author's own elaboration from Istat, Regional Statics Database

Healthy life expectancy at birth, in terms of average number of years, has increased in the recent years, 2020 and 2021, in Piemonte but also in Italy and in the North-Western regions: 61.2 in the North-Western regions, **60.8** in Piemonte and 60.5 in Italy (2021).

In Piemonte the worst value was recorded in 2009, with an average number of years of 56.8 (56.4 in Italy and 57 in the North-Western regions). The values have steadily increased since 2010, except between 2014 and 2015 and in 2018 for Piemonte and the North-Western regions.

3.3.4 SDG 4 - ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

SDG	4
Number of additional indicators (regional level)	6

SDG Target 4.1 PRIMARY AND SECONDARY EDUCATION

By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

Indicator: **Not adequate alphabetical and numerical competence, secondary school**



Table 168 - Not adequate alphabetical and numerical competence, secondary school

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Not adequate alphabetical and numerical competence, secondary school	Official	Italian regions	2022	ISTAT from data of Invalsi, National learning surveys	Percentage	2019, 2021, 2022	-

Source: author's own elaboration from Istat, Regional Statics Database, from Invalsi, National learning surveys

Table 169 - Not adequate alphabetical and numerical competence, secondary school - Data

Not adequate alphabetical and numerical competence, secondary school (3 years)	Not adequate alphabetical competence, secondary school			Not adequate numerical competence, secondary school		
	2019	2021	2022	2019	2021	2022
Piemonte	26.5	40.5	39.5	29.4	43.0	40.0
Italy	35.7	48.2	48.5	39.3	50.3	49.9

Source: author's own elaboration from Istat, Regional Statics Database, from Invalsi, National learning surveys

In Piemonte the percentage of students (from the last year of secondary school) with not adequate alphabetical and numerical competences has increased between the last three years (2019-2022), from 26.5 to **39.5% – alphabetical competence** – and from 29.4 to **40% – numerical competence**. Overall, the best result was in 2021. If compared with the national average, these values are low. In Italy, in fact, the values (of both alphabetical and numerical competences) are always higher by about 10 percentage points (from 2019 to 2022).

SDG Target 4.3 VOCATIONAL AND TERTIARY EDUCATION

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

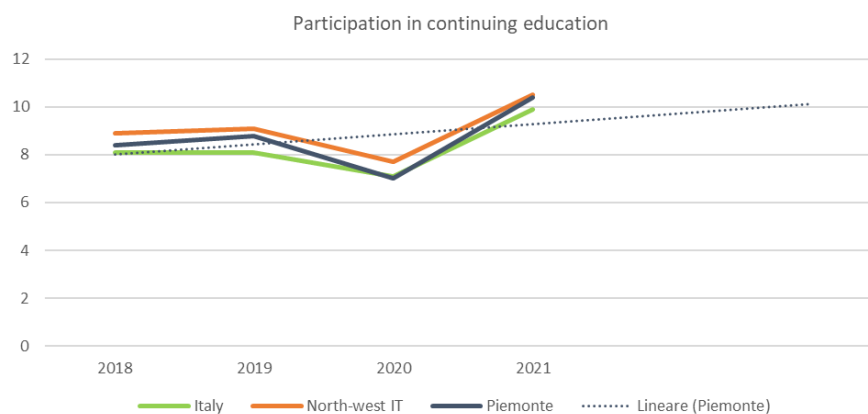
Indicator: **Participation in continuing education**

Table 170 - Participation in continuing education

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Participation in continuing education	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2018-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 82 - Participation in continuing education



Source: author's own elaboration from Istat, Regional Statics Database

The rate of **participation in continuing education** follows a very positive and increasing trend over time. Piemonte's trend follows, in parallel, the national trend and that of the North-Western regions. After a decline in 2020 (7% the Piemonte's value), 2021 looks to be the year of recovery at the regional and, in general, at the national level: the percentage rises to **10.4%** for Piemonte, 10.5% for the North-Western regions and 9.9% for Italy.

SDG Target 4.4 INCREASE THE NUMBER OF PEOPLE WITH RELEVANT SKILLS FOR FINANCIAL SUCCESS

By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

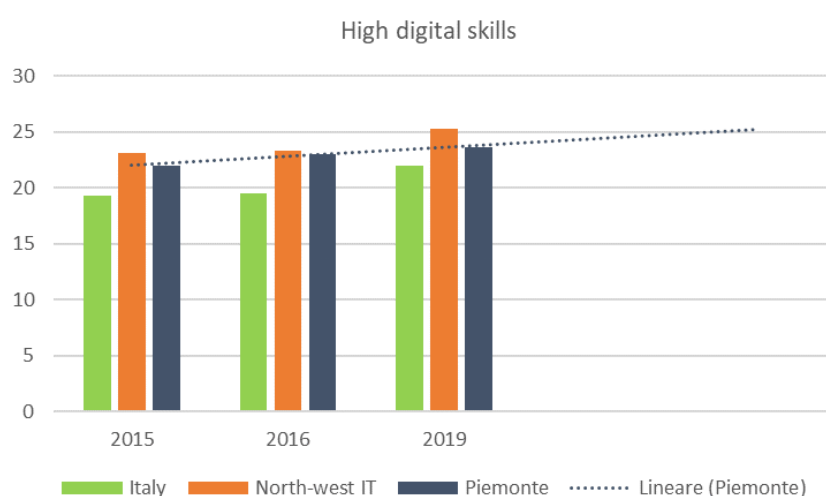
Indicator: **High digital skills**

Table 171 - High digital skills

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	High digital skills	Official	Italian regions	2019	ISTAT, Regional Statics	Percentage	2015, 2016, 2019	-

Source: author's own elaboration from Istat, Regional Statics Database

Figure 83 - High digital skills



Source: author's own elaboration from Istat, Regional Statics Database

The percentage of **high digital skills** in Piemonte is very high and better than the Italian average (22%). The best result for Piemonte is **23.6%** in **2019** (23% in 2016 and 22% in 2015). Higher percentage in other North-Western regions, such that the average reached 25% in 2019, among 23% in 2015 and 2016.

SDG Target 4.8 BUILD AND UPGRADE INCLUSIVE AND SAFE SCHOOLS

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

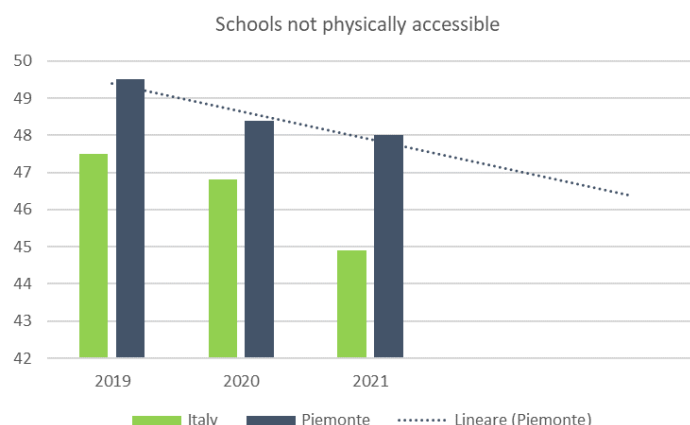
Indicator: **Schools not physically accessible**

Table 172 - Schools not physically accessible

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Schools not physically accessible	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2019-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 84 - Schools not physically accessible



A small improvement recorded in relation to the percentage of **schools** present that are **not physically accessible**, in Piemonte and, in general, in Italy. The percentage in Piemonte improved from 49.4% to **48%**, but but remains worse than the Italian average: 44.9% of schools not accessible (in 2021).

Source: author's own elaboration from Istat, Regional Statics Database

SDG Target 4.8 BUILD AND UPGRADE INCLUSIVE AND SAFE SCHOOLS

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

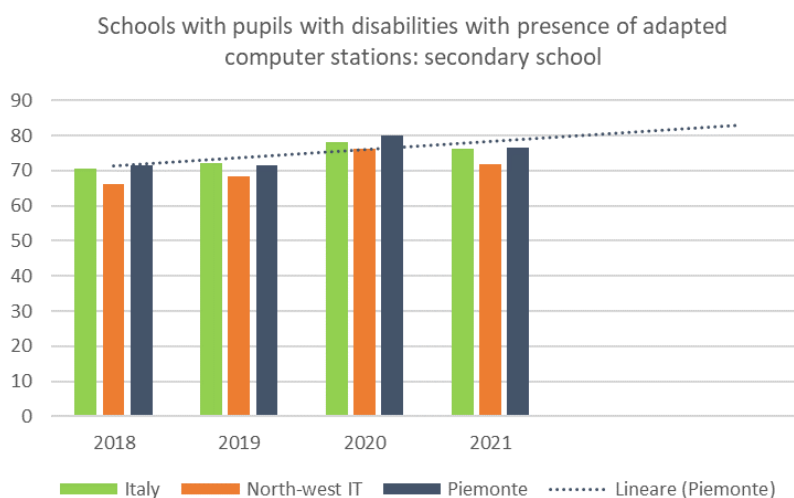
Indicator: Schools with pupils with disabilities with presence of adapted computer stations: secondary school

Table 173 - Schools with pupils with disabilities with presence of adapted computer stations: secondary school

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Schools with pupils with disabilities with presence of adapted computer stations: secondary school	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2018-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 85- Schools with pupils with disabilities with presence of adapted computer stations: secondary school



Source: author's own elaboration from Istat, Regional Statics Database

The trend of the **secondary schools with pupils with disabilities with presence of adapted computer stations** is positive, but in Piemonte and, in general in the rest of Italy, the values in 2021 dropped from the previous year, 2020. In any case, the percentage remains quite high: **76.5%** for Piemonte, 76.1% for Italy and only 71.9% for the North-Western regions (2021).

SDG Target 4.a EDUCATION FACILITIES AND INCLUSIVE LEARNING ENVIRONMENTS

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

Indicator: **Physically accessible schools**

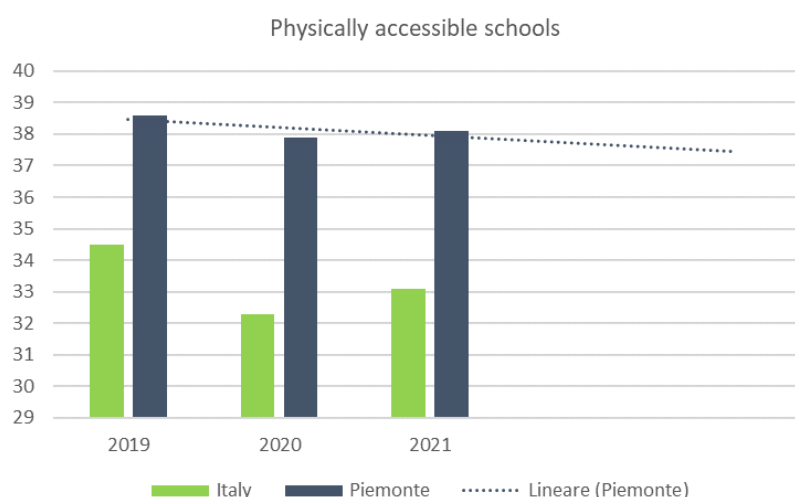


Table 174 - Physically accessible schools

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
4	Physically accessible schools	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2019-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 86 - Physically accessible schools



Source: author's own elaboration from Istat, Regional Statics Database

While the percentage of not-physically accessible schools (*figure 84*) has shown a positive trend over time (decrease), the percentage of physically accessible schools is negative (decrease). Probably, despite the fact that many schools have been built or renovated to be adequate and accessible to people with disabilities, many other schools (possibly older ones) have not been restructured and re-adapted.

In this case, contrary to the previous one, Piemonte's values show a positive difference from the Italian average: in Piemonte, in 2021, the percentage was 38.1; in Italy 33%.

Overall, from the data comparison in Piemonte there are (2021): only **38.1% of schools physically accessible and 48% not physically accessible**.

In Italy: 33% of schools physically accessible and 44.9% not physically accessible.

3.3.5 SDG 5 - ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SDG	5
Number of additional indicators (regional level)	1

SDG Target 5.4 UNPAID WORK

Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

Indicator: Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children

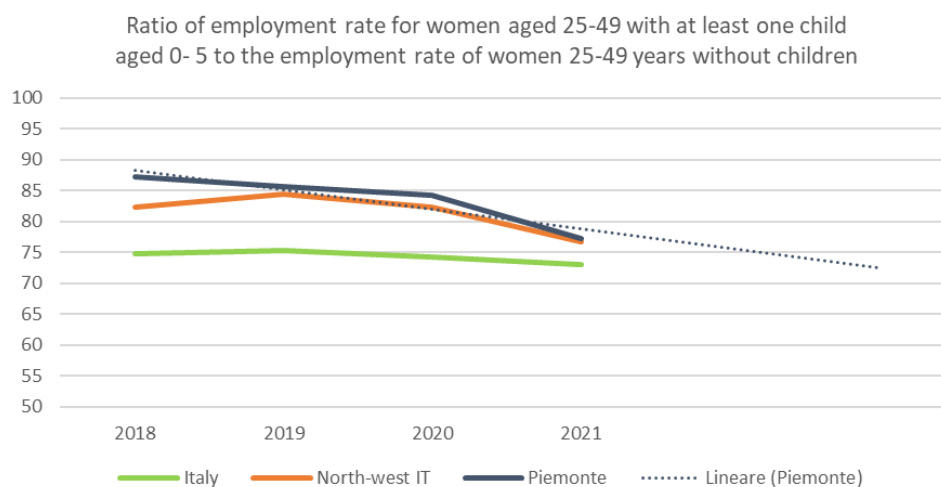


Table 175 - Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
5	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	Official	Italian regions	2021	ISTAT, Regional Statistics	Percentage	2018-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 87 - Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children



Source: author's own elaboration from Istat, Regional Statics Database

The **ratio of the employment rate of women aged 25-49 with at least one child aged 0-5 to the employment rate of women aged 25-49 without children** worsened in the last year of analysis, falling about 10 percentage points from 2018 (87.3%) to 2021 (77.2%).

More or less the same situation for other regions in the North-West.

Italian average values are confirmed to be fairly stable over time: they are worse than those recorded in the Northern regions, including Piemonte: in **2021** the percentage in Italy was 73%, 76.8% for the North-Western regions and **77.2%** for Piemonte, the best result.

3.3.6 SDG 6 - ENSURE AVAILABILITY AND MANAGEMENT OF WATER AND SANITATION FOR ALL

SDG	6
Number of available indicators (regional level)	2

SDG Target 6.4 INCREASE WATER-USE EFFICIENCY AND ENSURE FRESHWATER SUPPLIES

By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

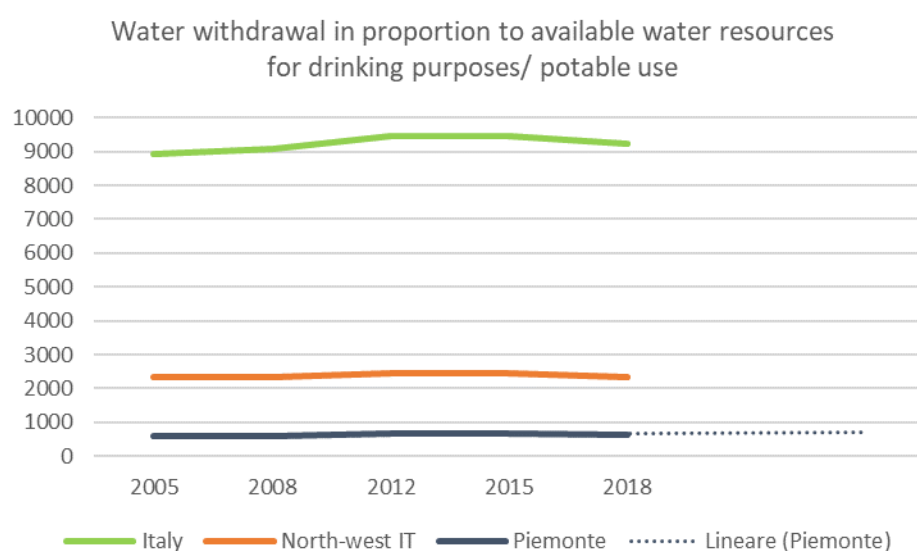
Indicator: **Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use**

Table 176 - Water withdrawals for drinking purposes/ potable use

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Water withdrawals for drinking purposes/ potable use	Official	Italian regions	2018	ISTAT, Regional Statics	number (million m3)	2005 - 2018	3 years

Source: author's own elaboration from Istat, Regional Statics Database

Figure 88 - Water withdrawal in proportion to available water resources for drinking purposes/potable use



Source: author's own elaboration from Istat, Regional Statics Database

Water withdrawal as a proportion of available water resources for drinking/domestic use, measured in millions of m3, has had a small increase over time (particularly from 2012), but remains almost stable

between 600-650 m³ in Piemonte between 2005 and 2018. Same stable trend for average withdrawals in Italy (9220 m³ in total in 2018) and the North-Western regions (2357 m³ in total in 2018).

SDG Target 6.6 PROTECT AND RESTORE WATER-RELATED ECOSYSTEMS

By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

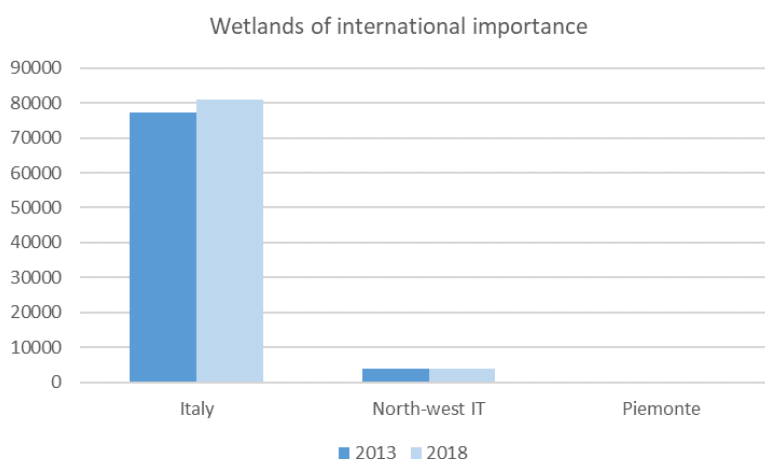
Indicator: **Wetlands of international importance**

Table 177 - Wetlands of international importance

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
6	Wetlands of international importance	Official	Italian regions	2018	ISTAT from ISPRA data	number (hectares)	2013, 2018	5 years

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

Figure 89 - Wetlands of international importance



Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

In Piemonte there aren't **wetlands of international importance** ⁽¹³⁾ but is an important indicator for monitoring the water-related ecosystems and evaluate if there are any protection systems at the regional level.

The data are very old, but at least we understand that in 2018 in Italy there were 80,836 hectares of wetlands of international importance, 4,000 (4,8% of the total) of which were in the North-Western regions, excluding Piemonte.

⁽¹³⁾ <https://www.mase.gov.it/pagina/zone-umide-di-importanza-internazionale-0>

3.3.7 SDG 7 - ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

SDG	7
Number of available indicators (regional level)	4

SDG Target 7.1 ACCESS TO ENERGY

By 2030, ensure universal access to affordable, reliable and modern energy services

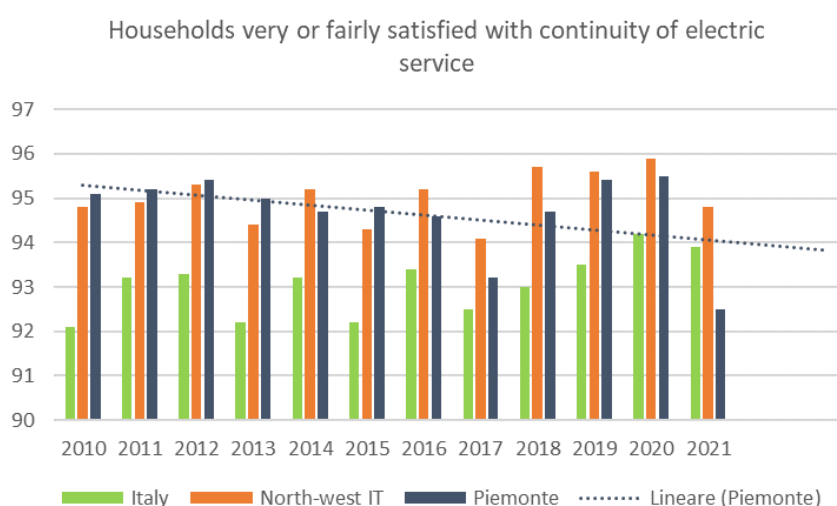
Indicator: **Households very or fairly satisfied with continuity of electric service**

Table 178 - Households very or fairly satisfied with continuity of electric service

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Households very or fairly satisfied with continuity of electric service	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2010-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 90 - Households very or fairly satisfied with continuity of electric service



Source: author's own elaboration from Istat, Regional Statics Database

From a national survey, households in Piemonte very or fairly satisfied with the **continuity of electric service** have declined over the years. Between 2005 and 2010 family satisfied with electric services were 95%, from

2011 to 2018 the percentage dropped slightly to 94-94.7% before rising again in 2019 and 2020 to 95.5%. In **2021** there is again a decline, with a percentage of **92.5%**, recording the lowest value in the last 10 years.

However, the percentage remains very high, but lower than the national and North-Western region averages.

Moreover, while the North-Western regions have always maintained a very high level (between 94 and 96%), in Italy the values were lower than Piemonte (92-93%), but then increased in 2019, to 94%, and also exceeding the Piemonte average in 2020.

SDG Target 7.2 SHARE OF RENEWABLE ENERGY

By 2030, increase substantially the share of renewable energy in the global energy mix

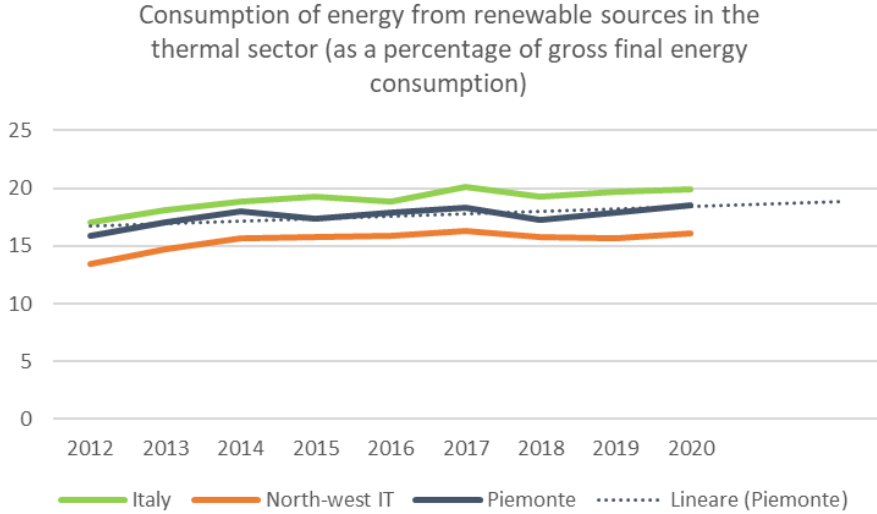
Indicator: **Consumption of energy from renewable sources in the thermal sector**

Table 179 - Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	Official	Italian regions	2020	ISTAT from data of GSE S.p.A. - Energy Services Operator	Percentage	2012-2020	Annual

Source: author’s own elaboration from Istat, Regional Statics Database, from GSE data

Figure 91 - Consumption of energy from renewable sources in the thermal sector



Source: author’s own elaboration from Istat, Regional Statics Database, from GSE data

Renewable energy consumption in the thermal sector (as a percentage of gross final energy consumption) in Piemonte reached a share of **18.5%** in **2020**, higher than the average of the North-Western regions (16%), but slightly inferior to the national average (19.9%). There was a slight decline in 2018, regionally but also nationally. Overall, the trend is positive and fairly linear with the general national trend.

SDG Target 7.2 SHARE OF RENEWABLE ENERGY

By 2030, increase substantially the share of renewable energy in the global energy mix

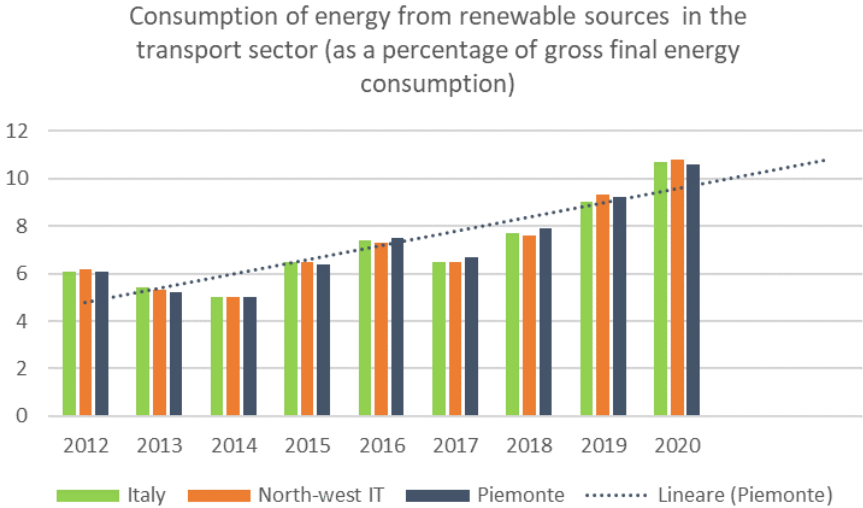
Indicator: **Consumption of energy from renewable sources in the transport sector**

Table 180 - Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	Official	Italian regions	2020	ISTAT from data of GSE S.p.A. - Energy Services Operator	Percentage	2012-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from GSE data

Figure 92 - Consumption of energy from renewable sources in the transport sector



Source: author's own elaboration from Istat, Regional Statics Database, from GSE data

Energy consumption from renewable sources in the transport sector (as a percentage of gross final energy consumption) in Piemonte has increased a lot in recent years (2012-2020) and reached a share of **10.6%** in **2020**, in line with the average of North-Western regions (10.8%), and the national average (10.7%).

In general, the trend is positive and follows the general national trend, which declined in 2013 and 2014 and then improved in the following years, particularly in 2016 and from 2018 onward.

SDG Target 7.2 SHARE OF RENEWABLE ENERGY

By 2030, increase substantially the share of renewable energy in the global energy mix

Indicator: **Renewable energy share in the gross final energy consumption**

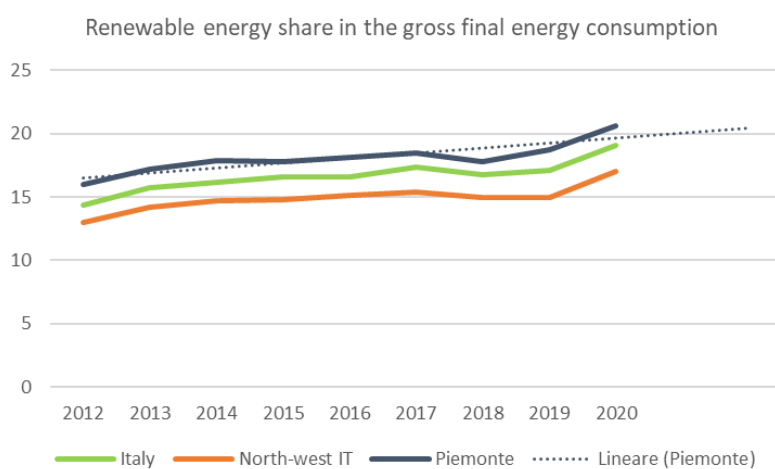


Table 181 - Renewable energy share in the gross final energy consumption (excluding transport sector)

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
7	Renewable energy share in the gross final energy consumption (excluding transport sector)	Official	Italian regions	2020	ISTAT from data of GSE S.p.A. - Energy Services Operator	Percentage	2012-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from GSE data

Figure 93 - Renewable energy share in the gross final energy consumption



The share of **renewable energy in gross final energy consumption** in general has had a large increase in the last 8 years, reaching **20.6%** in Piemonte in **2020** (16% in 2012), a larger share than the average of the North-Western regions and the Italian average. There was a slight decrease between 2018 and 2019, affecting Piemonte (17.8 -18.7% the share recorded in this two-year period) but also the rest of the Italian regions. In general, the regional trend follows the national trend, which will continue to grow in the coming years (according to trend projections).

Source: author's own elaboration from Istat, Regional Statics Database, from GSE data

3.3.8 SDG 8 - PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SDG	8
Number of additional indicators (regional level)	4

SDG Target 8.1 ECONOMIC GROWTH

Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

Indicator: Annual growth rate of real GDP per capita

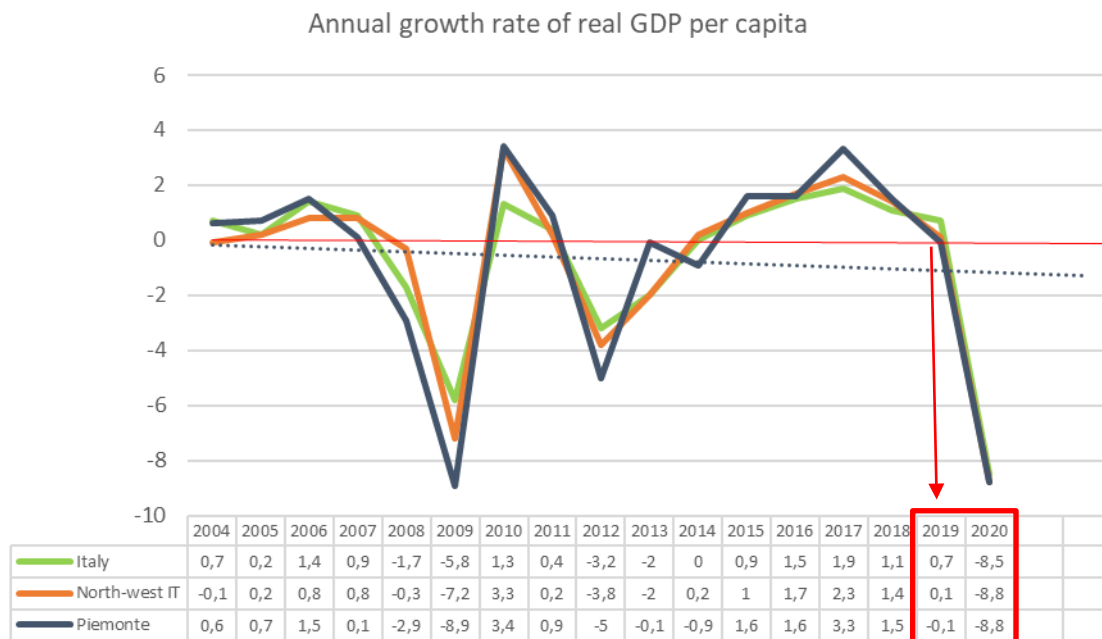


Table 182 - Annual growth rate of real GDP per capita

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Annual growth rate of real GDP per capita	Official	Italian regions	2020	ISTAT, Regional Statics	Percentage	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 94 - Annual growth rate of real GDP per capita



Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte the trend of **growth rate of real GDP per capita** has suffered a large decline in recent years (2019-2020), during Covid 19 period, with negative values of -0.1% in 2019 and **-8.8%** in **2020**. Same negative values are recorded in the rest of Italy: -8.5% in the national average and -8.8% in the average of the North-Western regions.

In the pre-pandemic period, values were around 3.3% in 2017, 1.5% in 2018 (in line with the national average). The highest values were recorded in 2010 (3.4%) and 2017 (3.3%); on the contrary, negative values (below 0) were also recorded in 2008 (-2.9%) and 2009 (-8.9%) and between 2012 and 2014 (-2 or -1%); the same trend in the national average.

SDG Target 8.3 JOB CREATION

Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services



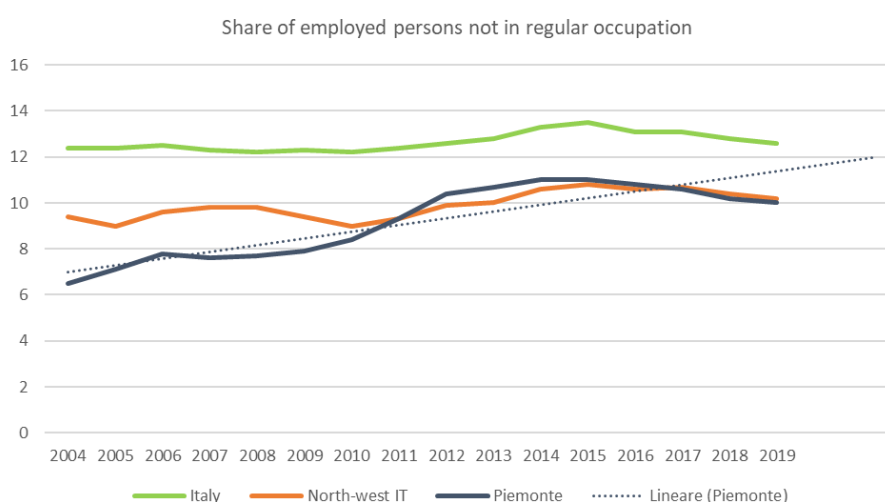
Indicator: **Share of employed persons not in regular occupation**

Table 183 - Share of employed persons not in regular occupation

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Share of employed persons not in regular occupation	Official	Italian regions	2019	ISTAT, Regional Statics	Percentage	2004-2019	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 95 - Share of employed persons not in regular occupation



Source: author's own elaboration from Istat, Regional Statics Database

The trend of **employed persons not in regular occupation** is negative, because from 2004 to 2019 the share has steadily increased: from 6.5% in 2004 to **10%** in **2019**. The worst values were in 2016 (10.8%), 2013 (10.7%), 2017 (10.6%) and 2012 (10.4%). However, compared to the Italian average and the North-

Western regions average, Piemonte shows a slight improvement; in Italy, in particular, the share in 2019 was 12.6%.

SDG Target 8.5 PRODUCTIVE EMPLOYMENT

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value



Indicator: **Rate of non-participation in employment**

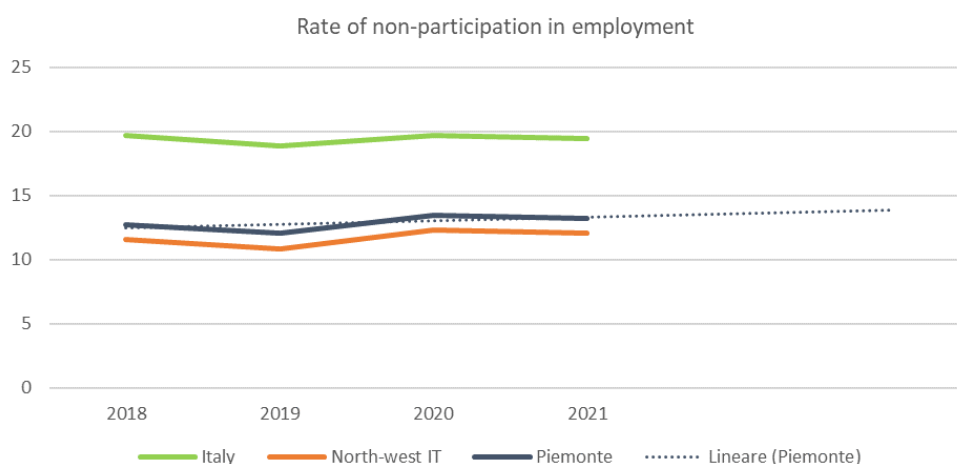
Table 184 - Rate of non-participation in employment

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Rate of non-participation in employment	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2018-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte the rate of unemployment (from 15 to 74 years old) was 7.3% in 2021, the general trend (from 2000 to 2021) is negative, but in recent years, from 2014 to 2021, the rate went back down, from 11.3 to 7.3% (Ch.2, figure 37).

Figure 96 - Rate of non-participation in employment



Source: author's own elaboration from Istat, Regional Statics Database

The rate of **non-participation in employment** is also negative. In this case we know only the data from 2018 but the rate is higher than the rate of unemployment, **13.2%** in **2021**, better than the national average (19.4) but worse than the average of the North-Western regions (12.1).

SDG Target 8.10 ACCESS TO BANKING, INSURANCE AND FINANCIAL SERVICES

Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

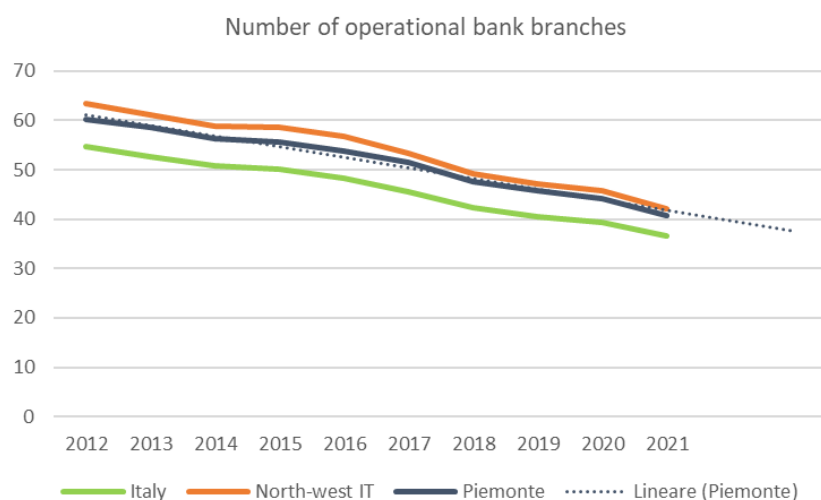
Indicator: **Number of operational bank branches**

Table 185 - Number of operational bank branches

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
8	Number of operational bank branches	Official	Italian regions	2021	ISTAT, Regional Statics	Rate per 100.000 inhabitants	2012-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 97 - Number of operational bank branches



In the mountain cities of Piemonte, there are many critical situations in relation to the availability of and access to services, in general, such as transport services, care and assistance services, and even bank or post office counters.

In Piemonte there has been a consistent decrease in number of **operational bank branches** from 60.3% to **40.8%** in less than 10 years (2012-2021). Same trend for the other regions of Italy.

Source: author's own elaboration from Istat, Regional Statics Database

From this constant loss over time, the trend seems to continue in a negative direction in the future. The increase in digital services may have influenced this decrease, but mountain areas also have the disadvantage of the "digital divide", which therefore does not help to compensate for the accessibility of services with digital devices.

3.3.9 SDG 9 - BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

SDG	9
Number of additional indicators (regional level)	3

SDG Target 9.3 ACCESS TO FINANCIAL SERVICES AND MARKETS

Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

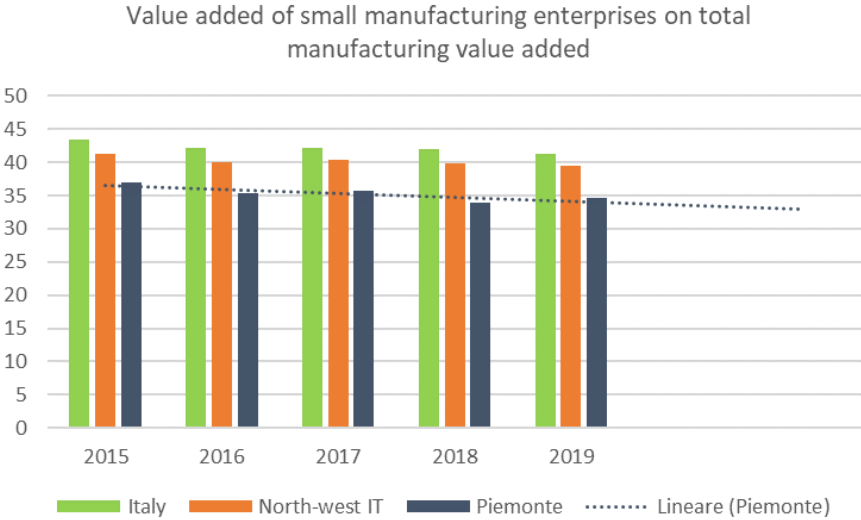
Indicator: Value added of small manufacturing enterprises on total manufacturing value added

Table 186 - Value added of small manufacturing enterprises on total manufacturing value added

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Value added of small manufacturing enterprises on total manufacturing value added	Official	Italian regions	2019	ISTAT, Regional Statics	Percentage	2015-2019	Annual

Source: author’s own elaboration from Istat, Regional Statics Database

Figure 98 - Value added of small manufacturing enterprises on total manufacturing value added



Source: author’s own elaboration from Istat, Regional Statics Database

In Piemonte and in Italy, in general, there is a large number of small enterprises. In this case, in relation to the **added value of small manufacturing enterprises**, the percentage in Piemonte in 2019 was **34.7%** (on total manufacturing value added), 39.4% in the North-Western regions and 41.3 in the Italian average, a fairly high percentage. The best values were in 2015 (36.9%) and 2017 (33.9%), but the trend is negative due to the lower values recorded in the last survey years (2018 - 2019).

SDG Target 9.5 PROMOTE INNOVATION

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending



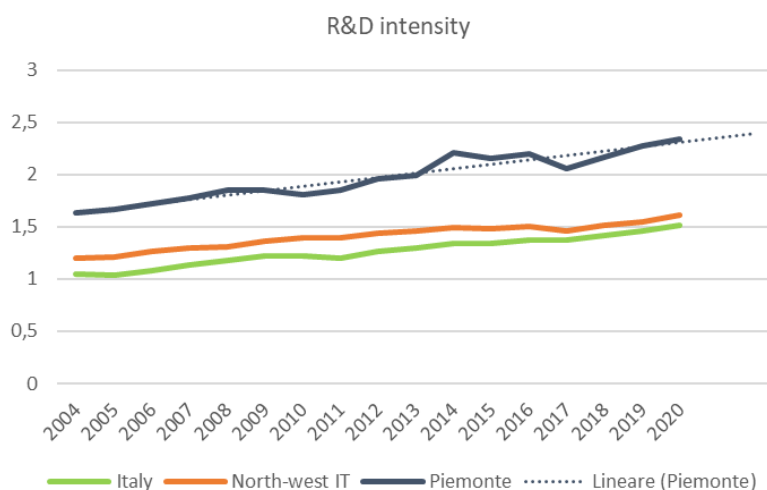
Indicator: **R&D intensity**

Table 187 - R&D intensity

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	R&D intensity	Official	Italian regions	2020	ISTAT, Regional Statics	Percentage	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 99 - R&D intensity



The percentage of **R&D intensity (research and development)** increased between 2004 and **2020**, from 1.6% to **2.3%**. Piemonte had the best performance with the highest results compared to the rest of Italy. Specifically, in Italy, the percentage of R&D intensity was 1.5 and 1.6 for the North-Western regions.

The trend is increasing in parallel between Piemonte and the other regions and probably it will continue to increase in the future.

Source: author's own elaboration from Istat, Regional Statics Database

SDG Target 9.8 ACCESS TO INFORMATION AND COMMUNICATIONS TECHNOLOGY

Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

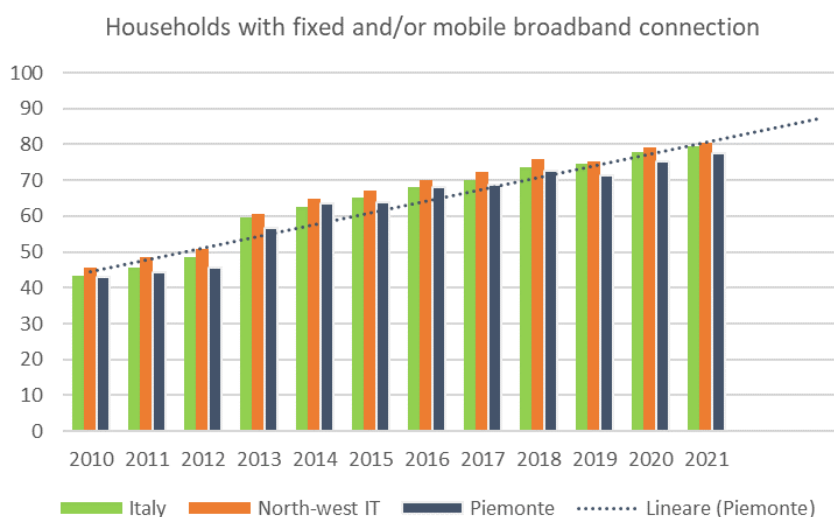
Indicator: **Households with fixed and/or mobile broadband connection**

Table 188 - Households with fixed and/or mobile broadband connection

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
9	Households with fixed and/or mobile broadband connection	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2010-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 100 - Households with fixed and/or mobile broadband connection



Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte **households with fixed and/or mobile broadband connection** percentage was **77.5%** in **2021**, less than the national average (79.5%) and the average of the North-Western regions (80.5%). However, the trend is positive, growing steadily since 2010 (43% in Piemonte) and will continue to improve in the coming years. This is a great regional policy, especially for the mountain areas of the Piemonte region.

3.3.10 SDG 10 - REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

SDG	10
Number of additional indicators (regional level)	2

SDG Target 10.1 INCOME GROWTH

By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

Indicator: **Inequality of net income**

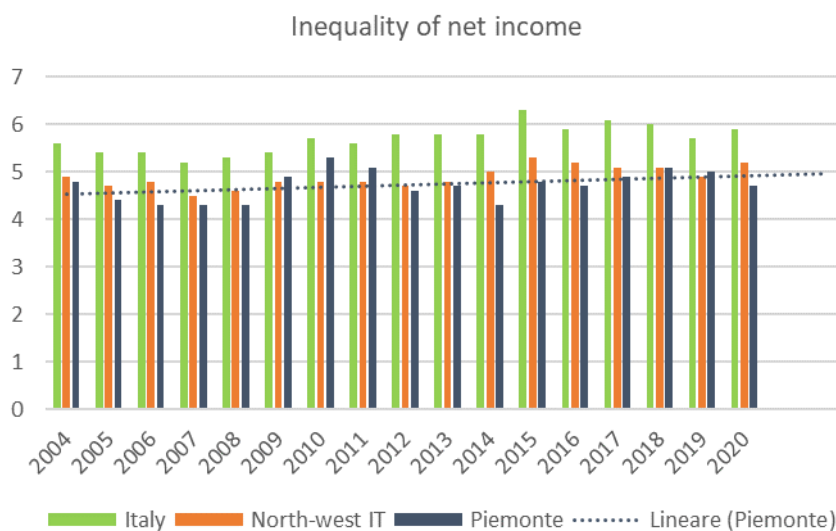


Table 189 - Inequality of net income

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
10	Inequality of net income	Official	Italian regions	2020	ISTAT, Regional Statics	Number (ratio of incomes)	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 101 - Inequality of net income



Source: author's own elaboration from Istat, Regional Statics Database

Net income inequality is still a major problem at the national level. In Italy, the rate of inequality (in terms of income ratio) in **2020** was 5.9, in the North-Western regions 5.2 and in Piemonte **4.7** (better than the rest of the nearby regions and the Italian average).

In Piemonte, the trend shows an increase in inequality over the years (2004-2020), in particularly between 2009 and 2011 and also in 2018-2019, which is expected to continue in the coming years.

SDG Target 10.1 INCOME GROWTH

By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

Indicator: **Disposable income per capita**

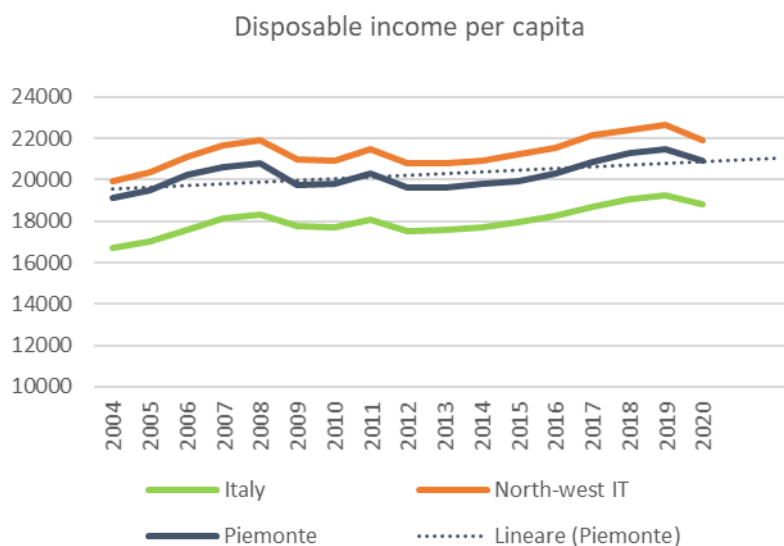


Table 190 - Disposable income per capita

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
10	Disposable income per capita	Official	Italian regions	2020	ISTAT, Regional Statics	Number (euro - current prices)	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 102 - Disposable income per capita



Source: author's own elaboration from Istat, Regional Statics Database

In Piemonte **disposable income (per capita)** in **2020** was **20,899€**, better than the Italian average (18,805€) but slightly lower than the average for the North-Western regions (21,928€). The trend follows the general national trend, with the highest values in 2007 and 2008, a continuous growth from 2014 to 2019 (21,471€ the value in Piemonte). In 2020 there was a small decrease (probably also in connection with the Covid-19 pandemic crisis) but in general the trend is positive, also for the coming years.

3.3.11 SDG 11 - MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

SDG	11
Number of additional indicators (regional level)	3

SDG Target 11.3 SUSTAINABLE URBANIZATION

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries



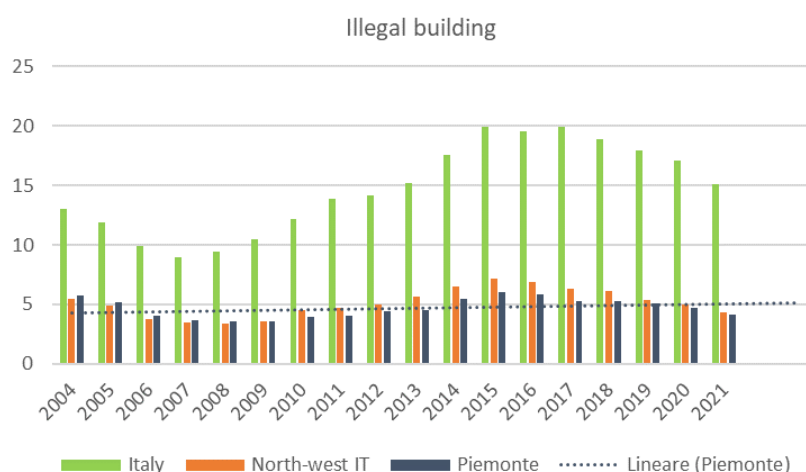
Indicator: **Illegal building**

Table 191 - Illegal building

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Illegal building	Official	Italian regions	2021	ISTAT from CRESME data	Rate (per 100 authorized buildings)	2004-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from CRESME data

Figure 103 - Illegal building



Source: author's own elaboration from Istat, Regional Statics Database, from CRESME

In Italy the development of **illegal buildings** is a big problem, in particular between 2015 and 2017 the rate was 20 illegal buildings per 100 authorized buildings. In recent years the rate has decreased, but it still remained very high, in 2021 was 15/100. This is a problem especially in Southern Italian regions; on the contrary in Piemonte and in the North-Western regions the rate is lower: in Piemonte and, in general, in the North-West in **2021** was **4/100**. The trend shows a slight increase (considering the high results between 2004-2015 and 2014-2016), but contained between 5-6/100.

SDG Target 11.6 ENVIRONMENTAL IMPACT

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management



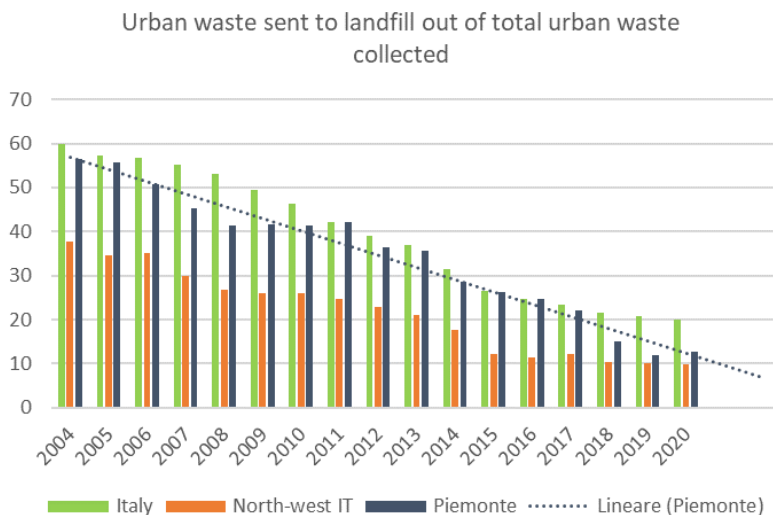
Indicator: **Urban waste sent to landfill out of total urban waste collected**

Table 192 - Urban waste sent to landfill out of total urban waste collected

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Urban waste sent to landfill out of total urban waste collected	Official	Italian regions	2020	ISTAT from ISPRA data	Percentage	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

Figure 104 - Urban waste sent to landfill out of total urban waste collected



The percentage of **urban waste sent to landfill out of total urban waste collected** has decreased during the years has decreased enormously over the years (2004-2020). In Piemonte in particular, it has fallen from 56.5% in 2004 to **12.6% in 2020**.

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

The new circular economy package (EU) sets out ambitious recycling and landfilling targets for the EU. The package includes a common **EU target**, one of this is: **by 2035, no more than 10% of municipal waste would be deposited in a landfill** ⁽¹⁴⁾. In Italy the percentage is still 20% (a very good result for the North-Western regions with 9.7%), but in general, in Piemonte and also in the rest of Italy the trend is positive and will continue to improve in the coming years, approaching the European target.

⁽¹⁴⁾ EU: the circular economy package

SDG Target 11.7 GREEN AND PUBLIC SPACES

By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

Indicator: **Incidence of urban green areas on urbanised area of cities**

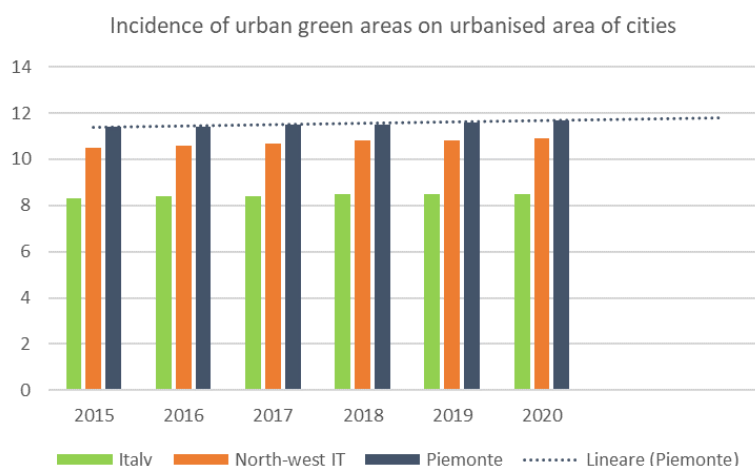


Table 193 - Incidence of urban green areas on urbanised area of cities

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
11	Incidence of urban green areas on urbanised area of cities	Official	Italian regions	2020	ISTAT, Regional Statics	Rate (m2 per 100 m2 of urbanised areas)	2015-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 105 - Incidence of urban green areas on urbanised area of cities



Source: author's own elaboration from Istat, Regional Statics Database

The **incidence of urban green areas** in Piemonte is very high and better than the Italian average or the average of the N-W regions. In particular, in **2020** the rate was **11.7** mq per 100 mq of urbanised areas; in 2015 and 2016 11.4, 11.5 between 2016 and 2017, 11.6 in 2019, fairly stable over time but with a slight constant increase that will probably continue over time. In Italy and in the North-Western regions values are also fairly stable, but lower than the Piemonte average, between 8.3-8.5 in the Italian average 10.5-10.9 for the N-W regions.

3.3.12 SDG 12 - ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

SDG	12
Number of additional indicators (regional level)	8

SDG Target 12.2 MANAGEMENT OF NATURAL RESOURCES

By 2030, achieve the sustainable management and efficient use of natural resources

Indicator: **Domestic material consumption per capita**



Table 194 - Domestic material consumption per capita

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Domestic material consumption per capita	Official	Italian regions	2018	ISTAT, Regional Statics	Rate (tons per capita)	2015-2018	Annual

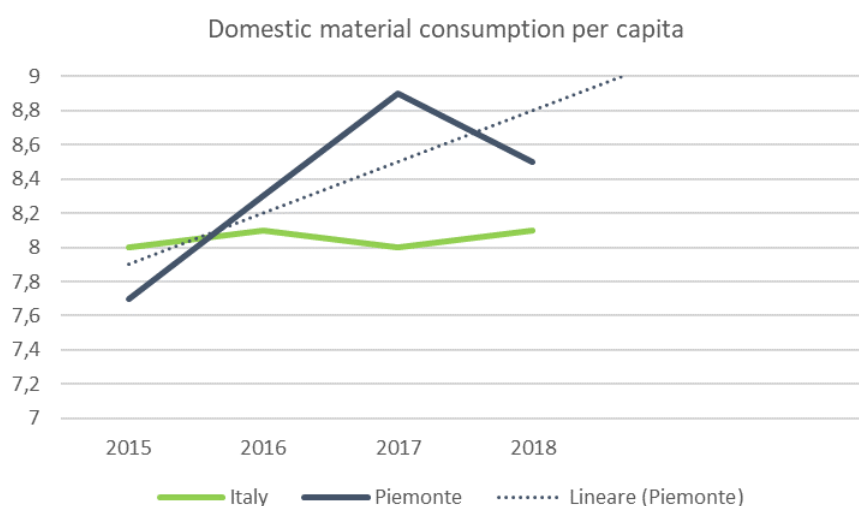
Source: author's own elaboration from Istat, Regional Statics Database

Domestic material consumption, abbreviated as DMC, measures the total amount of materials directly used by an economy and is defined as the annual quantity of raw materials extracted from the domestic territory, plus all physical imports minus all physical exports. The DMC indicator provides an assessment of the absolute level of the use of resources, and allows to distinguish consumption driven by domestic demand from consumption driven by the export market. It is important to note that the term "consumption" as used in DMC denotes apparent consumption and not final consumption. DMC does not include upstream "hidden" flows related to imports and exports of raw materials and products ⁽¹⁵⁾.

Domestic Material Consumption measures a country's apparent consumption of material resources, i.e. the amount of materials that at the end of the reporting period have been transformed into residues (emissions to water, air and soil) or new stocks in the socio-economic system (waste in controlled landfills; capital goods, such as buildings, infrastructure and machinery; consumer durables) (ISPRA, IT).

⁽¹⁵⁾ EUROSTAT

Figure 106 - Domestic material consumption per capita



Source: author's own elaboration from Istat, Regional Statics Database

In Italy the rate of **DMC** in 2018 was 8.1 tons per capita, in Piemonte **8.5**.

In general, in Italy, the trend is rather stable between 8 and 8.1 (2015-2018); in Piemonte, on the other hand, there have been slight variations over time, with an increase in 2017 (the rate was 7.7 in 2015 and 8.9 in 2017) but the values decrease in 2018 (8.5).

SDG Target 12.2 MANAGEMENT OF NATURAL RESOURCES

By 2030, achieve the sustainable management and efficient use of natural resources

Indicator: **Domestic material consumption per GDP**

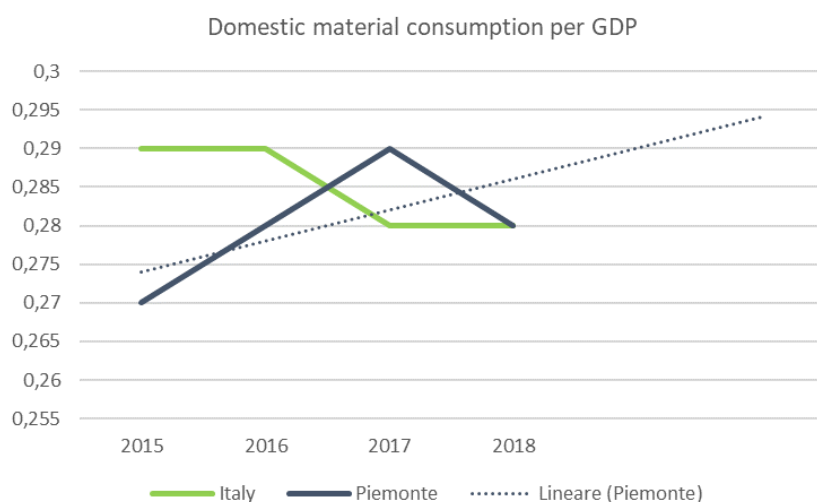


Table 195 - Domestic material consumption per GDP

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Domestic material consumption per GDP	Official	Italian regions	2018	ISTAT, Regional Statics	Rate (tons per 1,000 €)	2015-2018	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 107 - Domestic material consumption per GDP



In this case, the **DMC** is measured in relation to **GDP**. In Italy, the rate remained stable between 2015 (0.29 tons per 1,000 €) and 2018 (0.28). In Piemonte there were slight variations over time, in particular there was a small increase between 2015 (0.27) and 2017 (0.29) but the values remain stable between **0.28 tons per 1,000 €**. The trend shows a small increase but content between 0.29-0.30.

Source: author's own elaboration from Istat, Regional Statics Database

SDG Target 12.5 REDUCTION, RECYCLING AND REUSE WASTE

By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Indicator: **Separate collection of urban waste**



Table 196 - Separate collection of urban waste

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Separate collection of urban waste	Official	Italian regions	2020	ISTAT from ISPRA data	Percentage	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

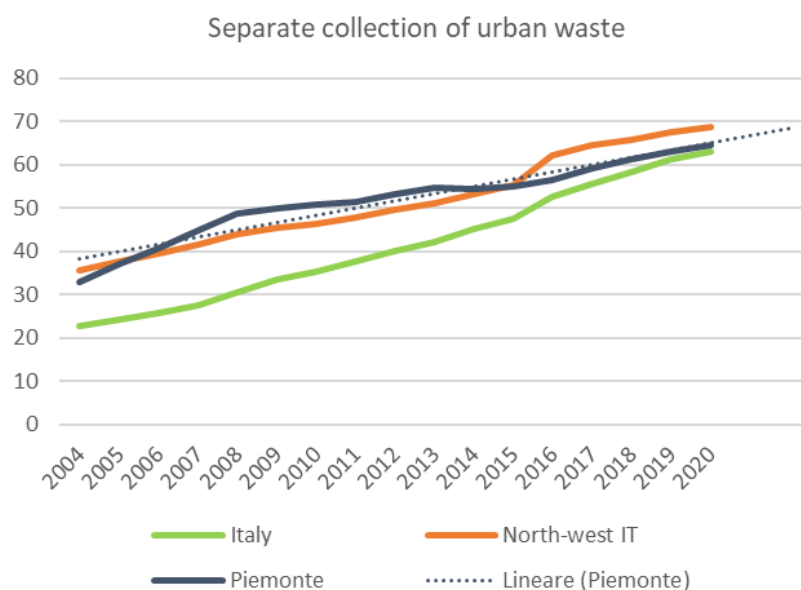
The new circular economy package sets out ambitious recycling and landfilling targets for the EU. The package includes a common **EU target for recycling at least 55% of municipal waste** by 2025; this target would rise to 60% by 2030 and **65% by 2035**. Also envisaged is a common EU target for recycling 65% of packaging waste by 2025, and 70% by 2030 ⁽¹⁶⁾.

Furthermore, at the regional level, the Waste Plan of Piemonte sets a target of **80% of separate collection of urban waste** by 2035 ⁽¹⁷⁾.

⁽¹⁶⁾ EU: the circular economy package

⁽¹⁷⁾ PRUBAI Piemonte

Figure 108 - Separate collection of urban waste



In Piemonte and, in general, in Italy, the percentage of **separate collection of urban waste** has increased greatly, steadily over time. The percentage has risen from 32.8% in 2004, to **64.5%** in 2020.

The trend is also positive for the North-Western regions, which altogether reached 68% of separate collection of urban waste in 2020; 63% for Italian the average.

In general, the performance of Piemonte and Italy seems to be going in the same direction as the EU and regional targets.

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

SDG Target 12.6 ENCOURAGE COMPANIES TO ADOPT SUSTAINABLE PRACTICES AND SUSTAINABILITY REPORTING

Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Indicator: Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)

Table 197 - EMAS-registered organizations/ enterprises

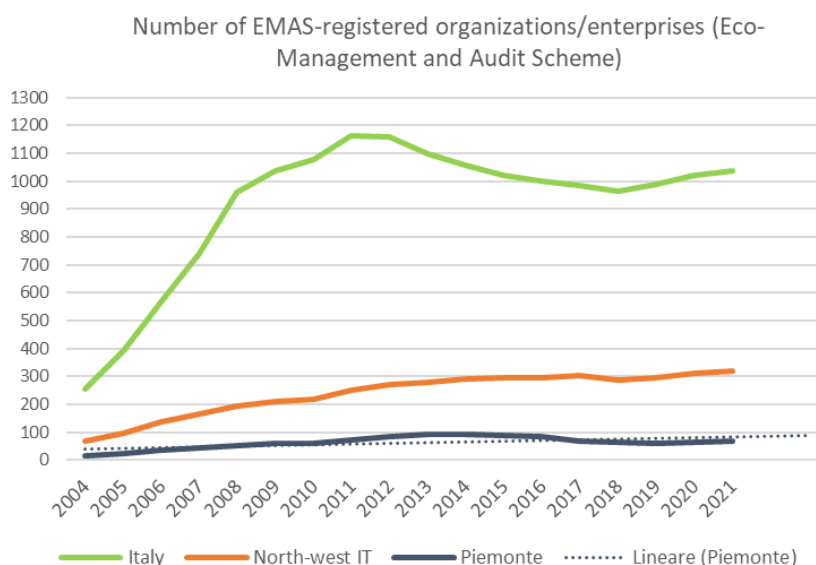
SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	EMAS-registered organizations/enterprises	Official	Italian regions	2021	ISTAT from ISPRA data	Number	2004-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

Figure 109 - Number of EMAS-registered organizations/enterprises

The EU Eco-Management and Audit Scheme (EMAS) is a premium management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance ⁽¹⁸⁾.

In Piemonte the number of **EMAS-registered organizations or enterprises was 67 in 2021, 6.4% of the total in Italy**; 318 in the North-Western regions 30-6% of the total in Italy (1038).



Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

SDG Target 12.7 PROMOTE SUSTAINABLE PUBLIC PROCUREMENT PRACTICES

Promote public procurement practices that are sustainable, in accordance with national policies and priorities

Indicator: Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (MEC), in at least one procurement procedure (Green Purchasing or Green Public Procurement)

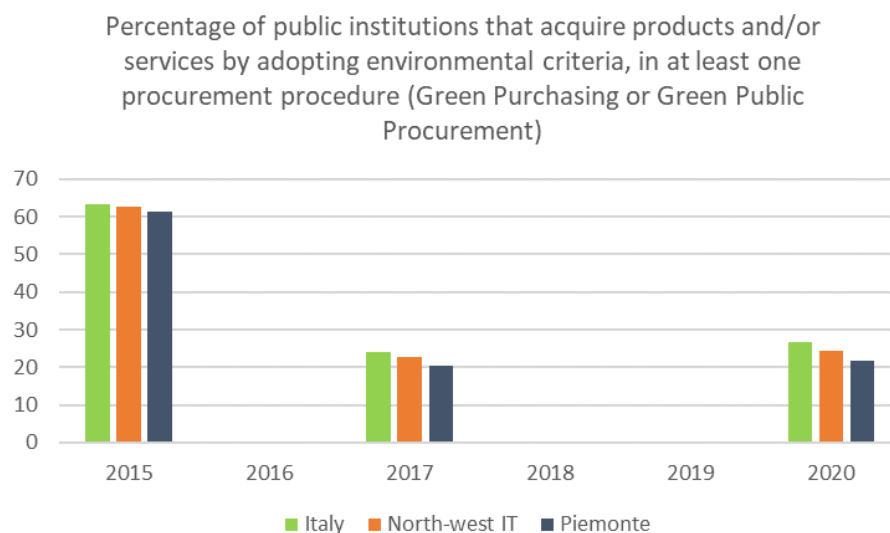
Table 198 - Percentage of public institutions that acquire products and/or services by adopting environmental criteria

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Percentage of public institutions that acquire products and/or services by adopting environmental criteria	Official	Italian regions	2020	ISTAT, Regional Statics	Percentage	2015, 2017, 2020	-

Source: author's own elaboration from Istat, Regional Statics Database

⁽¹⁸⁾ EMAS

Figure 110 - Percentage of public institutions that acquire products and/or services by adopting environmental criteria, in at least one procurement procedure (Green Purchasing or Green Public Procurement)



Source: author's own elaboration from Istat, Regional Statics Database

The percentage of **public institutions that acquire products and/or services by adopting environmental criteria, in at least one procurement procedure** (Green Purchasing or Green Public Procurement) in Piemonte was **21.8%** in 2020, down sharply from the 2015 value of 61.3%.

The trend is also negative for the Italian average: 63% in 2015 and 26.7% in 2020; and for the North-Western regions: 62.6% in 2015 and 26.7% in 2020.

SDG Target 12.b DEVELOP AND IMPLEMENT TOOLS TO MONITOR SUSTAINABLE TOURISM

Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

Indicator: **Incidence of tourism on waste**

Table 199 - Incidence of tourism on waste

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Incidence of tourism on waste	Official	Italian regions (NUTS 2)	2020	ISTAT from ISPRA data	Rate (Kg per inhabitants equivalent)	2006-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

Figure 111 - Incidence of tourism on waste



Source: author's own elaboration from Istat, Regional Statics Database, from ISPRA data

The **incidence of tourism on waste** is a big problem in the tourist areas, in Piemonte especially in the mountains, in ski areas.

In general, the incidence in Piemonte is better than in the rest of Italy. In 2020 in Italy the rate was 4.7 Kg per inhabitants equivalent, in Piemonte **2.1**.

This value is very low, but it is a consequence of the Covid-19 pandemia that stopped tourism. In general, in the pre-pandemic years, the values were between 3 and 4.7 (2018 and 2019) in Piemonte and between 8 and 9.7 (2019) in Italy.

SDG Target 12.b DEVELOP AND IMPLEMENT TOOLS TO MONITOR SUSTAINABLE TOURISM

Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

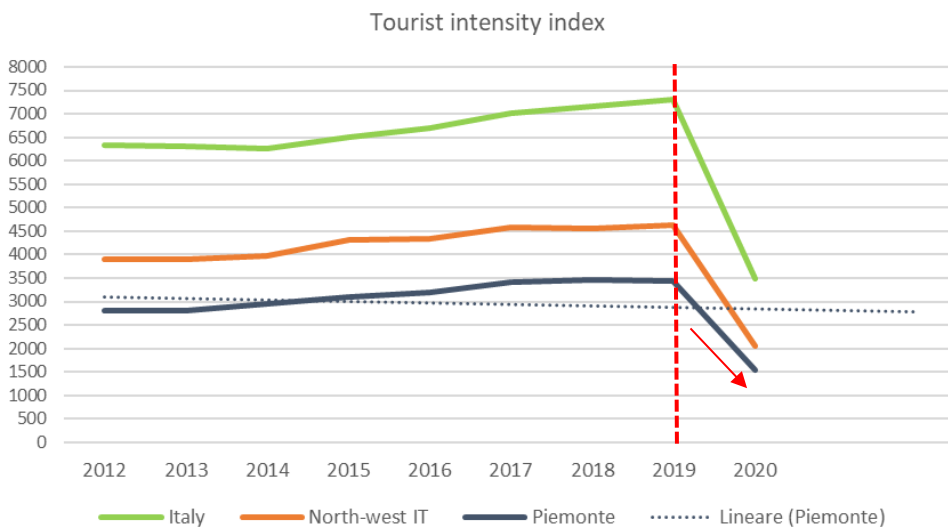
Indicator: **Tourist intensity index**

Table 200 - Tourist intensity index

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Tourist intensity index	Official	Italian regions	2020	ISTAT, Regional Statics	Rate (per 1000 Inhabitants)	2007; 2012-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 112 - Tourist intensity index



Source: author's own elaboration from Istat, Regional Statics Database

Piemonte has many tourist cities/areas with different types of tourism (e.g. there is a cultural tourism in Turin and in other historical cities; a tourism linked to the landscape and typical products, e.g. in the vineyard or lake areas, etc; hiking tourism in the mountains, etc.). However, the **intensity of tourism** is quite low compared to other North-Western regions and the Italian average.

The rate of tourist intensity index, in Piemonte, was between 2,800 and 3,500 per 1,000 Inhabitants between 2012 and 2019 (in the Italian average was between 6,300-7,300). In 2020 with the Covid pandemic the rate dropped to **1,539**, as in the rest of Italy (3,500 in the Italian average).

SDG Target 12.b DEVELOP AND IMPLEMENT TOOLS TO MONITOR SUSTAINABLE TOURISM

Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

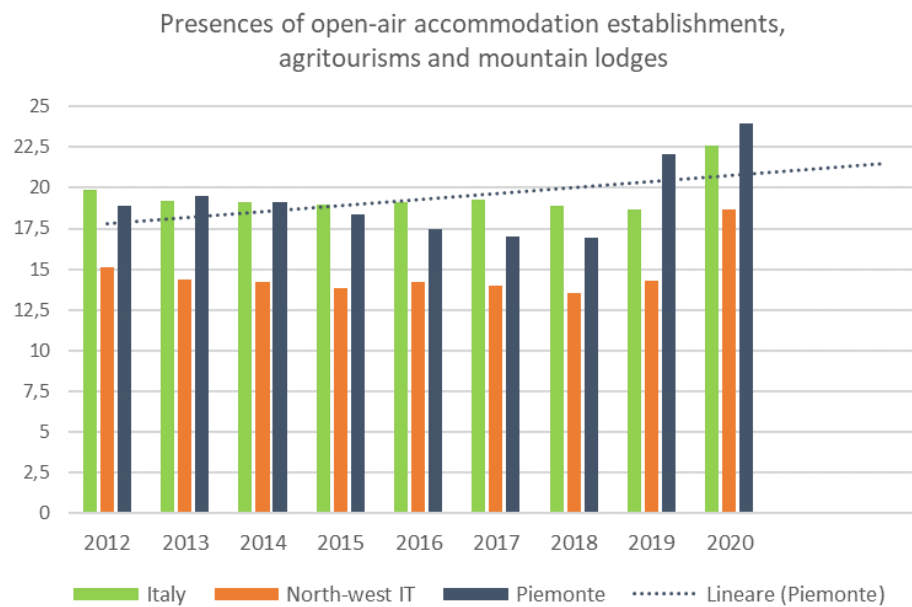
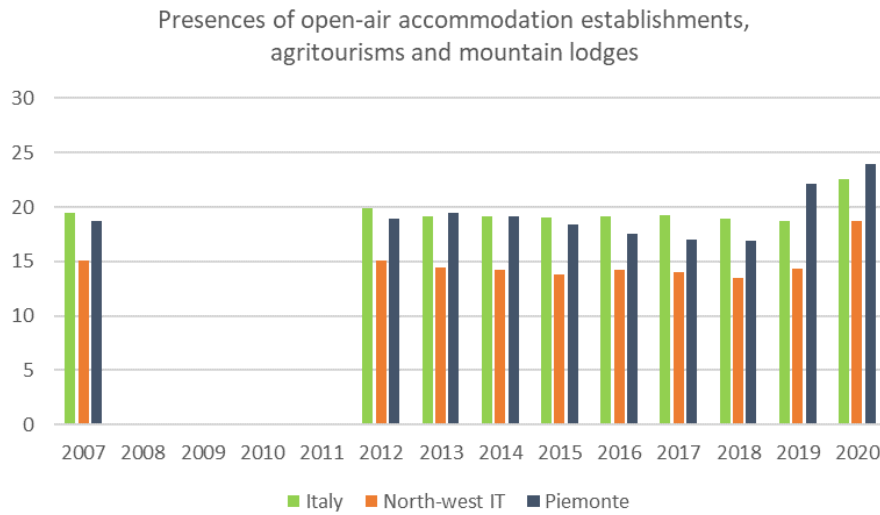
Indicator: **Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments**

Table 201 - Presences of open-air accommodation establishments, agritourisms and mountain lodges

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
12	Presences of open-air accommodation establishments, agritourisms and mountain lodges	Official	Italian regions	2020	ISTAT, Regional Statics	Percentage	2007; 2012-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 113 - Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments



Source: author's own elaboration from Istat, Regional Statics Database

Despite the pandemic, **presences of open-air accommodation establishments, agritourisms and mountain lodges** in Piemonte has increased in recent years. After a decline between 2015 and 2018 (17%), there has been a recovery and values have risen to **24% in 2020**, better than in the rest of Italy (average of 22.6%) and in the North-Western regions (18.7% in 2020).

3.3.13 SDG 13 - TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

SDG	13
Number of additional indicators (regional level)	2

SDG Target 13.1 STRENGTHEN RESILIENCE AND ADAPTIVE CAPACITY TO CLIMATE RELATED DISASTERS

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

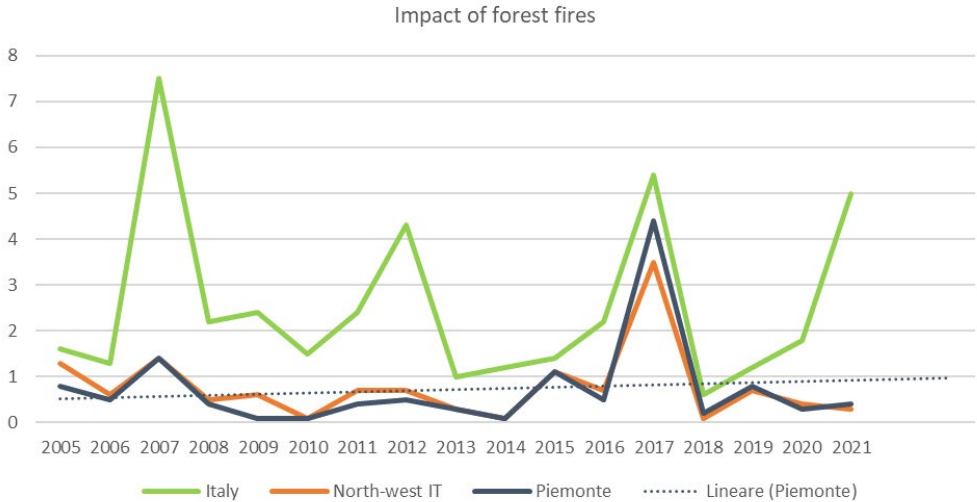
Indicator: Impact of forest fires

Table 202 - Impact of forest fires

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	Impact of forest fires	Official	Italian regions	2021	ISTAT, Regional Statics	Rate (per 1.000 km2)	2005-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

Figure 114 - Impact of forest fires



Source: author's own elaboration from Istat, Regional Statics Database

The **impact of forest fires** is a great criticality in Italy and continues to increase in recent years. There have been particular periods, such as 2007 (the worst year), 2012, 2017 and 2021.

In Piemonte and in the other North-Western regions, this is also a problem: the rate is better than in the rest of Italy, however the trend shows a slight increase in the coming years.

In general, in Piemonte the worst year was 2019 with a rate of 4.4, in general between 2005 and 2021 the values were between 0.1 and 0.8. The latest rate was **0.4 in 2021**.

SDG Target 13.1 STRENGTHEN RESILIENCE AND ADAPTIVE CAPACITY TO CLIMATE RELATED DISASTERS

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Indicator: **Population residing in flood and landslide hazard areas per km2**

Table 203 - Population residing in flood and landslide hazard areas per km2

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
13	Population residing in flood and landslide hazard areas per km2	Official	Italian regions	2020	ISTAT, Regional Statics	Rate (inhabitants per km2)	2015, 2017, 2020	-

Source: author’s own elaboration from Istat, Regional Statics Database

Figure 115 - Population residing in flood and landslide hazard areas per km2



Source: author’s own elaboration from Istat, Regional Statics Database

In Chapter 2 (figure 9), we considered the percentage of population exposed to the risk of floods and landslides in relation to the target 1.5 (exposure to vulnerability). In this case, the indicator measures the rate of population

living in areas at risk of floods and landslides per km². It is similar to the other, but in this way we can also assess the risk for inhabitants in relation to the areas in which they live. In Piemonte in 2020 the rate of population living in areas at risk was: **8.42 inhabitants per km²** in areas at risk of **flood** (22.6 in Italy) and **3.25** in areas at risk of **landslide** (4.32 in Italy).

3.3.14 SDG 15 - PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SDG	15
Number of additional indicators (regional level)	1

SDG Target 15.4 ENSURE CONSERVATION OF MOUNTAIN ECOSYSTEMS

By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

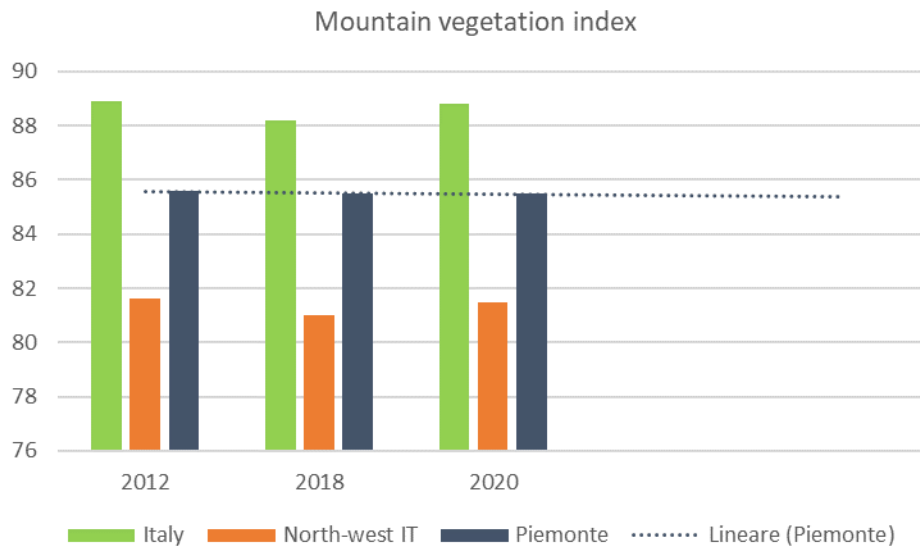
Indicator: **Mountain vegetation index**

Table 204 - Mountain vegetation index

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
15	Mountain vegetation index	Official	Italian regions	2020	ISTAT from ISPRA data	Percentage	2012, 2018, 2020	-

Source: author’s own elaboration from Istat, Regional Statics Database

Figure 116 - Mountain vegetation index



Source: author's own elaboration from Istat, Regional Statics Database

Piemonte is a region with about 50% of mountain territory. This is why measuring the mountain vegetation index is very interesting, both from an environmental and economic point of view (e.g. in terms of sustainable development of the forest-wood chain; energy produced from biomass, etc.). The region has worked and is working on the elaboration and implementation of a **Strategy for the Sustainable Development of Piemonte's mountains** (approved in February 2023) ⁽¹⁹⁾ and one of the objectives of the Strategy is the enhancement of the natural and forestry resources of the mountains, in environmental and socio-economic terms. In relation to the analysed data (from ISPRA) in Piemonte the percentage of **mountain vegetation** was **85.5% in 2020** (stable value between 2012 and 2020). In Italy, the index was very high, 88.8%; 81.5% in the average of the North-Western regions.

⁽¹⁹⁾ Strategy for the Sustainable Development of Piemonte's mountains

3.3.15 SDG 16 - PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SDG	16
Number of additional indicators (regional level)	4

SDG Target 16.1 REDUCE ALL FORMS OF VIOLENCE

Significantly reduce all forms of violence and related death rates everywhere

Indicator: **Intentional homicide rate**

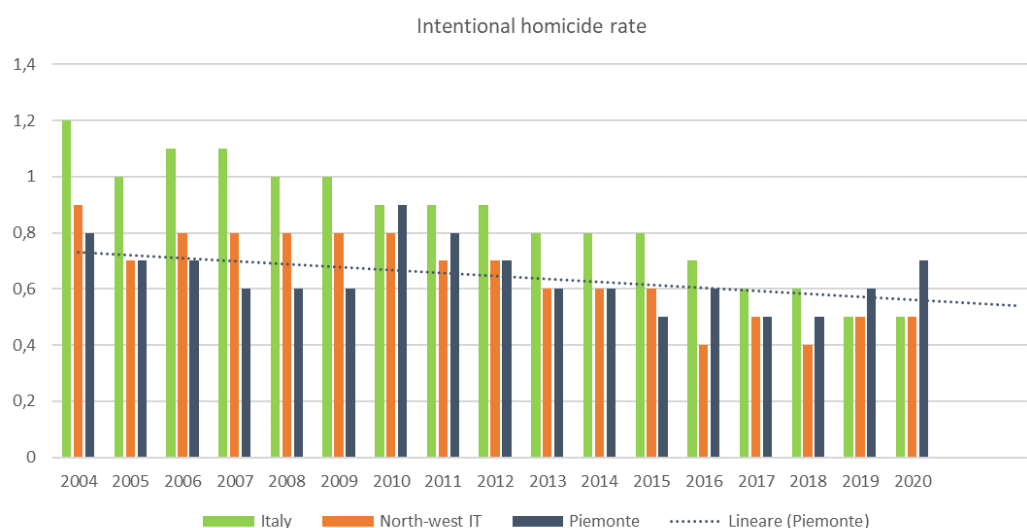


Table 205 - Intentional homicide rate

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Intentional homicide rate	Official	Italian regions	2020	ISTAT from data of the Ministry of the Interior	Rate (per 100,000 inhabitants)	2004-2020	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of the Interior

Figure 117 - Intentional homicide rate



Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of the Interior

The **intentional homicide rate** in Piemonte is the highest compared to the rest of Italy. The rate in 2020 was **0.7 per 100,000 inhabitants**; in Italy and in the average of the North-Western regions was 0.5.

In Piemonte, the highest value was recorded in 2010, 0.9, the same value as the Italian average, but after this year the rate decreased; only in 2020 the value increased again.

SDG Target 16.3 RULE OF LAW AND EQUAL ACCESS TO JUSTICE

Promote the rule of law at the national and international levels and ensure equal access to justice for all

Indicator: **Prisoners waiting for first judgment as a percentage of the total number of adult prisoners**

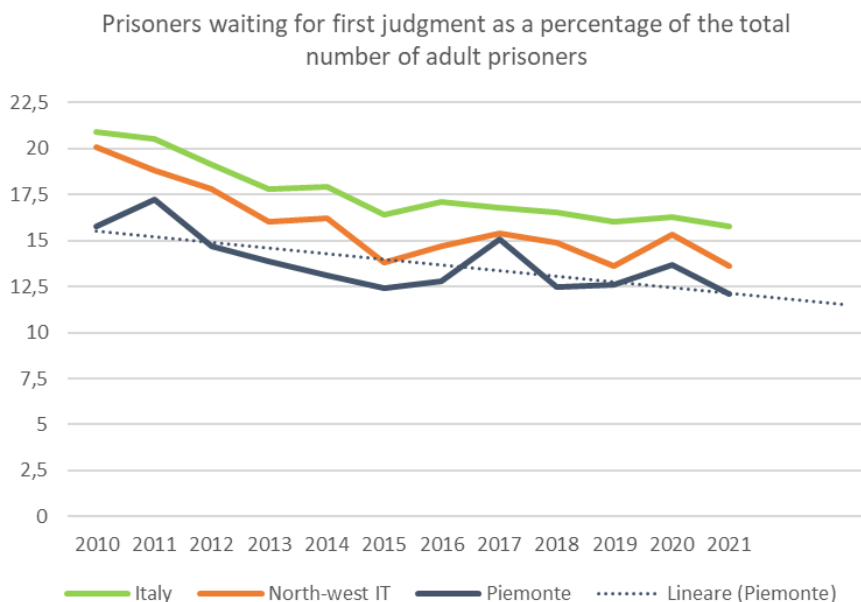


Table 206 - Unsented detainees as a proportion of overall prison population

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Unsented detainees as a proportion of overall prison population	Official	Italian regions (NUTS 2)	2021	ISTAT from data of the Ministry of Justice – Dep. of prison administration	Percentage	2010-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of Justice –Dep. of prison administration

Figure 118 - Prisoners waiting for first judgment as a percentage of the total number of adult prisoners



In Piemonte, **prisoners waiting for first judgment** were **12%**, in 2021, as a percentage of the total number of adult prisoners, better than the Italian average (15.8%) and in the North-Western regions (13.6).

In general, the regional trend is positive and follows the national trend, continuing to decline in coming years.

Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of Justice –Dep. of prison administration

SDG Target 16.3 RULE OF LAW AND EQUAL ACCESS TO JUSTICE

Promote the rule of law at the national and international levels and ensure equal access to justice for all



Indicator: **Correctional institution crowding**

Table 207 - Correctional institution crowding

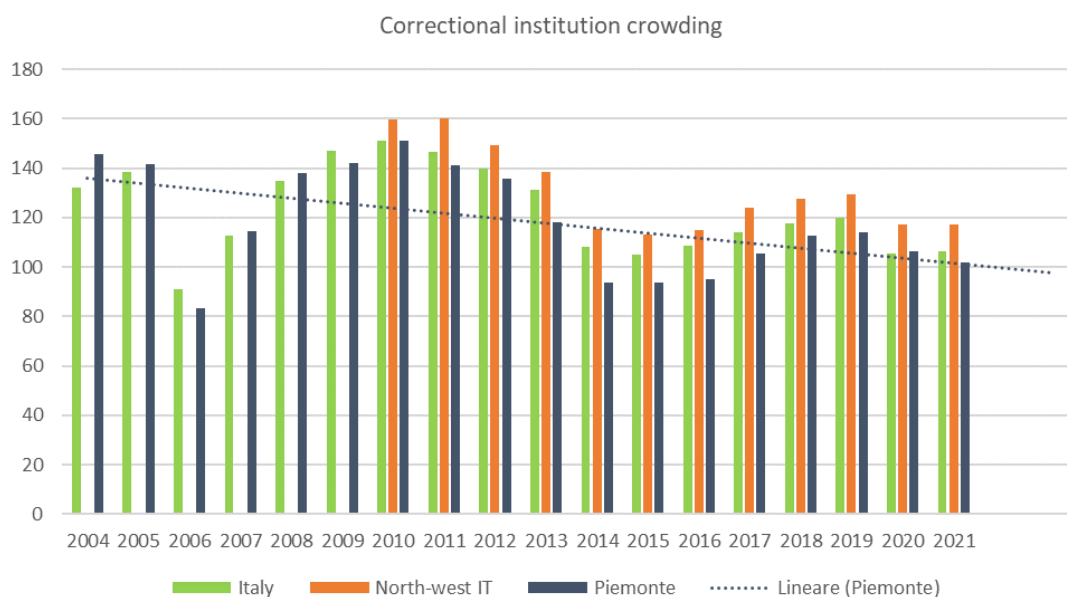
SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Correctional institution crowding	Official	Italian regions	2021	ISTAT, Regional Statics	Percentage	2004-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database

With regard to the percentage of **correctional institution crowding**, the trend in Piemonte is better than in the rest of the other North-Western regions and also compared to the national average.

The period between 2010 and 2013 was the worst at the nation level, in general. After an improvement in the two-year period, 2014-2016, the values went up again. However, the trend seems to remain positive (decrease in the next few years).

Figure 119 - Correctional institution crowding



Source: author's own elaboration from Istat, Regional Statics Database

SDG Target 16.6 EFFECTIVE INSTITUTIONS

Develop effective, accountable and transparent institutions at all levels

Indicator: **Length of civil proceedings**

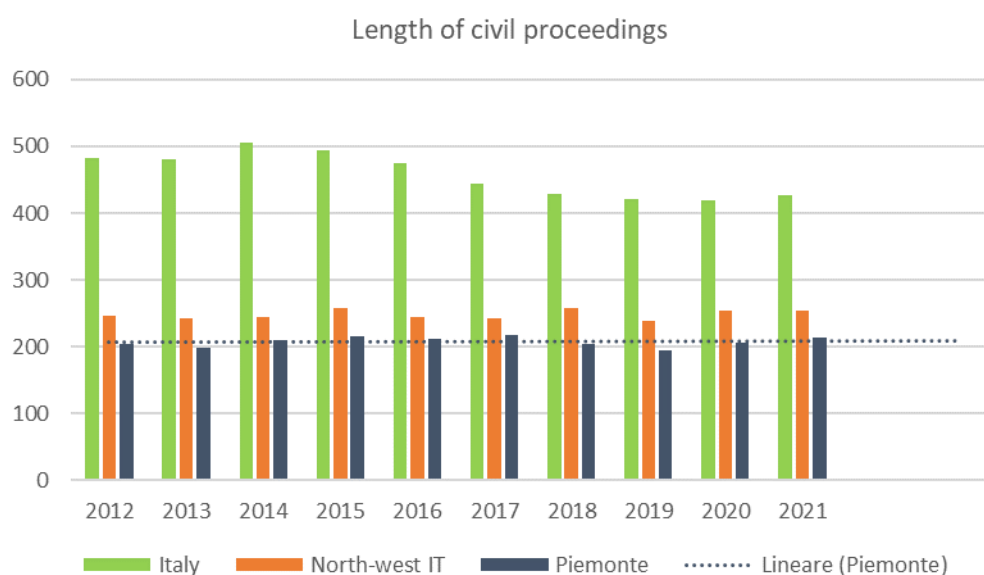


Table 208 - Length of civil proceedings

SDG	Indicator name	Type	Coverage	Year of availability	Source	Unit of measurement	Time coverage	Frequency
16	Length of civil proceedings	Official	Italian regions	2021	ISTAT from data of the Ministry of Justice – Dep. Judicial organization	Number (of days)	2012-2021	Annual

Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of Justice – Dep. Judicial organization

Figure 120 - Length of civil proceedings



Source: author's own elaboration from Istat, Regional Statics Database, from data of the Ministry of Justice – Dep. Judicial organization

The duration of civil proceedings was **213 days** in 2021 in Piemonte; high but better than the Italian average, 426 days. In general, in Piemonte the trend is stable between 195-215 days.

Box 5 – Statistical synthesis of the analysed additional indicators at the Piemonte regional level

Out of these 45 additional indicators, 44 indicators are supported by historical series. For time series where available data are prior to 2000, trend analyses consider only data from 2000 onwards.

Out of these 44 trends (excluding 'Wetlands of international importance'):

for **21** indicators the trend is positive

for **17** the trend is negative

for **6** the trend is (approximately) stable

for **9** the trend is (approximately) stable

Annex 1 – table 230 - Statistical synthesis of the analysed additional indicators at the Piemonte regional level: positive, negative or stable trend

Annex 1 – table 231- Synthesis of the analysed additional indicators at the Piemonte regional level, at the last year of analysis, in relation to the Italian/North-West Italy regions average and the Target to 2030/2050 (where possible)

4. CHALLENGES IN DATA AVAILABILITY AND COLLECTION

CRITICAL ISSUES FOUND - IN RELATION TO THE ANALYSES IN CHAPTER 2:

- Current difficulties in **describing the performance** of indicators at the regional level **without a benchmarking analysis** allowing to consider and evaluate (possible) gaps between Piemonte Region's results and the national average or other European regions. However, comparison with the results of the other 9 pilot regions of the "Regions2030 project" will be useful for future in-depth analysis

- 8 Indicators are not available or not fit for purpose at the regional level for Piemonte
4 Indicators are **not available** at the regional level for Piemonte (only at the national level or NUTS1):
 - Inactive population rate due to caregiving responsibilities - target 5.4 (unpaid work)
 - People affected by energy poverty - target 7.1 (access to energy)
 - Food waste – target 12.3 (reduce food waste)
 - Official Development Assistance – target 17.2 (development assistance commitments)

4 Indicators are **not measurable** for Piemonte, because they are not realistic for Piemonte, in particular in relation to:

SDG 7 – Electricity production that comes from nuclear power – target 7.2 (share of renewable energy) - is not measurable for Piemonte, because in Italy we don't have nuclear power

SDG 14 – Protected coastal area as a percentage of total coastal area – target 14.5 (coastal and marine areas) and Coastal areas with good/very good water quality - target 14.5 (coastal and marine areas) -

not measurable for Piemonte if are considered only environmental indicator; the best scenario, in the case, for Piemonte, can be measured SGS 14 in relation to economic aspects, in order to measure the economic benefits generated by the proximity to the port of Genova (Liguria region, in the south of Piemonte), but we don't have data.

- Particular case: SDG 6 - SDG Target 6.3 WATER QUALITY

Groundwater that exceed a standardized quality rating

At the regional level, ARPA Piemonte (Regional Environmental Protection Agency) monitors groundwater quality status and assigns a standardized overall quality score (e.g. good, sufficient, poor quality). There are many data, but these are available for individual stream and for individual type of pollutant parameters; there isn't a total quantitative data, but only a qualitative classification.

- Particular case: SDG 12 - SDG Target 12.2 MANAGEMENT OF NATURAL RESOURCES

Carbon footprint

Seeing the Flanders study, they consider the difference in **Co2 equivalent emissions per capita** over the years to measure carbon footprint. In the case of Piemonte, we have considered the same indicators, using the Co2 eq data, and measured it per capita. The problem is that we don't have the time series at the regional level, the available datum is very old and, and in particular, we don't know whether this indicator considers the

different sources of emissions and if the emissions are generated by production and/or consumption, in relation to the different types of emission sources (urban use, industrial production, etc.)

- Particular case: SDG 17 - SDG Target 11.12 IMPORTS FROM LEAST DEVELOPED COUNTRIES

Imports from developing countries

In this case, at the regional level, we have data of export and import but they are not aggregated by developing countries, the datum should be deduced from the aggregation of the individual Country data.

- Some available indicators are **old** (e.g., last year available 2007 / 2017)

Table 209 - Old indicators

SDG	Indicator name	Coverage	Year of availability
2	Organic farming: areas with different crops	EU-27 plus others	2007
5	Fatal victims of gender-based violence at the hands of their partners or expartners	Italian regions	2014
6	Percentage of water bodies achieving the ecological quality objective	Italian regions (NUTS 2)	2015
8	Firm creation Birth rate (in % of employer firms - same sector, same size class)	OECD countries and other European countries	2017
9	Patent applications to the EPO	EU-27 plus others	2012
10	Gini index of disposable income (after taxes and transfers)	OECD countries and other European countries	2013
11	Share of Housing Cost (in % of household disposable income)	OECD countries and other European countries	2015
12	CO2 equ per capite	Piemonte Region	2015
15	Estimated soil erosion (Agricultural areas and natural grassland)	EU-27	2016
15	Forest area over total surface area	Italian regions	2015
16	Transparency index	Italian regions	2013
17	PCT co-patent applications that are done with foreign regions	OECD countries and other European countries	2015

Source: author's own elaboration

when possible, the indicator has been replaced with a “proxy”, to use more recent and up-to-date data, as in the following example:

Table 210 - Share of utilised agricultural area (UAA) cultivated with organic crops - proxy indicator

SDG	Indicator name	Type	Coverage	Availability	Year of availability	Source	Unit of measurement	Time coverage	Frequency
2	Organic farming: utilised agricultural area with different crops	Official	EU-27 plus others	available (rl)	2007	Eurostat, Regional Statistics	Number (ha)	2000-2007	Triannual
2	Share of utilised agricultural area (UAA) cultivated with organic crops	Official	Italian regions	Proxy available (rl)	2021	Ministry of Agriculture, Food and Forestry; Istat, Regional Statistics	Number (ha)	2010-2021	Annual

Source: author's own elaboration

- Some indicators are not supported by **historical series** (only one year available), so we can't analyse and evaluate the trends and the dynamics over the years

Table 211 - Indicators not supported by historical series

SDG	Indicator name	Time coverage
5	Fatal victims of gender-based violence at the hands of their partners or expartners	2014
5	Female achievement/disadvantage index	2021
6	Percentage of water bodies achieving the ecological quality objective	2015
10	Gini index of disposable income (after taxes and transfers)	2013
11	Land use	2020
12	Carbon footprint - CO2 equ per capite	2015
16	Transparency index	2013

Source: author's own elaboration

- SDG targets not fully covered (52 by JRC; 47 by Piemonte Region)
- Heterogeneity in number of indicators per SDG

SOME ISSUES IN RELATION TO THE **ANALYSES IN CHAPTER 3** (proposal additional indicators):

- **No additional indicators for the 14 and 17 SDGs**
- **SDG targets not fully covered**
- **Historical data series available from 2000** onwards (not before)
- For some indicators, the latest available data are stationary to 2018 or 2019

Table 212 - Indicators with the latest available data stationary to 2018 or 2019

SDG	Additional indicators	Time coverage
4	High digital skills	2015, 2016, 2019
6	Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use	2005-2018
	Wetlands of international importance	2013, 2018
8	Share of employed persons not in regular occupation	2000-2019
9	Value added of small manufacturing enterprises on total manufacturing value added	2015-2019
12	Domestic material consumption per capita	2015-2018
	Domestic material consumption per GDP	2015-2018

Source: author's own elaboration

Finally, other challenges to consider:

— Data-related capacities

- Ability and capacity to **understand the motivations of the trends**, in particular for **the negative trends**, and **interpret data**: from data to information to knowledge
- It is not possible to provide an **evaluation of sustainability**, from individual indicators

5. RECOMMENDATIONS TOWARDS THE DEVELOPMENT OF AN EU-WIDE REGIONAL INDICATOR SET FOR MONITORING THE SDGS

— General suggestions:

About indicators and data analysis

- It is important to compare data at the regional level with the national average and with other similar regions (European or national - such as regions in Northern Italy in the case of Piemonte), in order to analyse the results in the relevant **benchmark** and to be able to evaluate trends in relation to other regional realities.
- Where it is possible, it would be ideal to compare regional data with **European targets by 2030 and 2050** (e.g., in the *European Green Deal*) to assess the gap between the regional data (at the last available years) and the target to be achieved at 2030/2050.
- Where possible, it would be more useful to choose indicators that are **up-to-date**, with **historical series** and **disaggregated data** (by gender, age, territory, etc.)
- If there is a Regional Sustainable Development Strategy is better to maintain **coherence with the regional monitoring system** (in particular for the proposal of additional indicators) in order to reflect the regional needs and the regional sustainable development goals

How to read sustainability in relation to the **balance between economic, social and environmental dimensions**?

From the reading of the individual indicators it is not possible to give an evaluation of sustainability, because each indicator enters into relation to, or can be influenced by, several phenomena (social, economic, or environmental). If we want to read data on sustainability in relation to a phenomenon such as, for example, organic agriculture, we will also have to take in consideration data on agricultural employment; data on education and training; technological and social innovation; energy; water quality; etc.

In the same way that if one wants to evaluate a policy, a plan, a strategy, one would need to be able to understand how the goals of one policy (e.g., energy policy), relate to those of another sustainability policy (e.g., sustainable rural development). Reading sustainability is a very complex task, and arguably the key to doing so is to assess policy coherence.

— **Specific suggestions** (in relation to specific indicators, SDGs or SDG targets...):

Figure 121 - SDG 17



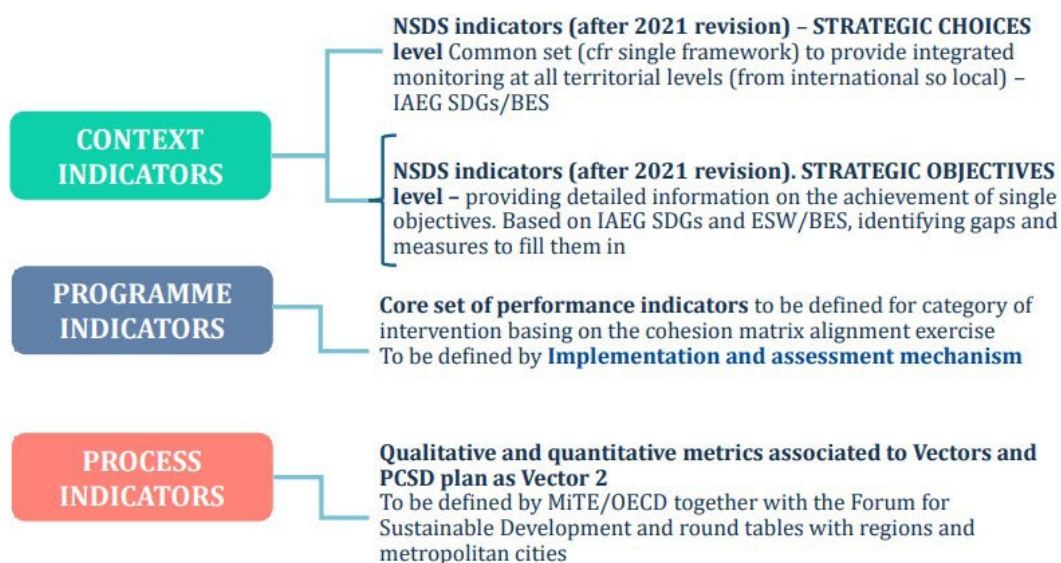
Source: 2030 Agenda

How to enhance and measure policy coherence?

In relation to SDG 17 and in particular to the SDG target **17.14 Enhance policy coherence for sustainable development** (indicator: Number of countries with mechanisms in place to enhance policy coherence for sustainable development), Piemonte Region (in coherence with the Ministry of Environment in Italy) is working on expanding its set of indicators in order to be able to consolidate an integrated monitoring system that, in line with the dashboard provided by the National Action Plan - Policy Coherence for Sustainable Development (*PAN PCSD*)⁽²⁰⁾, allows for the identification of **process and programme indicators** in addition to context indicators.

Figure 122 - Sustainable dashboard for the national monitoring system of NSDS

SUSTAINABILITY DASHBOARD



Source: MASE Italy⁽²¹⁾

⁽²⁰⁾ <https://www.mase.gov.it/pagina/il-piano-d-azione-nazionale-e-il-ruolo-dei-vettori-di-sostenibilita-la-coerenza-delle>

⁽²¹⁾ <https://www.mase.gov.it/pagina/il-piano-d-azione-nazionale-e-il-ruolo-dei-vettori-di-sostenibilita-la-coerenza-delle>

https://www.mase.gov.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/SNSvS_eventi/workshop_16122021_cossu1.pdf

This work is in coherence with the **OECD Recommendation on Policy Coherence for Sustainable Development** ⁽²²⁾:

A comprehensive standard to support policymakers in achieving the 2030 Agenda

Implementing the Sustainable Development Goals (SDGs) as an integrated and coherent set represents a major challenge to all countries. Addressing interactions between economic, social and environmental goals in a balanced manner, while avoiding negative effects on the wellbeing of people here and now, elsewhere and later, has been recognised by many countries as one of the most difficult challenges to implementing the SDGs.

The OECD Recommendation on Policy Coherence for Sustainable Development (PCSD) is the culmination of more than 20 years of lessons learnt in promoting policy coherence. As a joint proposal from the Development Assistance Committee (DAC) and the Public Governance Committee (PGC), the Recommendation draws on the DAC peer reviews as well as on country experiences in the PGC. It responds to the growing demand by OECD Members and non-Members to deal with the “how” of coherent 2030 Agenda implementation.

The Recommendation presents a set of eight principles for promoting PCSD, which are organised under three main pillars. It calls on Adherents to develop:

- *A strategic vision for implementing the 2030 Agenda underpinned by a clear political commitment and leadership to enhance policy coherence for sustainable development.*
- *Effective and inclusive institutional and governance mechanisms to address policy interactions across sectors and align actions between levels of government.*
- *A set of responsive and adaptive tools to anticipate, assess and address domestic, transboundary and long-term impacts of policies.*

The process for defining the methodology for analyzing process and programme indicators is currently being defined. The Piemonte Region will engage in discussions with the Ministry (MATE) and the OECD to gather useful suggestions and guidance to explore this issue further and define ways to integrate these types of indicators into the monitoring system at the regional scale.

The Piemonte Region intends to deepen/explore these methodologies and give suggestions to the JRC and the other pilot regions involved in the Regions2030 project for the implementation of the monitoring system at the European level (in coordination with the OECD).

⁽²²⁾ <https://www.oecd.org/gov/pcsd/oecd-recommendation-on-policy-coherence-for-sustainable-development.htm>

— **Useful indicators** for Piemonte Region (but also for other European regions):

Incidence of the elderly population (SDG 1): this is a relevant aspect for Piemonte (and other Italian regions), because the percentage of elderly population has increased over the years and continues to increase. This means: a rise in the demand for services and care for the elderly, etc.; a decline in the number of births and a decrease in the young and active population and workforce, etc... The phenomenon commonly referred to as the "demographic trap". This indicator could be useful in relation to different targets; therefore, we point to it as a useful indicator for analyses and for commenting on results, but not specifically related to any one SDG target.

Mental health index (SDG 3): the rate of people with mental health problems is another critical issue in Piemonte (among children, young people, and adults). This is one of the priority of the Piemonte's healthcare system, because the percentage of individuals with mental health issues has escalated during the last years and in particular during and after the Covid-19 pandemic ⁽²³⁾.

Distribution of Telemedicine initiatives (SDG 3): in Piemonte, the Covid-19 pandemic was a driving factor in the process of digitisation of services, particularly in the field of health, accelerating their development and spread. The regional Resolution No. 6-1613 of 3 July 2020, '*First activation of outpatient specialist health services that can be delivered remotely (Tele-medical examination)*', constituted a turning point in this sense, as it allowed telemedicine (TM) to fully enter the regional health system. IRES Piemonte, with the support of the Health and Welfare Directorate of the Piemonte region and in collaboration with SEPI (supra-zonal epidemiology service of ASL TO3) conducted a study showing the evolution of TM in Piemonte following this Resolution ⁽²⁴⁾.

Quality of the Education and Training system (SDGs 4 and 8): at the regional level we have indicators about education levels but not for monitoring the quality of the system, in relation to the production system and the demand for skills or new professions, crucial factors in the current economic landscape. It is crucial that the teachers are well-trained and equipped with the necessary tools to deliver high-quality education. Additionally, we must continuously evaluate and improve the education and training system to keep up with the ever-changing demands of the world, to produce competent and successful individuals who can contribute positively to society.

Youth employment: young people who find jobs in their home region, home country or another country abroad (SDG 8): in Italy, in general, the rate of young people is steadily decreasing and the old-age index, on the contrary, is rising. The monitoring of youth employment is very important in relation to how many young people find jobs in their home region, how many find jobs in other regions, and, most importantly, how many find employment in another country (this is a particularly common phenomenon among young Italians who decide to move abroad to find work or because they have found work in another country, especially for recent graduates).

Energy poverty (SDG 7): reduce the percentage of people affected by energy poverty is a priority of the Regional Sustainable Development Strategy but we haven't indicators at the regional level for monitoring this aspect.

Sustainable tourism (SDG 11): use indicators to measure the impacts of tourism on the environment, in relation to socio-economic dynamics and evaluate if the current model of tourism is sustainable; indicators to measure new forms of sustainable tourism (outdoor tourism, soft tourism, slow tourism,...). For Piemonte, this is a crucial aspect because the region is 50% mountainous and a large part of tourism involves mountainous

⁽²³⁾ Data from the Piemonte Health Observatory

⁽²⁴⁾ Data from the Piemonte Health Observatory

areas, but it is predominantly ski-tourism, not very sustainable, with a strong impact on the environment (e.g. high water and energy consumption for artificial snowmaking, increased waste production, air pollution,...).

Food waste (SDG 12): reduce food waste is also a priority of the Regional Sustainable Development Strategy but we haven't indicators at the regional level for monitoring this phenomenon.

Recycling/reusing of waste (SDG 12): at the regional level there are several indicators on waste (e.g., urban waste or special waste production,...) or Indicators for differentiated waste collection and waste that ultimately ends up in landfills, etc... but there are no indicators to monitor how much is recycled or reused by type of waste (such as plastic, glass, paper, textile, waste from electrical and electronic equipment, etc.).

Number of countries with mechanisms in place to enhance policy coherence for sustainable development (SDG 17)

— **Useful indicators** to cover other SDG Targets:

At the national level in Italy, other indicators have been selected in Istat's dashboard for monitoring the SDGs. These are available at the regional level (for the Italian regions) and could be useful for monitoring other SDG targets.

Table 213 - Proposal of other possible additional indicators to cover other SDG Targets, useful at the regional level

SDG	Indicator name	New SDG targets covered	Time coverage
3	Alcohol consumption per capita	3.5 (prevent and treat substance abuse)	2017-2021
3	Number of deaths in traffic accidents	3.6 (reduce road injuries and deaths)	2004-2021
3	Demand for contraception met by modern methods during the past 12 months	3.7 (access to sexual and reproductive care)	2013,2019
3	Standardized mortality rate for accidental poisoning - per 100,000 population	3.9 (reduce illnesses and death from hazardous chemicals)	2004-2019
3	Tobacco use relative to persons 15 years of age and older, standardized by age	3.a (implement the who framework convention on tobacco control)	2005-2021
5	Voluntary abortion rate of women aged 15-49 years per 1,000 women	5.6 (universal access to reproductive health and rights)	2005-2020
8	Domestic material consumption per capita	8.4 (improve resource efficiency in consumption and production)	2015-2018
10	Share of long-term permits	10.7 (responsible and well-managed migration policies)	2012-2021
12	Special hazardous waste sent for disposal operations	12.4 (responsible management of chemicals and waste)	2014-2020
12	Special hazardous waste sent to recovery operations	12.4 (responsible management of chemicals and waste)	2014-2020
13	Concern about climate change	13.3 (build knowledge and capacity to meet climate change)	2012-2021
17	Remittances from immigrants in Italy to foreign country	17.3 (mobilize financial resources for developing countries)	2005-2021

Source: author's own elaboration

6. CONCLUSIONS

Participation in the Regions2030 pilot project was a valuable opportunity for the Piemonte Region to deepen studies and advance knowledge useful for implementing and structuring its SDGs monitoring system at the regional level. This experience is part of a path initiated by the Region in 2018, the year it started developing the Regional Strategy for Sustainable Development of Piemonte (RSDS), in coherence with the national process (set in the National Strategy for Sustainable Development - NSDS), in relation to and implementation of the sustainability goals dictated by the 2030 Agenda. The development of a SDGs monitoring system at the regional level, therefore, starts in parallel with the preparation of the Strategy and is powered over the years (including through building collaborations between the Region and its Observatories, with IRES and ARPA Piemonte, and with the Ministry - MASE, which is working on the setting up of an integrated monitoring system at the national level with the Italian regions). To date, thanks to the experience gained over time and, among the most recent, the participation in the project with the JRC, the Piemonte Region is working on the construction of the *Centre for the Sustainable Development of Piemonte*, a knowledge tool to support the elaboration and monitoring of policy coherence that, among its various functions and activities, will also deal with the monitoring of the SDGs at the regional level. The Centre's monitoring system will take into account the knowledge produced at the regional level, in relation to the monitoring of the Regional Strategy, but will refer to the national monitoring system and the results of the Regions 2030 European project in order to structure and consolidate a set of indicators that are useful and available at the regional level and, at the same time, consistent with the demands of the national and European levels.

An added value of the participation into this EU project, is certainly the empowerment in building a monitoring system for the territorialization of the SDGs at the local level. Such a system needs to be well-structured, shared at different scales (from the European scale, to the regional scale), resulting from a comparison among European regions, in order to be able to compare with other realities which can be very different from the Piemonte's one.

The indicator set identified as a result of the project, consists of 120 indicators (out of these, 45 are derived from the Piemonte Region proposal), covering 68 SDG Targets. Despite some critical issues found, e.g., with respect to data availability at the regional level, in general this set of indicators is appropriate to describe some of the dynamics of Piemonte in relation to the 16 Goals (Goal 14 is excluded because Piemonte is an inland region, with no marine coastline) and see some critical issues from a socio-economic and environmental perspective, also in relation to some European targets at 2030 and 2050, where Available. Many of the issues raised are addressed in the RSDS -as well as in other strategies (e.g., Climate Change Strategy, Smart Specialization Strategy) or regional plans (waste, mobility, energy and environmental plan, etc.). However, monitoring is useful if it can be updated, including to assess whether, as a result of regional interventions (policies, strategies, plans), improvements in trends are seen or not. In any case, it should be emphasized that what has been discussed so far is a context monitoring, built on some indicators which can be considered as "sentinel" indicators, useful to describe the context (in this case, regional) with respect to some analysed phenomena and their trend over time, in relation to the SDG targets. This type of analysis is very useful to see and study positive trends, potentials, or criticalities; it represents a useful reference scenario to identify critical problems in need of a solution and criticalities to be addressed at the regional level.

However, from this set of indicators we do not get to assess the progress and/or achievement of the SDGs, and thus the "degree of sustainability" of the region (whether it is sustainable, how sustainable it is) according to an integrated reading from an environmental, economic, or social perspective. We called these indicators "sentinels" because from considering them it is possible to speculate and understand what factors - economic, social, and environmental - are driving a certain trend. This activity would imply a deeper analysis, including the use of other indicators and methodological approaches, and the crossing of quantitative analyses with qualitative readings.

One of the main research activities of the *Centre for the Sustainable Development of Piemonte* will be devoted to the analysis and evaluation of the coherence of regional sustainability policies. Therefore, its main goal will include the development of a monitoring system able to monitor the progress and achievement of the SDGs through the assessment of policy coherence from a sustainability perspective, thus enabling the assessment and monitoring of synergies and conflicts (between different policies) in relation to the achievement of the SDGs.

REFERENCES

- A.A.V.V., Regional Sustainable Development Strategy of Piemonte, Piemonte Region, Torino, 2022.
- Bertozzi, C., Siragusa, A., Stamos, I., Proietti, P., Rainoldi, A., Espadas, J., Gallego Garcia, F., Dzurovčinová, P., Hakala, J., Iori, E. and Bertoft, A., European cities localising the SDGs: experiences and lessons learned, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-46206-4, doi:10.2760/74637, JRC127341.
- Ciambra A, Stamos I, Siragusa A. Localizing and Monitoring Climate Neutrality through the Sustainable Development Goals (SDGs) Framework: The Case of Madrid. Sustainability. 2023; 15(6):4819. <https://doi.org/10.3390/su15064819>
- Ciambra A., Siragusa A., Proietti P. and Stamos I. Monitoring SDG localisation: An evidence-based approach to standardised monitoring frameworks. Journal of Urban Ecology, Volume 9, Issue 1, 2023, juad013, <https://doi.org/10.1093/jue/juad013>
- European Commission, Biodiversity strategy for 2030, Bringing nature back into our lives, Luxembourg: Publications Office of the European Union, 2021. KH-09-21-133-EN-N ISBN 978-92-76-36472-6 doi:10.10.2779/677548
- European Commission, Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy. EC (2000). OJ L327, 22.12.2000
- European Commission, European Green Deal, EC, Bruxelles, 2019
- European Commission, Farm to Fork Strategy, For a fair, healthy and environmentally-friendly food system, European Union, 2020
- European Commission, Fit for 55 package, Council of the European Union, General Secretariat, 2023
- European Commission, Soil strategy for 2030, Reaping the benefits of healthy soils for people, food, nature and climate, EC - Directorate-General for Environment, Bruxelles, 2021
- European Commission, The European Pillar of Social Rights Action Plan, European Union, Directorate-General for Employment, Social Affairs and Inclusion Communication, Brussels, 2021. ISBN 978-92-76-30755-6, doi:10.2767/89, KE-09-21-008-EN-N.
- Governo Italiano, Presidenza del Consiglio dei Ministri, National Recovery and Resilience Plan, NRRP (EC - Next Generation EU - NGEU), Italia Domani
- IRES Piemonte, Annual Report 2022, Piemonte Economico e sociale, Affrontare il futuro con responsabilità, Torino, 2022
- IRES Piemonte, Opinion Climate Survey 2022/5, La salute dei piemontesi e le spese mediche, Torino, 2022
- ISTAT, Rapporto SDGs 2022, Informazioni statistiche per l'Agenda 2030 in Italia, Roma, 2022, ISBN 978-88-458-2086-1
- ISTAT, Rapporto BES 2022, Il benessere equo e sostenibile in Italia, Roma, 2023, ISBN 978-88-458-2100-4
- Lella, L., Il posizionamento del Piemonte rispetto all'Agenda 2030, Piemonte Region, Torino, 2021
- Lella, L., Il posizionamento del Piemonte rispetto all'Agenda 2030, Piemonte Region, Torino, 2020
- Lella, L., Tools for monitoring the SRSvS - Methodology and Indicators", Annex 2 Regional Sustainable Development Strategy of Piemonte, Piemonte Region, Torino, 2022.
- Ministry of Economy And Finance, Documento di Economia e Finanza (DEF), Deliberato dal Consiglio dei Ministri l'11 aprile 2023. ISSN 2239-0928
- Ministry of Environment and Energy Security, Ecological Transition Plan, approved by the CITE - Comitato per la Transizione Ecologica, 2022
- Ministry of the Ecological Transition and Ministry of Foreign Affairs and International Cooperation of Italy, Voluntary National Review, Roma, 2022

Ministry of the Environment and Protection of Land and Sea, National Sustainable Development Strategy of Italy, Roma, 2017

OECD, Recommendation of the Council on Policy Coherence for Sustainable Development, OECD/LEGAL/0381, 2019

OECD, Implementing the OECD Recommendation on Policy Coherence for Sustainable Development - Guidance Note COM/DCD/DAC/GOV/PGC (2021)1, 2021

Piemonte Region, Disability Plan, 2021-2024

Piemonte Region, Environmental Energy Plan of Piemonte Region, 2022

Piemonte Region, Regional Climate Change Strategy, 2022

Piemonte Region, Regional Economic and Financial Document (REFD), 2023-2025

Piemonte Region, Regional Forestry Plan, 2017

Piemonte Region, Regional Hydrogen Strategy, 2022

Piemonte Region, Regional Landscape Plan, 2017

Piemonte Region, Regional Mobility and Transportation Plan, 2018

Piemonte Region, Regional Plan for Air Quality Air, 2019

Piemonte Region, Regional Plan for the Reduction of Hydrogeological Hazard, 2021

Piemonte Region, Regional Prevention Plan 2020-2025

Piemonte Region, Regional Territorial Plan, 2011

Piemonte Region, Regional Waste Plan, 2022

Piemonte Region, Regional Water Protection Plan, 2021

Piemonte Region, Rp Piemonte European Regional Development Fund (ERDF), 2021-2027

Piemonte Region, Rp Piemonte European Social Fund Plus (ESF+), 2021-2027

Piemonte Region, Rural Development Complement, 2023-2027

Piemonte Region, Smart Specialisation Strategy-S3, 2021-2027

Piemonte Region, Strategy for the Piemonte Mountains, 2023

Piemonte Region, Three-Year Regional Plan Against Discrimination, 2018-2020

Piemonte Region, Three-Year Regional Plan Against Gender Violence, 2017-2019

Piemonte Region, Three-Year Plan for the Prevention of Corruption and Transparency of The Piemonte Region, 2022-2024

Piemonte Region, Ultra-Broadband Strategic Plan, 2019-2021

Piemonte Region, Unified Strategic Document (UDS), 2021

Piemonte Region and Metropolitan City of Turin, Voluntary Local Review, Annex 2 - Voluntary National Review, Roma, 2022

Piemonte Region and Agenzia Piemonte Lavoro, Collocamento mirato in Piemonte, 2021

Siragusa, A., Stamos, I., Bertozzi, C. and Proietti, P., European Handbook for SDG Voluntary Local Reviews - 2022 Edition, EUR 31111 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-53390-0, doi:10.2760/218321, JRC129381

United Nations, Transforming Our World: The 2030 Agenda for Sustainable Development, A/RES/70/1, 2015

Vega Rapun, M., Stamos, I., Siragusa, A. and Proietti, P., REGIONS2030 - European regional SDG indicators, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/850788, JRC131581

LIST OF ABBREVIATIONS AND DEFINITIONS

ARPA	Regional Agency for Environmental Protection/Agenzia regionale per la protezione ambientale (ita)
BES	Fair and Sustainable Welfare/ Benessere equo e sostenibile (ita)
CRESME	Center for economic, sociological and market research in the construction and building industry Centro di ricerche economiche, sociologiche e di mercato nel mondo delle costruzioni e dell'edilizia (ita)
DEF	Economic and Financial Document/ Documento di Economia e Finanza (ita)
IRES	Institute of Economic and Social Research of Piemonte Region/Istituto di ricerche economiche e sociali della Regione Piemonte (ita)
ISTAT	National Institute of Statics/Istituto nazionale di statistica (ita)
ISPRA	Higher Institute for Environmental Protection and Research/Istituto superiore per la protezione e la ricerca ambientale (ita)
MAECI	Ministry of Foreign Affairs and International Cooperation/Ministero degli Affari Esteri e della Cooperazione Internazionale (ita)
MASE	Ministry of Environment and Energy Security/Ministero dell'Ambiente e della Sicurezza Energetica (ita)
MATTM	Ministry of the Environment and Protection of Land and Sea/Ministero dell'ambiente e della tutela del territorio e del mare (from 2021 MITE, from 2022 MASE) (ita)
MEF	Ministry of Economy and Finance/Ministero dell'Economia e delle Finanze (ita)
MITE	Ministry of Ecological Transition/Ministero della Transizione Ecologica (ita)
SDG	Sustainable Development Goal
NSDS	National Sustainable Development Strategy/SNSvS - Strategia Nazionale per lo Sviluppo Sostenibile (ita)
RSDS	Regional Sustainable Development Strategy/SRSvS - Strategia Regionale per lo Sviluppo Sostenibile (ita)

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ANNEXES

Annex 1. The set of indicators proposed by the JRC and Piemonte Region and the analysis of data

Table 214 - The JRC proposed indicator set: 83 indicators

SDG	Indicator name	Type	Coverage	Source	Time coverage
1	Persons living in households with very low work intensity	Official	EU-27 plus others	Eurostat, Regional Statistics	2017-2021
1	Affected people due to disasters	Experimental		Case study	
1	Material and social deprivation	Official	EU-27 plus others	European Union Statistics on Income and Living Conditions (EU-SILC)	2014-2021
1	Persons at risk of poverty or social exclusion	Official	EU-27 plus others	Eurostat, Regional Statistics	2016-2020
2	Gross Value Added (GVA) of agriculture, livestock and fishing	Official	Basque county	Eustat (Instituto Vasco de Estadística)	1996-2019
2	Organic farming: areas with different crops	Official	EU-27 plus others	Eurostat, Regional Statistics	2003-2013
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2014-2016
2	Overweight rate	Official	Sweden	Public Health Agency of Sweden	2004-2021
3	Deaths due to Covid-19	Official	Spain	CNE (National Centre of Epidemiology)	2019-2022
3	Self reported unmet needs for medical examination	Official	EU-27 plus others	European Union Statistics on Income and Living Conditions (EU-SILC)	2008-2021
3	Health personnel	Official	EU-27 plus others	Eurostat, Regional Statistics	1993-2021
3	Hospital beds	Official	EU-27 plus others	Eurostat, Regional Statistics	1993-2021
3	Infant mortality	Official	EU-27 plus others	Eurostat, Regional Statistics	2013-2017
4	Women 30-34 years old with higher education level	Official	Basque county	Eustat (Instituto Vasco de Estadística)	1994-2019
4	Students enrolled in tertiary education	Official	EU-27 plus others	Eurostat, Regional Statistics	2013-2020
4	Participation in education	Official	EU-27 plus others	Eurostat, Regional Statistics	2013-2020
4	Pupils enrolled in early childhood education	Official	EU-27 plus others	Eurostat, Regional Statistics	2013-2020
4	Early leavers from education and training	Official	EU-27 plus others	Eurostat, Regional Statistics	2000-2021
4	Participation rates in selected education levels	Official	EU-27 plus others	Eurostat, Regional Statistics	2012-2020

4	Distribution of pupils and students enrolled in general and vocational programmes	Official	EU-27 plus others	Eurostat, Regional Statistics	2013-2020
5	Fatal victims of gender-based violence at the hands of their partners or expartners	Official	Spain	INE (National Statistics Institute)	1999-2021
5	Victims of violence against women	Official	Spain	Ministry of Equality	2009-2021
5	Female research and development personnel	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2011-2015
5	Inactive population rate due to caregiving responsibilities	Official	Andalusia	Institute of Statistics and Cartography	2007
5	Women in parliament and government	Official	Spain	INE (National Statistics Institute)	2006-2021
5	Female achievement/disadvantage index	Experimental	EU-27	European Commission, DG REGIO	2021
5	Gender gap in part-time employment incidence	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2016-2017
6	Water bodies that exceed a standardized quality rating	Official	Navarra	NILSA (Navarra de Infraestructuras Locales)	
6	Groundwater that exceed a standardized quality rating	Official	Navarra	NILSA (Navarra de Infraestructuras Locales)	
6	Population served by safely managed drinking water supply services	Official	Flanders	Flanders Environment Agency	2012-2017
6	Population connected to wastewater with at least secondary treatment	Official	Navarra	NILSA (Navarra de Infraestructuras Locales)	
7	Electricity production that comes from nuclear power	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2019
7	Electricity production that comes from renewable sources	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2019
7	Energy intensity	Official	Basque county	Euskadi Energia	2017-2020
7	People affected by energy poverty	Official	Spain	Ministry for the Ecological Transition and the Demographic Challenge	2017-2020
8	Occupational accidents	Official	Spain	National Institute for Occupational Safety and Health	2003-2021
8	Economic activity	Official	EU-27 plus others	Eurostat, regional statistics	1999-2021

8	Unemployment	Official	EU-27 plus others	Eurostat, regional statistics	1999-2021
8	Firm creation	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2013-2016
8	Employment	Official	EU-27 plus others	Eurostat, Regional Statistics	2011-2021
8	GDP at current market prices	Official	EU-27 plus others	Eurostat, Regional Statistics	1995-2020
8	GVA at basic prices	Official	EU-27 plus others	Eurostat, Regional Statistics	1995-2020
8	Long-term unemployment (12 months and more)	Official	EU-27 plus others	Eurostat, Regional Statistics	1999-2021
8	Compensation of employees	Official	EU-27 plus others	Eurostat, regional statistics	1995-2020
8	Young people neither in employment nor in education and training	Official		Own elaboration (regional government)	
9	GVA of the industry with respect to the GVA of the total sectors (current price)	Official	Spain	INE (National Statistics Institute)	2016-2020
9	Gross Domestic Expenditure on R&D	Official	EU-27 plus others	Eurostat, Regional Statistics	1980-2020
9	R&D personnel and researchers	Official	EU-27 plus others	Eurostat, Regional Statistics	1980-2020
9	Employment in high-technology manufacturing as a percentage of total manufacturing employment	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2015-2016
9	Patent applications to the EPO	Official	EU-27 plus others	Eurostat, Regional Statistics	1977-2012
10	Unemployment of people with disabilities	Official	Spain	INE (National Statistics Institute)	2014-2020
10	Gini index of disposable income (after taxes and transfers)	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2010-2014
11	Households expenses dedicated to housing costs	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2011-2016
11	Transport performance	Experimental		Own elaboration (regional government)	
11	Daily accessibility	Experimental	EU-27	European Commission, Joint Research Centre	2015-2050
11	Stock of vehicles (passenger cars)	Official	EU-27 plus others	Eurostat, Regional Statistics	1990-2020
11	Difference between built-up area growth rate and population growth rate	Experimental	OECD countries and other	Organisation for Economic Cooperation and Development (OECD)	2014

				European countries	
11	Land use	Experimental		European Commission, Joint Research Centre	
11	PM2.5 Emissions	Experimental	EU-27	European Commission, Joint Research Centre	2015-2030
11	Household and commercial waste generation per inhabitant	Official	Portugal	Statistics Portugal	2009-2020
11	Victims in road accidents	Official	EU-27 plus others	Eurostat, Regional Statistics	1990-2020
12	Carbon footprint	Official	Flanders	Statistics Flanders	2010-2016
12	Food waste	Official		Department of Environment of the Regional Government	
12	Hazardous Waste	Official	Spain	INE (National Statistics Institute)	2015-2019
13	PM10 Emissions	Experimental	EU-27	European Commission, Joint Research Centre	2015-2030
13	CO2 Emissions	Experimental	EU-27	European Commission, Joint Research Centre	2015-2030
13	Greenhouse Gas Emissions	Official	EU-27	Organisation for Economic Cooperation and Development (OECD)	2001-2018
13	Cooling and heating degree days	Official	EU-27 plus others	Eurostat, Regional Statistics	1979-2021
14	Estuarine with high/very high water quality	Official	Basque county	URA (Basque Water Agency)	2014-2019
14	Protected coastal area as a percentage of total coastal area	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2017
14	Coastal areas with good/very good water quality	Official	Basque county	URA (Basque Water Agency)	2015-2020
15	Terrestrial protected areas as a percentage of total area	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2017
15	Estimated soil erosion	Experimental	EU-27	European Commission, Joint Research Centre	2000-2016
15	Land Abandonment	Experimental	EU-27	European Commission, Joint Research Centre	2015-2050
15	Forest area over total surface area	Official	Spain	Ministry for the Ecological Transition and the Demographic Challenge	1965-2017

16	Transparency index	Experimental		Transparency International	
16	Participation in the last elections	Official	Spain	INE (National Statistics Institute)	2014-2022
16	Quality of Government Index	Experimental		University of Gothenburg	2010-2021
16	Extract from QGI an indicator on corruption	Experimental		University of Gothenburg	2010-2021
17	Official Development Assistance	Official		Own elaboration (regional government)	
17	Imports from developing countries	Official		Own elaboration (regional government)	
17	PCT co-patent applications that are done with foreign regions	Experimental	OECD countries and other European countries	Organisation for Economic Cooperation and Development (OECD)	2015
17	Individuals who used the internet for interaction with public authorities	Official	EU-27 plus others	Eurostat, Regional Statistics	2008-2021

Source: JRC EU

Table 215 - The regional set of available indicators for Piemonte Region: 75 indicators (without the proposed additional indicators)

SDG	Indicator name	Year of availability	Source	Unit of measurement	Time coverage	Frequency
1	Persons living in households with very low work intensity	2021	Eurostat, Regional Statistics	Percentage	2017-2021	Annual
1	Population exposed to the risk of floods	2020	ISPRA; Istat, Regional Statistics	Percentage	2015-2020	2 or 3 years
	Population exposed to the risk of landslides	2020	ISPRA; Istat, Regional Statistics	Percentage	2015-2020	3 or 3 years
1	Severe material deprivation	2021	Istat, Regional Statistics	Percentage	2004-2021	Annual
1	Persons at risk of poverty or social exclusion	2020	Eurostat, Regional Statistics	Rate	2016-2020	Annual
2	Gross Value Added (GVA) of agriculture, forestry and fishing	2021	Eustat (Istituto Vasco de Estadística) Istat, Regional Statistics	Number (Euro millions current prices)	1995-2021	Annual
2	Share of utilised agricultural area (UAA) cultivated with organic crops	2021	Ministry of Agriculture, Food and Forestry; Istat, Regional Statistics	Percentage	2010-2021	Annual
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	2019	Organisation for Economic Cooperation and Development (OECD)	Number (€)	2004-2019	Annual
2	Overweight rate	2021	Istat, Regional Statistics	Rate (per 100 persone)	2001-2021	Annual
3	Deaths due to Covid-19	2022	Istat, Regional Statistics	Number	2019-2022	Monthly
3	Satisfaction with health services (family doctors and public hospital services)	2022	IRES Piemonte	Percentage	2021-2022	Annual
3	Health personnel (medical doctors)	2021	Eurostat, Regional Statistics	Number	2000-2021	Annual
3	Hospital beds	2020	Eurostat, Regional Statistics	Number	1993-2020	Annual
3	Infant mortality	2017	Eurostat, Regional Statistics	Rate	2013-2017	Annual
4	Women 30-34 years old with higher education level (Tertiary education)	2021	Eurostat, Regional Statistics	Percentage	2000-2021	Annual
4	Students enrolled in tertiary education	2020	Eurostat, Regional Statistics	Number	2013-2020	Annual
4	Participation in education- From 20 to 24 years	2020	Eurostat, Regional Statistics	Rate	2013-2020	Annual

4	Pupils enrolled in early childhood education - Early childhood education	2020	Eurostat, Regional Statistics	Number	2013-2020	Annual
4	Early leavers from education and training	2021	Eurostat, Regional Statistics	Percentage	2000-2021	Annual
4	Participation rates in selected education levels - Primary and lower secondary education (levels 1 and 2)	2020	Eurostat, Regional Statistics	Rate	2013-2020	Annual
4	Distribution of pupils and students enrolled in general and vocational programmes (Short-cycle tertiary education - vocational/professional)	2020	Eurostat, Regional Statistics	Percentage	2013-2020	Annual
5	Fatal victims of gender-based violence at the hands of their partners or expartners	2014	Istat, Regional Statistics	Percentage	2014	Annual
5	Victims of violence against women	2021	Istat, Regional Statistics	Percentage	2013-2021	Monthly
5	Female research and development personnel- Share of R&D Female in R&D Total Personnel	2020	OECD and Istat, Regional Statistics	Percentage	2003-2020	Annual
5	Women in parliament and government	2018	Istat, Regional Statistics	Percentage	2008-2018	6/4 years
5	Female achievement/disadvantage index	2021	European Commission, DG REGIO	Percentage	2021	-
5	Gender gap in part-time employment incidence- Part-Time employment Incidence, 15-64 years old (% part-time employees over total employment)	2021	Organisation for Economic Cooperation and Development (OECD)	Percentage (% females - %males)	2001-2021	Annual
6	Percentage of water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes)	2015	Istat, Regional Statistics	Percentage	2015	-
6	Groundwater monitoring	2014	Piemonte Region and ARPA	Rate	2009-2014	-
6	Efficiency of drinking water distribution networks	2018	Istat, Regional Statistics	Percentage	2005-2018	Triennial

6	Urban waste water with secondary or advanced treatment	2018	Istat, Regional Statistics	Number	2005-2018	Triennial
7	Electricity production that comes from renewable sources	2020	GSE S.p.Ai; Istat, Regional Statistics	Percentage	2012-2020	Annual
7	Energy intensity	2019	Istat, Regional Statistics	Index (tons of oil equivalent per million €)	2009-2019	Annual
8	Occupational accidents Fatal accidents and permanent disability	2020	Inail; Istat regional statistics	Rate	2008-2020	Annual
8	Economic activity (Economically active population - from 15 to 74 years)	2021	Eurostat, regional statistics	Rate (Thousand [THS])	1999-2021	Annual
8	Unemployment (from 15 to 74 years)	2021	Eurostat, regional statistics	Rate	1999-2021	Annual
8	Firm creation Birth rate (in % of employer firms - same sector, same size class)	2017	OECD	Rate	2011-2017	Annual
8	Employment (from 15 to 64 years)	2021	Eurostat, Regional Statistics	Number	1999-2021	Annual
8	GDP at current market prices	2020	Eurostat, Regional Statistics	Number (Million euro)	2000-2020	Annual
8	GVA at basic prices	2020	Eurostat, Regional Statistics	Number (Million euro)	1995-2020	Annual
8	Long-term unemployment (12 months and more) From 15 to 74 years)	2021	Eurostat, Regional Statistics	Rate Thousand [THS]	1999-2021	Annual
8	Compensation of employees	2019	Eurostat, regional statistics	Number (Million euro)	1995-2019	Annual
8	Young people neither in employment nor in education and training (15-24 years)	2021	Istat, Regional Statistics	Percentage	2004-2021	Annual
9	Added value of manufacturing industry to total economy	2019	Istat, Regional Statistics	Percentage	2004-2019	Annual
9	Gross Domestic Expenditure on R&D (GERD) by sector of performance -all sectors	2020	Eurostat, Regional Statistics	Number (Million euro)	1994-2020	Annual
9	R&D personnel and researchers	2020	Eurostat, Regional Statistics	Number (Head count)	1980-2020	Annual
9	Employment in high-technology manufacturing (in % of total employment)	2019	OECD	Percentage	2008-2019	Annual
9	Patent applications to the EPO	2012	Eurostat, Regional Statistics	Number	1977-2012	Annual

10	Employees with disabilities	2021	Piemonte Region, "Targeted employment"	Number (tot = starts - terminations)	2017-2021	Annual
10	Gini index of disposable income (after taxes and transfers)	2013	OECD	Number	2013	Annual
11	Households expenses dedicated to housing costs -Share of Housing Cost (in % of household disposable income)	2015	Organisation for Economic Cooperation and Development (OECD)	Percentage	2000-2015	Annual
11	Transport performance- Seat-km offered by local public transport	2020	Istat, Regional Statistics	Number per inhabitant	2004-2020	Annual
11	Daily accessibility	2020	European Commission, Joint Research Centre	Number (M)	2015-2050	Decade
11	Stock of vehicles (passenger cars)	2020	Eurostat, Regional Statistics	Number	1990-2020	Annual
11	Soil sealing per capita	2021	Istat, Regional Statistics	Rate (M2 per inhabitant)	2012-2021	Annual
11	Land use (urban and total)	2020	European Commission, Joint Research Centre JRC - LUISA	Number (ha)	2020	-
11	PM2.5 Emissions	2020	LUISA platform; European Commission, JRC	Number (Tons)	2015-2030	Decade
11	Urban waste generation per inhabitant	2020	Istat, Regional Statistics	Rate (Kg per inhabitant)	2010-2020	Annual
11	Victims in road accidents	2020	Eurostat, Regional Statistics	Number (Killed+injured)	1990-2020	Annual
12	CO2 equ per capita	2015	Regional Inventory of Emissions to the Atmosphere (IREA)	Rate kiloTons/cap Tons of CO2 equivalents per inhabitant	2015	-
12	Hazardous Waste - Production of special hazardous waste	2020	ISPRA; Istat, Regional Statistics	Number (Tons)	2014-2020	Annual
13	PM10 Emissions	2020	LUISA platform; European Commission, JRC	Number (Tons)	2015-2030	Decade
13	CO2 Emissions	2020	LUISA platform; European Commission, JRC	Number (M Tons)	2015-2030	Decade
13	Greenhouse Gas Emissions - Total green house gas emissions per capita (in tons of CO2 equivalent per capita)	2018	Department of Tourism/Economics of the Regional Government	Rate (Tons CO2eq/per capita)	2001-2018	Annual
13	Cooling degree days	2022	Eurostat, Regional Statistics	Number	1979-2022	Annual

	Heating degree days	2022	Eurostat, Regional Statistics	Number	1979-2022	Annual
15	Terrestrial protected areas as a percentage of total area	2021	Istat; Elaboration on Ministry of Ecological Transition data.	Percentage	2012-2021	-
15	Estimated soil erosion (Agricultural areas and natural grassland)	2016	Eurostat; European Commission, JRC	Rate (Tons per hectare)	2000-2016	Annual
15	Land Abandonment	2020	LUIA platform; European Commission, JRC	Percentage	2015-2050	Decade
15	Forest area over total surface area	2015	FAO-INFC, Global Forest Resources Assessment; Istat, Regional Statistics	Percentage	2005-2015	Decade
16	Transparency index	2013	Istat, Regional Statics; Cohesion Open Government Index	Index (base Italy 2013=100)	2013	-
16	Participation in the last elections - Voters Turnout to General Elections (in % of registered voters who voted)	2018	OECD, Regional database	Percentage	2001-2018	Per election cycle
16	Quality of Government Index (European Quality of Government Index)	2021	University of Gothenburg	Index	2010-2021	Triennial
16	Quality of Government Index -Corruption index	2021	University of Gothenburg	Index	2010-2021	Triennial
17	Imports from developing countries	2022	Istat, Regional Statics	Number B €	2021-2022	Annual
17	PCT co-patent applications that are done with foreign regions	2015	OECD	Share (in % of co-patent applications, total count)	2001-2015	Annual
17	Individuals who used the internet for interaction with public authorities	2021	Eurostat, Regional Statistics	Percentage	2011-2021	Annual

Source: own elaboration

Table 216 - Statistical synthesis of the analysed indicators at the Piemonte regional level: positive, negative or stable trend

SDG	Indicator name	SDG Target(s)	Time coverage	Trend: posit/negat/stable
1	Persons living in households with very low work intensity	1.2 (reduce poverty)	2017-2021	=
1	Affected people due to disasters: Population exposed to the risk of floods and landslides	1.5 (exposure to vulnerability)	2015-2020	=
1	Several material deprivation	1.1 (extreme poverty)	2004-2021	-

1	Persons at risk of poverty or social exclusion	1.2 (reduce poverty)	2016-2020	+
2	Gross Value Added (GVA) of agriculture, forestry and fishing	2.3 (agricultural productivity)	1995-2021	=
2	Share of utilised agricultural area (UAA) cultivated with organic crops	2.4 (sustainable food production)	2010-2021	+
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	2.3 (agricultural productivity)	2004-2019	+
2	Overweight rate	2.2 (end malnutrition)	2001-2021	-
3	Deaths due to Covid-19	3.3 (epidemics and diseases)	2019-2022	+
3	Satisfaction with health services	3.c (health financing and recruitment)	2021-2022	+
3	Health personnel	3.c (health financing and recruitment)	2000-2021	+
3	Hospital beds	3.8 (universal health coverage)	1993-2020	-
3	Infant mortality	3.2 (preventable death of newborns)	2013-2017	+
4	Women 30-34 years old with higher education level (Tertiary education)	4.5 (gender and other disparities in education), 4.6 (adult literacy)	2000-2021	+
4	Students enrolled in tertiary education	4.3 (vocational and tertiary education)	2013-2020	+
4	Participation in education	4.3 (vocational and tertiary education)	2013-2020	+
4	Pupils enrolled in early childhood education	4.2 (access to early childhood education)	2013-2020	-
4	Early leavers from education and training	4.6 (youth and adult literacy)	2000-2021	+
4	Participation rates in selected education levels	4.1 (primary and secondary education)	2013-2020	+
4	Distribution of pupils and students enrolled in general and vocational programmes – <i>Upper secondary education - general</i>	4.3 (vocational and tertiary education)	2013-2020	+
5	Fatal victims of gender-based violence at the hands of their partners or expartners	5.2 (gender violence)	2014	<i>No trend</i>
5	Women victims of violence	5.2 (gender violence)	2013-2021	-
5	Female research and development personnel	5.5 (women participation and leadership)	2003-2020	+
5	Women in parliament	5.5 (women participation and leadership)	2008-2018	+
5	Female achievement/disadvantage index	5.1 (gender discrimination)	2021	<i>No trend</i>
5	Gender gap in part-time employment incidence	5.4 (unpaid work)	2001-2021	+
6	Percentage of water bodies achieving the ecological quality objective (high or good)	6.3 (water quality)	2015	<i>No trend</i>
6	Groundwater monitoring	6.3 (water quality)	2014	<i>No trend</i>
6	Efficiency of drinking water distribution networks	6.1 (universal access to water)	2005-2018	-
6	Urban waste water with secondary or advanced treatment	6.3 (water quality)	2005-2018	+
7	Electricity production that comes from renewable sources	7.2 (share of renewable energy)	2012-2020	+
7	Energy intensity	7.3 (energy efficiency)	2009-2019	+
8	Occupational accidents - Fatal accidents and permanent disability	8.8 (labour rights)	2008-2020	+

8	Economic activity	8.5 (productive employment)	1999-2021	+
8	Unemployment	8.5 (productive employment)	1999-2021	-
8	Firm creation	8.3 (job creation)	2011-2017	+
8	Employment	8.5 (productive employment)	1999-2021	-
8	GDP at current market prices	8.1 (economic growth)	2000-2020	+
8	GVA at basic prices	8.2 (economic productivity)	1995-2020	+
8	Long-term unemployment (12 months and more)	8.5 (productive employment)	1999-2021	-
8	Compensation of employees	8.5 (productive employment)	1995-2019	+
8	Young people neither in employment nor in education and training	8.6 (youth not in employment, education or training)	2004-2021	-
9	Added value of manufacturing industry to total economy	9.2 (sustainable industrialization)	2004-2019	=
9	Gross Domestic Expenditure on R&D	9.5 (promote innovation)	1994-2020	+
9	R&D personnel and researchers	9.5 (promote innovation)	1980-2020	+
9	Employment in high-technology manufacturing	9.5 (promote innovation)	2008-2019	=
9	Patent applications to the EPO	9.5 (promote innovation)	1977-2012	-
10	Employees with disabilities	10.2 (inclusion irrespective of status)	2017-2021	-
10	Gini index of disposable income (after taxes and transfers)	10.4 (greater equality)	2013	<i>No trend</i>
11	Housing costs	11.1 (access to housing)	2000-2015	-
11	Transport performance	11.2 (access to transport systems)	2004-2020	-
11	Daily accessibility	11.2 (access to transport systems)	2015-2050	+
11	Stock of vehicles (passenger cars)	11.2 (access to transport systems)	1990-2020	-
11	Soil sealing per capita	11.3 (sustainable urbanization)	2012-2021	-
11	Land use	11.3 (sustainable urbanization)	2020	<i>No trend</i>
11	PM2.5 Emissions	11.6 (environmental impact)	2015-2030	+
11	Urban waste generation per inhabitant	11.6 (environmental impact)	2010-2020	=
11	Victims in road accidents	11.2 (access to transport systems)	1990-2020	+
12	Carbon footprint: Co2 eq per capita	12.2 (management of natural resources)	2015	<i>No trend</i>
12	Production of special hazardous waste	12.4 (chemical management)	2014-2020	-
13	PM10 Emissions	13.2 (climate change measures into policy)	2015-2030	+
13	CO2 Emissions	13.2 (climate change measures into policy)	2015-2030	+
13	Greenhouse Gas Emissions	13.2 (climate change measures into policy)	2001-2018	+
13	Cooling and heating degree days	13.2 (climate change measures into policy)	1979-2022	=
15	Terrestrial protected areas as a percentage of total area	15.5 (degradation of habitats)	2012-2021	=

15	Estimated soil erosion	15.5 (degradation of habitats)	2000-2016	+
15	Land Abandonment	15.1 (restoration of ecosystems)	2015-2050	-
15	Forest area over total surface area	15.1 (restoration of ecosystems)	2005-2015	=
16	Transparency index	16.6 (effective institutions)	2013	<i>No trend</i>
16	Participation in the last elections- Voters Turnout to General Elections	16.6 (effective institutions)	2001-2018	-
16	Quality of Government Index	16.6 (effective institutions)	2010-2021	-
16	Quality of Government Index - Corruption index	16.5 (reduce corruption)	2010-2021	+
17	Imports from developing countries	17.12 (imports from least developed countries)	2021-2022	+
17	PCT co-patent applications that are done with foreign regions	17.6 (regional and international cooperation)	2001-2015	+
17	Individuals who used the internet for interaction with public authorities	17.8 (enabling technology)	2011-2021	+

Source: author's own elaboration

Note: “*no trend*” is indicated in relation to cases where the trend could not be measured because the data is available for one year of analysis only.

For time series where available data are prior to 2000, trend analyses consider only data from 2000 onwards.

Of these 67 indicator trends (excluding the 8 indicators without trend analysis):

- for **38** indicators the trend is **positive**
- for **20** the trend is **negative**
- for **9** the trend is (approximately) **stable**

Table 217 - Synthesis of the analysed indicators at the Piemonte regional level, at the last year of analysis, in relation to the Italian/North-West Italy regions average and the Target to 2030/2050 (where possible)

SDG	Indicator name	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	NW Italy	Target 2030/2050
1	Persons living in households with very low work intensity	2021	Eurostat, Regional Statistics	Percentage	7.2	11.7	6.3	-
1	Population exposed to the risk of floods	2020	ISPRA; Istat, Regional Statistics	Percentage	4.9	11.5	5.9	-
	Population exposed to the risk of landslides	2020	ISPRA; Istat, Regional Statistics	Percentage	1,9	2.2	1.5	-
1	Severe material deprivation	2021	Istat, Regional Statistics	Percentage	4.5	5.6	3.3	-
1	Persons at risk of poverty or social exclusion	2021	Istat, Regional Statistics EU-SILC	Percentage	18.3	25.4	17.1	21.8% (EU)
2	Gross Value Added (GVA) of agriculture, forestry and fishing	2021	Eustat (Istituto Vasco de Estadistica) Istat, Regional Statistics	Number (Euro millions current prices)	1,924.3	34,384.0	6,281.9	-
2	Share of utilised agricultural area (UAA) cultivated with organic crops	2021	Ministry of Agriculture , Food and Forestry; Istat, Regional Statistics	Percentage	5.5	17.4	5.3	25% (EU)
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	2019	OECD, Regional database	Number (€)	41,170	36,964		-
2	Overweight rate	2021	Istat, Regional Statistics	Rate (per 100 persone)	41.3	46.2	41.6	-
3	Deaths due to Covid-19	2022	Istat, Regional Statistics	Number	48,059	584,501	-	-
3	Satisfaction with health services (family doctors and public hospital services)	2022	IREC Piemonte	Percentage	75.1	-	-	-
3	Health personnel (medical doctors)	2021	Eurostat, Regional Statistics	Number	16,008	244,441	-	-
3	Hospital beds	2020	Eurostat, Regional Statistics	Number	15,332	189,270	-	-
3	Infant mortality	2017	Eurostat, Regional Statistics	Number	78	1,335	320	-

4	Women 30-34 years old with higher education level (Tertiary education)	2021	Eurostat, Regional Statistics	Percentage	31.7	33.3	35.1	-
4	Students enrolled in tertiary education	2020	Eurostat, Regional Statistics	Number	135,997	2,030,768	535,381	40% (EU)
4	Participation in education- From 20 to 24 years	2020	Eurostat, Regional Statistics	Rate	43.1	37.4	41.2	-
4	Pupils enrolled in early childhood education - Early childhood education	2020	Eurostat, Regional Statistics	Number	97,599	1,415,006	372,019	-
4	Early leavers from education and training	2021	Eurostat, Regional Statistics	Percentage	11.4	12.7	11.5	10% (EU)
4	Participation rates in selected education levels - Primary and lower secondary education (levels 1 and 2)	2020	Eurostat, Regional Statistics	Rate	7.5	7.6	7.6	-
4	Distribution of pupils and students enrolled in general programmes (Upper secondary education)	2020	Eurostat, Regional Statistics	Percentage	44.4	47.5	44.4	-
5	Fatal victims of gender-based violence at the hands of their partners or expartners	2014	Istat, Regional Statistics	Percentage	13.3	13.6	13.3	0% (ONU)
5	Victims of violence against women	2021	Istat, Regional Statistics	Percentage	43.5	51.9	--	0% (ONU)
5	Female research and development personnel- Share of R&D Female in R&D Total Personnel	2020	ISTAT, Regional Statics	Percentage	27.4	35.2	32.7	-
5	Women in parliament and government	2018	ISTAT, Regional Statistics	Percentage	35.3	35.4	31.0	50% (ONU)
5	Female achievement/disadvantage index	2021	European Commission, DG REGIO	Percentage	48.6 A/ 33.3 D	-	-	-
5	Gender gap in part-time employment incidence- 15-64 years old (% part-time employees over total employment)	2021	OECD, Regional database	Percentage (% females - % males)	22.8	23.1	-	-
6	Percentage of water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes)	2015	Istat, Regional Statistics	Percentage	53	41.7	-	100% (EU)

6	Groundwater monitoring: chemical status (good status)	2014	Piemonte Region and ARPA	Percentage	66.7	-	-	-
6	Efficiency of drinking water distribution networks	2018	Istat, Regional Statistics	Percentage	64	58	67.5	- 20%water dispersion (IT)
6	Urban waste water system with secondary or advanced treatment	2018	Istat, Regional Statistics	Number	1,343	7,781	2,245	100% (EU)
7	Electricity production that comes from renewable sources	2020	GSE S.p.Ai; ISTAT, Regional Statistics	Percentage	21.7	20.4	18.1	42,5% (EU)
7	Energy intensity	2019	ISTAT, Regional Statistics	Index (tons of oil equ. per million €)	94.3	91.4	79.8	-
8	Occupational accidents Fatal accidents and permanent disability	2020	Inail; Istat regional statistics	Rate	6.8	9.0	7.1	-
8	Economic activity (Economically active population - from 15 to 74 years)	2021	Eurostat, regional statistics	Rate (Thousand)	1,895.8	24,829.5	7,184.9	-
8	Unemployment (from 15 to 74 years)	2021	Eurostat, regional statistics	Rate	7.3	9.5	6.5	-
8	Firm creation Birth rate (in % of employer firms - same sector, same size class)	2017	OECD, Regional database	Rate	8.44	9.23	-	-
8	Employment (from 15 to 64 years)	2021	Eurostat, Regional Statistics	Number	1,702.2	21,849.2	6,546.3	78% (EU)
8	GDP at current market prices	2020	Eurostat, Regional Statistics	Number (Million euro)	126,199	1,653,577	542,325	-
8	GVA at basic prices	2020	Eurostat, Regional Statistics	Number (Million euro)	113,952.7	1,493,117	489,699	-
8	Long-term unemployment (12 months and more) From 15 to 74 years)	2021	Eurostat, Regional Statistics	Rate Thousand [THS]	77.8	1,344.4	230.2	-
8	Compensation of employees	2019	Eurostat, regional statistics	Number (Million euro)	55,969.4	721,544	236,850.5	-
8	Young people neither in employment nor in education and training (15-24 years)	2021	Istat, Regional Statistics	Percentage	17.7	19.8	17.4	9% (EU)
9	Added value of manufacturing industry to total economy	2019	Istat, Regional Statistics	Percentage	21.5	16.6	19.5	-
9	Gross Domestic Expenditure on R&D (GERD) by sector of	2020	Eurostat, Regional Statistics	Number (Million euro)	2,957.7	25,028.3	8,778.9	3% GDP (IT)

	performance -all sectors							
9	R&D personnel and researchers	2020	Eurostat, Regional Statistics	Number (Head count)	44,725	520,750	167,156	-
9	Employment in high-technology manufacturing (in % of total employment)	2019	OECD, Regional database	Percentage	1.08	1.01	-	-
9	Patent applications to the EPO	2012	Eurostat, Regional Statistics	Number	402.2	3,576	1,408	-
10	Employees with disabilities	2021	Piemonte Region, "Targeted employment"	Number (tot = starts - terminations)	-125	-	-	-
10	Gini index of disposable income (after taxes and transfers)	2013	OECD, Regional database	Number	0.28	0.32	-	-
11	Households expenses dedicated to housing costs - Share of Housing Cost (in % of household disposable income)	2015	OECD, Regional database	Percentage	33.5	34.9	-	-
11	Transport performance- Seat-km offered by local public transport	2020	Istat, Regional Statistics	Number per inhabitant	3,634	3,622	6,408	-
11	Daily accessibility	2020	European Commission, Joint Research Centre	Number (M)	43.5	30.4	44.7	-
11	Stock of vehicles (passenger cars)	2020	Eurostat, Regional Statistics	Number (M)	2.92	39.70	10.22	-
11	Soil sealing per capita	2021	Istat, Regional Statistics	Rate (M2 per inhabitant)	397	363	-	0% (EU)
11	Land use (urban)	2020	European Commission, Joint Research Centre JRC - LUISA	Number (ha)	153.37k	1.8M	462.51k	-
11	PM2.5 Emissions	2020	LUISA platform; European Commission, JRC	Number (Tons)	12.6k	36.9k	138.6k	-40% from 2005 values (IT)
11	Urban waste generation per inhabitant	2020	Istat, Regional Statistics	Rate (Kg per inhabitant)	486	487	479	455 (Piemonte)
11	Victims in road accidents	2020	Eurostat, Regional Statistics	Number (Killed+injured)	10,019	161,643	43,493	-
12	CO2 equ per capite	2015	Regional Inventory of Emissions to the	Rate kiloTons/cap	9.3	-	-	-



















			Atmosphere (IREA)					
12	Hazardous Waste - Production of special hazardous waste	2020	ISPRA; Istat, Regional Statistics	Number (M Tons)	1.1	9.9	4.4	-
13	PM10 Emissions	2020	LUISA platform; European Commission, JRC	Number (k Tons)	16.27	49.53	181.25	Climate neutrality (EU)
13	CO2 Emissions	2020	LUISA platform; European Commission, JRC	Number (M Tons)	23.1	111.5	467.5	-51% from 1990 values (IT)
13	Greenhouse Gas Emissions - Total greenhouse gas emissions per capita (in tons of CO2 equivalent per capita)	2018	OECD, Regional database	Rate (Tons CO2eq/per capita)	8.5	-	-	-55% (from 1990) (EU)
13	Cooling degree days	2022	Eurostat, Regional Statistics	Number	277.4	375.2	272.5	-
	Heating degree days	2022	Eurostat, Regional Statistics	Number	2,204.2	1,734.6	2,281.6	-
15	Terrestrial protected areas as a percentage of total area	2021	ISTAT; Elaboration on Ministry of Ecological Transition data.	Percentage	16.7	21.7	18.2	30% (EU)
15	Estimated soil erosion (Agricultural areas and natural grassland)	2016	Eurostat; European Commission, JRC	Rate (Tons per hectare)	10.7	11.0	-	-
15	Land Abandonment	2020	LUISA platform; European Commission, JRC	Percentage	2.9			-
15	Forest area over total surface area	2015	FAO-INFC, Global Forest Resources Assessment; Istat, Regional Statistics	Percentage	34.8	30.8	33.6	-
16	Transparency index	2013	Istat, Regional Statics; Cohesion Open Government Index	Index (base Italy 2013=100)	94.9	100	-	-
16	Participation in the last elections - Voters Turnout to	2018	OECD, Regional database	Percentage	75.2	72.9	-	-

	General Elections (in % of registered voters who voted)							
16	Quality of Government Index (European Quality of Government Index)	2021	University of Gothenburg	Index	-0.52	-	-	-
16	Quality of Government Index - Corruption index	2021	University of Gothenburg	Index	-0.40	-	-	-
17	Imports from developing countries	2022	Istat, Regional Statics	Number (B €)	1.6	22.2	9.7	-
17	PCT co-patent applications that are done with foreign regions	2015	OECD, Regional database	Share (in % of co-patent applications, total count)	44.3	-	-	-
17	Individuals who used the internet for interaction with public authorities	2021	Eurostat, Regional Statistics	Percentage	36.6	33.9	37.2	-

Source: author's own elaboration from European and National sources

Table 218 - Relationships among the Strategic Macro-Areas (SMAs), the RSDS Priorities of Piemonte, the NSDS and the Goals of the 2030 Agenda

RSDS - Strategic Macro-Areas (SMAs)	RSDS - Strategic Priorities	NSDS Areas, Choices and Strategic Objectives	Goals 2030 Agenda
SMA1: Supporting the transition of the Piemontese productive system towards a model matching competitiveness and sustainability	1.A. DEVELOPING ECONOMIC SKILLS/SUSTAINABILITY FIRMS	<p>PROSPERITY</p> <p>I. Funding and promoting sustainable research and innovation</p> <p>I.1 Increasing investment in research and development</p> <p>I.3 Adding novelty in processes and products and promoting technology transfer</p> <p>IV. Decarbonizing economy</p> <p>IV.3 Reducing greenhouse gas emissions in non-ETS sectors</p>	  
	1.B. FINDING A BALANCE BETWEEN ECONOMIC SUSTAINABILITY, SAVING ENERGY AND MATERIALS, SUPPORTING THE CONVERSION OF THE PRODUCTIVE SYSTEM	<p>PROSPERITY</p> <p>III. Establishing sustainable production and consumption models</p> <p>III.1 Dematerializing the economy, improving efficiency in the use of resources and promoting circular economy mechanisms</p> <p>III.3 Ensuring fair access to financial resources</p> <p>III.5 Limiting waste production and promoting the market for secondary raw materials</p> <p>IV. Decarbonizing economy</p> <p>IV.3 Reducing greenhouse gas emissions in non-ETS sectors</p>	        
	1.C. NURTURING AND SUPPORTING THE POTENTIAL OF TERRITORIES	<p>PROSPERITY</p> <p>III. Establishing sustainable production and consumption models</p> <p>III.6 Promoting demand and increasing the supply of sustainable tourism</p> <p>III.9 Promoting Italian excellence</p>	   
	1.D. CONVERTING AGRICULTURAL PRACTICES THROUGH THE IMPROVEMENT OF ECONOMIC AND ENVIRONMENTAL PERFORMANCES OF FARMS AND ED AGRO-INDUSTRIAL FIRMS,	<p>PROSPERITY</p> <p>III. Establishing sustainable production and consumption models</p> <p>III.7 Ensuring the sustainability of agriculture and forestry along the entire supply chain</p>	  

	SUPPORTING SUSTAINABLE COMPETITIVENESS	IV. Decarbonizing economy IV.3 Reducing greenhouse gas emissions in non-ETS sectors	
SMA2: ENERGY TRANSITION AND CLIMATE CHANGE ADAPTATION AND MITIGATION	2.A. PROMOTING ENERGY EFFICIENCY MEASURES	PROSPERITY IV. Decarbonizing economy IV.1 Increasing energy efficiency and the production of energy from renewable sources, avoiding or reducing impact on cultural heritage and the landscape	   
	2.B. PROMOTING RENEWABLE ENERGIES AND DEVELOPING INTELLIGENT ENERGY STORAGE SYSTEMS, NETWORKS AND PLANTS AT LOCAL LEVEL	PROSPERITY IV. Decarbonizing economy IV.1 Increasing energy efficiency and the production of energy from renewable sources, avoiding or reducing impact on cultural heritage and the landscape	   
	2.C. MAKING MOBILITY MORE SUSTAINABLE	PROSPERITY IV. Decarbonizing economy IV.2 Increasing the sustainable mobility of people and goods IV.3 Reducing greenhouse gas emissions in non-ETS sectors	  
MAS 3: CULTURAL AND ENVIRONMENTAL HERITAGE AND TERRITORIAL RESILIENCE	3.A. REDUCING HYDROGEOLOGICAL DAMAGE AND ENVIRONMENTAL DEGRADATION	PLANET II. Ensuring sustainable management of natural resources II.2 Stop land consumption and fight desertification II.6 Minimizing emissions and reducing concentrations of pollutants in the atmosphere	  
	3.B. REDUCING TERRITORIAL MARGINALITIES	PLANET III. Creating resilient communities and territories, preserving landscapes and cultural heritage III.1 Preventing natural and anthropogenic risks and strengthening the resilience capacities of communities and territories III.2 Ensuring high environmental performance of buildings, infrastructures and open spaces	   

III.3 Regenerating cities, ensuring accessibility and the sustainability of connections

3.C. ENHANCING THE CULTURAL AND ENVIRONMENTAL HERITAGE

PLANET

III. Creating resilient communities and territories, preserving landscapes and cultural heritage

III.5 Ensuring the development of potential, the sustainable management of territories, landscapes and cultural heritage



3.D. PROTECTING WATER AND SOILS

PLANET

II. Ensuring sustainable management of natural resources

II.3 Minimizing pollutant loads in soils, water bodies and aquifers, taking into account the level of good ecological status of the natural systems

II.4 Implementing integrated water management at all planning levels

II.5 Maximizing water efficiency and adapting withdrawals to water scarcity



3.E. PRESERVING BIODIVERSITY

PLANET

I. Stopping the loss of biodiversity

I.1 Safeguarding and improving the conservation status of species and habitats for terrestrial and aquatic ecosystems

I.2 Stopping the spread of invasive alien species

I.3 Increasing land and sea protected area and ensuring effective management

I.4 Protecting and restoring genetic resources and natural ecosystems related to agriculture, forestry and aquaculture

I.5 Integrating the value of natural capital (ecosystems and biodiversity) into plans, policies and accounting systems

II. Ensuring sustainable management of natural resources

II.7 Ensuring sustainable forestry management and fighting abandonment and degradation



III. Creating resilient communities and territories, preserving landscapes and cultural heritage

III.4 Ensuring the restoration and defragmentation of ecosystems and fostering urban / rural ecological connections

MAS 4: VOCATIONAL TRAINING AND NEW JOBS FOR GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT

4. DEVELOPING SUSTAINABLE DEVELOPMENT SKILLS

PROSPERITY

II. Ensuring full employment and quality training

II.1 Ensuring accessibility, quality and continuity of training



4.B SUPPORTING THE QUALIFICATION OF WORKERS AND STEERING THE PRODUCTION SYSTEM

PROSPERITY

II. Ensuring full employment and quality training

II.1 Ensuring accessibility, quality and continuity of training



4.C DEVELOPING NEW ENTREPRENEURSHIP IN EMPOWERMENT PROCESSES

PROSPERITY

II. Ensuring full employment and quality training

II.2 Increasing sustainable and quality employment



4.D IMPLEMENTING THE TRANSVERSALITY OF "CULTURE" TO INCREASE THE COMPETITIVENESS OF THE REGIONAL SYSTEM AND OF ENTERPRISES



4.E SUSTAINABILITY TRAINING WITHIN THE REGION

MAS 5: SUPPORTING THE DEVELOPMENT AND THE PHYSICAL AND PSYCHOLOGICAL WELL-BEING OF PEOPLE

5.A. REDUCING POVERTY

PEOPLE

I. Tackling poverty and social exclusion by eliminating territorial gaps

I.1 Reducing the intensity of poverty

I.2 Fighting material and food deprivation

I.3 Reducing housing discomfort





5.B. FACING GROWING PSYCHOLOGICAL DISEASES

PEOPLE

II. Guaranteeing the conditions for the development of human potential



		<p>II.1 Reducing unemployment for the weakest parts of the population</p> <p>II.2 Ensuring the full functionality of the social protection and welfare system</p> <p>II.4 Fighting deviance through prevention and social integration of those at risk</p>	
	<p>5.C. IMPLEMENT PERMANENT EDUCATION IN SUSTAINABILITY AND PROMOTING HEALTHY LIFESTYLES</p>	<p>PEOPLE</p> <p>II. Guaranteeing the conditions for the development of human potential</p> <p>II.3 Reducing the school dropout rate and improving the education system</p>	
<p>MAS 6: REDUCING DISCRIMINATION, INEQUALITIES AND ILLEGALITY</p>	<p>6.A. REDUCING DEVIANCE AND CRIME</p>	<p>PEACE</p> <p>I. Promoting a non-violent and inclusive society</p> <p>I.1 Preventing violence against women and children and ensuring appropriate assistance to victims</p> <p>II.2 Guaranteeing the reception of migrants seeking asylum and the inclusion of ethnic and religious minorities</p>	
	<p>6.B. REDUCING DISCRIMINATION AND SOCIAL MARGINALIZATION</p>	<p>PEACE</p> <p>II. Eliminating all forms of discrimination</p> <p>II.1 Eliminating all forms of labor exploitation and guarantee workers' rights</p> <p>II.2 Ensuring gender equality</p> <p>II.3 Fighting all discrimination and promoting respect for diversity</p>	
	<p>6.C. FACILITATING ACCESS TO JUSTICE</p>	<p>PEACE</p> <p>III. Ensuring legality and justice</p> <p>III.3 Ensuring the efficiency and quality of the judicial system</p>	
	<p>6.D. DEVELOPING AND PROMOTING INTERNATIONAL COOPERATION</p>		
<p>MAS 7: ADDRESSING CHANGES IN HEALTHCARE DEMAND: CHRONICITY, FRAGILITY,</p>	<p>7.A. DEVELOPING AN INTEGRATED APPROACH AND MULTI-SPECIALIST INTERACTION BETWEEN HOSPITAL AND</p>	<p>PEOPLE</p> <p>III. Promoting health and well-being</p>	

<p>APPROPRIATE PERFORMANCE, EQUITY OF DISTRIBUTION</p>	<p>TERRITORIAL STRUCTURES</p>	<p>III.3 Ensuring access to effective health and care services, counteracting territorial gaps</p>
	<p>7.B. DEVELOPING AN APPROACH AIMED TO UNDERSTAND HOW DEMAND CHANGES</p>	<p>PEOPLE</p> <p>III. Promoting health and well-being</p> <p>III.2 Promoting healthy lifestyles and strengthening prevention systems</p> 
	<p>7.C. CREATING A BALANCE BETWEEN INNOVATION, INCREASED DEMAND AND COSTS</p>	<p>PEOPLE</p> <p>III. Promoting health and well-being</p> <p>III.1 Decreasing population exposure to environmental and anthropogenic risk factors</p> 

Source: RSDS Piemonte Region, VLR 2022

Table 219 - Relationships among themes/phenomena measured by the indicators and the regional Strategies/Plans/Programs

SDG	Indicators	SDG Target(s)	Regional Strategies	Regional Plans/Programs
1	Persons living in households with very low work intensity	1.2 (reduce poverty)	RSDS 22	PLAN AGAIN DISCRIMINATION 2018-2020; UDS 21-27; ESF+ 21-27
1	Affected people due to disasters: Population exposed to the risk of floods and landslides	1.5 (exposure to vulnerability)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	PLAN FOR THE REDUCTION OF HYDROGEOLOGICAL HAZARD 21; REFD 2023-25; ERDF 21-27; NRRP - M2 C4 I2.1b Measures to reduce flood risk and reduce hydrogeological risk
1	Several material deprivation	1.1 (extreme poverty)	RSDS 22	PLAN AGAIN DISCRIMINATION 18-20; REFD 23-25; NRRP – M5 workers employability plan 23
1	Persons at risk of poverty or social exclusion	1.2 (reduce poverty)	RSDS 2022; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	PLAN AGAIN DISCRIMINATION 18-20; ESF+ 21-27; REFD 23-25; NRRP – M5 workers employability plan 23
2	Gross Value Added (GVA) of agriculture, forestry and fishing	2.3 (agricultural productivity)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	RURAL DEVELOPMENT COMPLEMENT 23-27; REFD 23-25
2	Share of utilised agricultural area (UAA) cultivated with organic crops	2.4 (sustainable food production)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	RURAL DEVELOPMENT COMPLEMENT 23-27; REFD 2023-25; ERDF 21-27; NRRP – M2 C1 I2.3 Innovation and mechanization in the agriculture and food sector
2	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	2.3 (agricultural productivity)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	RURAL DEVELOPMENT COMPLEMENT 23-27; REFD 23-25
2	Overweight rate	2.2 (end malnutrition)	RSDS 22	PREVENTION PLAN 20-25; NRRP M6
3	Deaths due to Covid-19	3.3 (epidemics and diseases)	RSDS 22	NRRP M6
3	Satisfaction with health services	3.c (health financing and recruitment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	PREVENTION PLAN 20-25; REFD 23-25; ESF+ 21-27
3	Health personnel	3.c (health financing and recruitment)	RSDS 22	PREVENTION PLAN 20-25; REFD 23-25; NRRP M6
3	Hospital beds	3.8 (universal health coverage)	RSDS 22	PREVENTION PLAN 20-25; REFD 23-25; ; ERDF 21-27; ESF+ 21-27; NRRP M6
3	Infant mortality	3.2 (preventable death of newborns)	RSDS 22	PREVENTION PLAN 2020-2025; REFD 2023-25; NRRP M6
4	Women 30-34 years old with higher education level (Tertiary education)	4.5 (gender and other disparities in education), 4.6 (adult literacy)	RSDS 2022	REFD 2023-25; ESF+ 2021-2027; NRRP - M5 C1 R1.1 Active Policies for Employment and Training
4	Students enrolled in tertiary education	4.3 (vocational and tertiary education)	RSDS 2022	REFD 23-25; NRRP - M5 C1 R1.1 Active Policies for Employment and Training

4	Participation in education	4.3 (vocational and tertiary education)	RSDS 2022	REFD 23-25; ERDF 21-27; ESF+ 21-27; NRRP - M5 C1 R1.1 Active Policies for Employment and Training
4	Pupils enrolled in early childhood education	4.2 (access to early childhood education)	RSDS 22	REFD 23-25; ESF+ 21-27
4	Early leavers from education and training	4.6 (youth and adult literacy)	RSDS 22	REFD 23-25; ERDF 21-27
4	Participation rates in selected education levels	4.1 (primary and secondary education)	RSDS 22	REFD 23-25; ESF+ 21-27
4	Distribution of pupils and students enrolled in general and vocational programmes – <i>Upper secondary education - general</i>	4.3 (vocational and tertiary education)	RSDS 22	REFD 23-25
5	Fatal victims of gender-based violence at the hands of their partners or expartners	5.2 (gender violence)	RSDS 22	PLAN AGAINST GENDER VIOLENCE 17
5	Women victims of violence	5.2 (gender violence)	RSDS 22	PLAN AGAINST GENDER VIOLENCE 17
5	Female research and development personnel	5.5 (women participation and leadership)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	REFD 23-25; ERDF 21-27; ESF+ 21-27
5	Women in parliament	5.5 (women participation and leadership)	RSDS 22	
5	Female achievement/disadvantage index	5.1 (gender discrimination)	RSDS 22	PLAN AGAIN DISCRIMINATION 18-20
5	Gender gap in part-time employment incidence	5.4 (unpaid work)	RSDS 22	PLAN AGAIN DISCRIMINATION 18-20; REFD 2023-25; ERDF 2021-2027; ESF+ 21-27
6	Percentage of water bodies achieving the ecological quality objective (high or good)	6.3 (water quality)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	WATER PROTECTION PLAN 21; ERDF 21-27; NRRP - M2
6	Groundwater monitoring	6.3 (water quality)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	WATER PROTECTION PLAN 21
6	Efficiency of drinking water distribution networks	6.1 (universal access to water)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	WATER PROTECTION PLAN 21
6	Urban waste water with secondary or advanced treatment	6.3 (water quality)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	WATER PROTECTION PLAN 21; NRRP - M2 C4 I4.4 Sewerage and treatment investments
7	Electricity production that comes from renewable sources	7.2 (share of renewable energy)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27; REGIONAL HYDROGEN STRATEGY 22	ENVIRONMENTAL ENERGY PLAN of PIEMONTE REGION 22; REFD 23-25; ERDF 21-27; NRRP M2
7	Energy intensity	7.3 (energy efficiency)	RSDS 22; REGIONAL	ENVIRONMENTAL ENERGY PLAN of PIEMONTE REGION

			HYDROGEN STRATEGY 22	22; REF23-25; ERDF 21-27; NRRP M2
8	Occupational accidents - Fatal accidents and permanent disability	8.8 (labour rights)	RSDS 22	
8	Economic activity	8.5 (productive employment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	REFD 23-25; ERDF 21-27
8	Unemployment	8.5 (productive employment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	ERDF 21-27; ESF+ 21-27; NRRP – M5 WORKERS EMPLOYABILITY PLAN 23; NRRP - M5 C1 R1.1 Active Policies for Employment and Training
8	Firm creation	8.3 (job creation)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	REFD 23-25; ERDF 21-27
8	Employment	8.5 (productive employment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	REFD 23-25; ERDF 21-27; ESF+ 21-27; NRRP – M5 WORKERS EMPLOYABILITY PLAN 23; NRRP - M5 C1 R1.1 Active Policies for Employment and Training
8	GDP at current market prices	8.1 (economic growth)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	
8	GVA at basic prices	8.2 (economic productivity)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	
8	Long-term unemployment	8.5 (productive employment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	ERDF 21-27; ESF+ 21-27
8	Compensation of employees	8.5 (productive employment)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	PLAN AGAIN DISCRIMINATION 18-20
8	Young people neither in employment nor in education and training	8.6 (youth not in employment, education or training)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	ERDF 21-27; ESF+ 21-27; NRRP – M5 workers employability plan 23
9	Added value of manufacturing industry to total economy	9.2 (sustainable industrialization)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	ERDF 21-27
9	Gross Domestic Expenditure on R&D	9.5 (promote innovation)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27; REGIONAL HYDROGEN STRATEGY 22	REFD 23-25; ERDF 21-27; NRRP M4
9	R&D personnel and researchers	9.5 (promote innovation)	RSDS 22;	REFD 23-25; ERDF 2021-27; NRRP M4

			SMART SPECIALISATION STRATEGY-S3 21-27; REGIONAL HYDROGEN STRATEGY 22	
9	Employment in high-technology manufacturing	9.5 (promote innovation)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	REFD 23-25; ERDF 21-27
9	Patent applications to the EPO	9.5 (promote innovation)		
10	Employees with disabilities	10.2 (inclusion irrespective of status)	RSDS 22	DISABILITY PLAN 21-24 PLAN AGAIN DISCRIMINATION 18-20; ERDF 21-27
10	Gini index of disposable income (after taxes and transfers)	10.4 (greater equality)	RSDS 22	PLAN AGAIN DISCRIMINATION 18-20; NRRP – M5 workers employability plan 23
11	Housing costs	11.1 (access to housing)	RSDS 22	
11	Transport performance	11.2 (access to transport systems)	RSDS 22; CLIMATE CHANGE STRATEGY 22; SMART SPECIALISATION STRATEGY-S3 21-27; REGIONAL HYDROGEN STRATEGY 22	PLAN FOR AIR QUALITY AIR 19; MOBILITY AND TRANSPORTATION PLAN 18; REFD 23-25; ERDF 21-27; NRRP - M2 C2 I4.4.1 Green bus and train renewal
11	Daily accessibility	11.2 (access to transport systems)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	MOBILITY AND TRANSPORTATION PLAN 2018
11	Stock of vehicles (passenger cars)	11.2 (access to transport systems)	RSDS 22; REGIONAL HYDROGEN STRATEGY 22	MOBILITY AND TRANSPORTATION PLAN 18
11	Soil sealing per capita	11.3 (sustainable urbanization)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	TERRITORIAL PLAN 11-23 LANDSCAPE PLAN 2017; REFD 23-25
11	Land use	11.3 (sustainable urbanization)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	TERRITORIAL PLAN 11-23 LANDSCAPE PLAN 17
11	PM2.5 Emissions	11.6 (environmental impact)	RSDS 22; CLIMATE CHANGE STRATEGY 22	PLAN FOR AIR QUALITY AIR 19
11	Urban waste generation per inhabitant	11.6 (environmental impact)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	WASTE PLAN 22; REFD 23-25; ERDF 21-27; NRRP M2
11	Victims in road accidents	11.2 (access to transport systems)	RSDS 22	MOBILITY AND TRANSPORTATION PLAN 18

12	Carbon footprint: Co2 eq per capita	12.2 (management of natural resources)	RSDS 22; CLIMATE CHANGE STRATEGY 22	PLAN FOR AIR QUALITY AIR 19; REFD 23-25; ERDF 21-27
12	Production of special hazardous waste	12.4 (chemical management)	RSDS 22; SMART SPECIALISATION STRATEGY-S3 21-27	WASTE PLAN 22; REFD 23-25; ERDF 21-27
13	PM10 Emissions	13.2 (climate change measures into policy)	RSDS 22; CLIMATE CHANGE STRATEGY 22	PLAN FOR AIR QUALITY AIR 19
13	CO2 Emissions	13.2 (climate change measures into policy)	RSDS 22; CLIMATE CHANGE STRATEGY 22; REGIONAL HYDROGEN STRATEGY 22	PLAN FOR AIR QUALITY AIR 19; REFD 23-25; ERDF 21-27
13	Greenhouse Gas Emissions	13.2 (climate change measures into policy)	RSDS 22; CLIMATE CHANGE STRATEGY 22; REGIONAL HYDROGEN STRATEGY 22	PLAN FOR AIR QUALITY AIR 19; REFD 23-25; ERDF 21-27
13	Cooling and heating degree days	13.2 (climate change measures into policy)	RSDS 22; CLIMATE CHANGE STRATEGY 22	
15	Terrestrial protected areas as a percentage of total area	15.5 (degradation of habitats)	RSDS 22; CLIMATE CHANGE STRATEGY 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	FORESTRY PLAN 17 LANDSCAPE PLAN 2017; REFD 23-25; ERDF 21-27
15	Estimated soil erosion	15.5 (degradation of habitats)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	TERRITORIAL PLAN 11-23 LANDSCAPE PLAN 17; REFD 23-25
15	Land Abandonment	15.1 (restoration of ecosystems)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	TERRITORIAL PLAN 2011-23 LANDSCAPE PLAN 2017; REFD 23-25
15	Forest area over total surface area	15.1 (restoration of ecosystems)	RSDS 22; CLIMATE CHANGE STRATEGY 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	FORESTRY PLAN 17 LANDSCAPE PLAN 17; REFD 23-25; ERDF 21-27
16	Transparency index	16.6 (effective institutions)	RSDS 22	PLAN FOR THE PREVENTION OF CORRUPTION AND TRANSPARENCY OF THE PIEMONTE REGION 22-24
16	Participation in the last elections- Voters Turnout to General Elections	16.6 (effective institutions)		
16	Quality of Government Index	16.6 (effective institutions)	RSDS 22	
16	Quality of Government Index - Corruption index	16.5 (reduce corruption)	RSDS 22	PLAN FOR THE PREVENTION OF CORRUPTION AND TRANSPARENCY OF THE PIEMONTE REGION 22-24

17	Imports from developing countries	17.12 (imports from least developed countries)		
17	PCT co-patent applications that are done with foreign regions	17.6 (regional and international cooperation)		
17	Individuals who used the internet for interaction with public authorities	17.8 (enabling technology)	RSDS 22; STRATEGY FOR THE PIEMONTE MOUNTAINS 23	ULTRA-BROADBAND STRATEGIC PLAN 9-21

Source: author's own elaboration

Table 220 - The regional set of additional indicators proposed by the Piemonte Region: 45 indicators

SDG	Indicator name	Year of availability	Source	Unit of measurement	Time coverage	Frequency	SDG target
1	Waiver of health care	2021	ISTAT, Regional Statics	percentage	2017-2021	Annual	1.3
	Housing cost overcharge	2021	ISTAT – EU Silc , Regional Statics	percentage	2004-2021	Annual	1.4
	Households who report difficulties with public transport connections in the area where they reside	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	1.4
2	Overweight or obesity among minors from 3 to 17 years of age	2020	ISTAT, Regional Statics	percentage	2011-2020	Annual	2.2
3	Healthy life expectancy at birth	2021	ISTAT, Regional Statics	average number of years	2009-2021	Annual	3.4
4	Not adequate alphabetical and numerical competence, secondary school	2022	Invalsi, National learning surveys	percentage	2019, 2021-2022	-	4.1
	Participation in continuing education	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	4.3
	High digital skills	2019	ISTAT, Regional Statics	percentage	2015, 2016, 2019	-	4.4
	Schools not physically accessible	2021	ISTAT, Regional Statics	percentage	2019-2021	Annual	4.8
	Schools with pupils with disabilities with presence of adapted computer stations: secondary school	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	4.8
	Physically accessible schools	2021	ISTAT, Regional Statics	percentage	2019-2021	Annual	4.a
	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	5.4
6	Water stress level: water withdrawal in proportion to available water	2018	ISTAT, Regional Statics	number (million m3)	2005-2018	2 years	6.4

	resources - Water withdrawals for drinking purposes/ potable use						
	Wetlands of international importance	2018	ISPRA	number (hectares)	2013, 2018	5 years	6.6
7	Households very or fairly satisfied with continuity of electric service	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	7.1
	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	2020	GSE S.p.A. - <i>Energy Services Operator</i>	percentage	2012-2020	Annual	7.2
	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	2020	GSE S.p.A.	percentage	2012-2020	Annual	7.2
	Renewable energy share in the gross final energy consumption (excluding transport sector)	2020	GSE S.p.A.	percentage	2012-2020	Annual	7.2
8	Annual growth rate of real GDP per capita	2020	ISTAT, Regional Statics	percentage	2004-2020	Annual	8.1
	Share of employed persons not in regular occupation	2019	ISTAT, Regional Statics	percentage	2004-2019	Annual	8.3
	Rate of non-participation in employment	2021	ISTAT, Regional Statics	percentage	2018-2021	Annual	8.5
	Number of operational bank branches	2021	ISTAT, Regional Statics	rate per 100.000 inhabitants	2012-2021	Annual	8.10
9	Value added of small manufacturing enterprises on total manufacturing value added	2019	ISTAT, Regional Statics	percentage	2015-2019	Annual	9.3
	R&D intensity	2020	ISTAT, Regional Statics	percentage	2004-2020	Annual	9.5
	Households with fixed and/or mobile broadband connection	2021	ISTAT, Regional Statics	percentage	2010-2021	Annual	9.8
10	Inequality of net income	2020	ISTAT, Regional Statics	number (ratio of incomes)	2004-2020	Annual	10.1

	Disposable income per capita	2020	ISTAT, Regional Statics	number (euro - current prices)	2004-2020	Annual	10.1
11	Urban waste sent to landfill out of total urban waste collected	2020	ISPRA	percentage	2004-2020	Annual	11.6
	Incidence of urban green areas on urbanised area of cities	2020	ISTAT, Regional Statics	rate (m2 per 100 m2 of urbanised areas)	2015-2020	Annual	11.7
	Illegal building	2021	CRESME	rate (per 100 authorized buildings)	2004-2021	Annual	11.3
12	Domestic material consumption per capita	2018	ISTAT, Regional Statics	rate (tons per capita)	2015-2018	Annual	12.2
	Domestic material consumption per GDP	2018	ISTAT, Regional Statics	rate (tons per 1,000 EUR)	2015-2018	Annual	12.2
	Separate collection of urban waste	2020	ISPRA	percentage	2004-2020	Annual	12.5
	Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)	2021	ISPRA	number	2004-2021	Annual	12.6
	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)	2020	ISTAT, Regional Statics	percentage	2015, 2017, 2020	-	12.7
	Incidence of tourism on waste	2020	ISPRA	rate (Kg per inhabitants equivalent)	2006-2020	Annual	12.b
	Tourist intensity index	2020	ISTAT, Regional Statics	rate (per 1000 Inhabitants)	2007-2020	Annual	12.b
	Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments	2020	ISTAT, Regional Statics	percentage	2007-2020	Annual	12.b
13	Impact of forest fires	2021	ISTAT, Regional Statics	rate (per 1.000 km2)	2005-2021	Annual	13.1
	Population residing in flood hazard areas per km2	2020	ISTAT, Regional Statics	rate (inhabitants per km2)	2015, 2017, 2020	-	13.1

	Population residing in landslide hazard areas per km2	2020	ISTAT, Regional Statics	rate (inhabitants per km2)	2015, 2017, 2020	-	13.1
15	Mountain vegetation index	2020	ISPRA	percentage	2012, 2018, 2020	-	15.4
16	Intentional homicide rate	2020	Ministry of the Interior	rate (per 100,000 inhabitants)	2004-2020	Annual	16.1
	Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	2021	Ministry of Justice – Dep. of prison administration	percentage	2010-2021	Annual	16.3
	Correctional institution crowding	2021	ISTAT, Regional Statics	percentage	2004-2021	Annual	16.3
	Length of civil proceedings	2021	Ministry of Justice – Dep. Judicial organization	number (of days)	2012-2021	Annual	16.6

Source: own elaboration from Istat dashboard

Table 221 - ISTAT-SISTAN SDGs indicators

SDG	Strategic Area NSDS2022	National Strategic Choice (NSC) NSDS2022	Indicator NSC NSDS2022	Istat - Sistan SDGs	BES Indicators	Indicators included in the DEF
1	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	1.2.1 Absolute poverty (incidence)	X	X	X
	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	1.2.2 Severe material deprivation rate	X	X	
2	PEOPLE	III. Promote health and wellbeing	2.2.2 Overweight or obesity among minors from 3 to 17 years of age	X	X	
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	2.4.1 Share of utilized agricultural land under organic farming	X		
3	PEOPLE	III. Promote health and wellbeing	3.4.1 Healthy life expectancy at birth	X	X	X
4	PEOPLE	II. Guarantee the conditions for human potential development	4.6.1 People having completed tertiary education (30-34 years)	X	X	
	PEOPLE	II. Guarantee the conditions for human potential development	4.1.2 Early leavers from education and training	X	X	X
	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	4.1.1 Literacy or numeracy proficiency, secondary school, for citizenship (NEW)	X		
	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	4.a.1 Physically accessible schools	X		
5	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	5.2.2 - Proportion of women and girls at least 15 years of age who have been victims of sexual violence by persons other than partners in the past 5 years (NEW)	X		
	PEACE	II. End discrimination in all its forms	5.5.1 Women and political representation at regional level	X	X	

	PEACE	II. End discrimination in all its forms	5.4.1 Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	X	X	X
6	PLANET	II. Ensure the sustainable management of natural resources	6.4.1 Urban water supply network efficiency	X	X	
	PLANET	II. Ensure the sustainable management of natural resources	6.3 Percentage of purified wastewater (NEW)			
7	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.3.1 Energy intensity	X		
	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.2.1 Renewable energy share in the gross final energy consumption	X		
	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.2.1 Electricity from renewable sources (NEW)	X	X	
	PROSPERITY	V. Promote mobility and transport sustainability and security	7.1.2 Share of newly registered electric or hybrid cars (NEW)	X		
8	PEOPLE	II. Guarantee the conditions for human potential development	8.5.2 Rate of non-participation in employment (NEW)	X	X	X
	PEOPLE	II. Guarantee the conditions for human potential development	8.3.1 Share of employed persons not in regular occupation	X		
	PROSPERITY	I. Promote sustainable economic wellbeing	8.1.1 Annual growth rate of real GDP per capita	X		
	PROSPERITY	III. Ensure full employment and high quality training	8.5.2 Employment rate (20-64)	X	X	
	PROSPERITY	III. Ensure full employment and high quality training	8.6.1 People not in education, employment, or training (NEET) (aged 15-29)	X	X	
	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	8.5.2 Employment rate (20-64) for citizenship	X	X	
9	PROSPERITY	II. Fund and promote sustainable research and innovation	9.5.2 Researchers (in full-time equivalent) (NEW)	X		

	PROSPERITY	II. Fund and promote sustainable research and innovation	9.5.1 R&D intensity	X	X	
	PROSPERITY	II. Fund and promote sustainable research and innovation	9.4.1 CO2 emission per unit of value added	X	X	X
	PROSPERITY	V. Promote mobility and transport sustainability and security	9.1.2 Freight volumes, by transport mode	X		
	PROSPERITY	V. Promote mobility and transport sustainability and security	9.1.2 Passenger volumes, by transport mode	X		
10	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	10.2.1 People at risk of poverty	X	X	
	PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Inequality of net income (NEW)	X	X	X
	PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Adjusted disposable income per capita	X	X	X
11	PEOPLE	III. Promote health and wellbeing	11.5.1 Population at risk of landslides 11.5.1 Population at risk of floods	X	X	
	PLANET	II. Ensure the sustainable management of natural resources	11.6.2 Emissions of SO2, NOx, COVNM, NH3, PM2.5 (NEW)	X		
	PLANET	II. Ensure the sustainable management of natural resources	11.6.1 Urban waste sent to landfill out of total urban waste collected (NEW)	X		
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.7.1 Incidence of urban green areas on urbanised area of cities	X		
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.a Primary expenditure on environmental protection, use and management of natural resources with reference to biodiversity (NEW)			
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.3.1 Illegal building (NEW)	X	X	X

12	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per capita (NEW)	X		
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per GDP	X		
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.5.1 Separate collection of urban waste (NEW)	X		
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.5.1 Circular material use rate	X		
13	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	13.2.2 CO2 and other greenhouse gases emissions	X	X	X
	PEOPLE	III. Promote health and wellbeing	13.1.1 Population at risk of landslides 13.1.1 Population at risk of floods	X	X	
14	PLANET	I. Halt the loss of biodiversity	14.5.1 Marine areas EUAP	X		
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	14.4.1 Over-exploited fish stock (Western Mediterranean) (REM)			
15	PLANET	I. Halt the loss of biodiversity	15.1.2 Protected natural areas	X		
	PLANET	II. Ensure the sustainable management of natural resources	15.3.1 Soil sealing from artificial land cover	X	X	
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	15.3.1 Fragmentation of natural and agricultural land	X		
	PLANET	I. Halt the loss of biodiversity	15.5 Percentage of species and habitats of community interest in satisfactory conservation status (NEW)			
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	15.2.1 Forest area certified under an independent verification scheme (REM)			
16	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	16.1.1 Intentional homicide rate	X		

	PEACE	III. Ensure legality and justice	Predatory crime index (per thousand population) (NEW)		X	X
	PEACE	III. Ensure legality and justice	16.3.2 Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	X		
	PEACE	III. Ensure legality and justice	16.3.2 Correctional institution crowding (NEW)	X	X	
	PEACE	III. Ensure legality and justice	16.6.2 Length of civil proceedings	X	X	X
17	PARTNERSHIP		17.2.1 Net Official Development Assistance, total and to Least Developed Countries, as a proportion of gross national income	X		

Source: author's own elaboration from the National Strategy for Sustainable Development NSDS22, IT

Note:

(NEW) = Indicators added in the set from 2022

(REM) = Indicators from the 2018 set removed in the 2022 set

We exclude indicators that have been removed in the 2022 set.

Table 222 - Identification of additional indicators, starting with the National monitoring system of NSDS (55 national indicators)

SDG	Strategic Area NSDS2022	National Strategic Choice (NSC) NSDS2022	Indicator NSC NSDS2022	Source (year of availability, unit of measurement)	Indicators available at the regional level	SDG targets and indicators in JRC dataset
1	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	1.2.1 Absolute poverty (incidence)	ISTAT (2021, percentage values)	NUTS 0 NUTS 1	1.2 Persons at risk of poverty or social exclusion
	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	1.2.2 Severe material deprivation rate	ISTAT (2021, percentage values)	X	1.1 Material and social deprivation <i>proxy: Severe material deprivation</i>
2	PEOPLE	III. Promote health and wellbeing	2.2.2 Overweight or obesity among minors from 3 to 17 years of age	ISTAT (2020, percentage values)	X	2.2 Overweight rate
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	2.4.1 Share of utilized agricultural land under organic farming	Ministry of Agricultural, Food and Forestry Policies (2021, percentage values)	X	2.4 Organic farming: areas with different crops <i>Proxy: Share of utilized agricultural land under organic farming</i>
3	PEOPLE	III. Promote health and wellbeing	3.4.1 Healthy life expectancy at birth	ISTAT (2021, average number of years)	X	3.2 Infant mortality
4	PEOPLE	II. Guarantee the conditions for human potential development	4.6.1 People having completed tertiary education (30-34 years)	ISTAT (2021, percentage values)	X	4.3 Students enrolled in tertiary education
	PEOPLE	II. Guarantee the conditions for human potential development	4.1.2 Early leavers from education and training	ISTAT (2021, percentage values)	X	4.6 Early leavers from education and training
	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	4.1.1 Not adequate alphabetical and numerical competence, secondary school	Invalsi (2022, percentage values)	X	
	PEACE	I. Promote a nonviolent and inclusive society	4.a.1 Physically accessible schools	ISTAT (2021, percentage values)	X	

		respectful of human rights				
5	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	5.2.2 - Proportion of women and girls at least 15 years of age who have been victims of sexual violence by persons other than partners in the past 5 years	ISTAT (2021, percentage values)	X	5.2 Fatal victims of gender-based violence at the hands of their partners or ex partners
	PEACE	II. End discrimination in all its forms	5.5.1 Women and political representation at regional level	Individual regional councils (2021, percentage values)	X	5.5 Women in parliament and government
	PEACE	II. End discrimination in all its forms	5.4.1 Ratio of employment rate for women aged 25-49 with at least one child aged 0-5 to the employment rate of women 25-49 years without children	ISTAT (2021, percentage values)	X	
6	PLANET	II. Ensure the sustainable management of natural resources	6.4.1 Efficiency of drinking water distribution networks	ISTAT (2018, percentage values)	X	6.1 Population served by safely managed drinking water supply services <i>Proxy: Efficiency of drinking water distribution networks</i>
	PLANET	II. Ensure the sustainable management of natural resources	6.3 Percentage of purified wastewater	ISTAT (2015, percentage values)	X	6.3 Population connected to wastewater with at least secondary treatment <i>Proxy: Urban waste water system with secondary or advanced treatment</i>
7	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.3.1 Energy intensity	ENEA processing on Eurostat and Istat data (2019, tons of oil equivalent per million €)	X	7.3 Energy intensity
	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.2.1 Renewable energy share in the gross final energy consumption	GSE S.p.A. - <i>Energy Services Operator</i> (2020, percentage values)	X	

	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.2.1 Electricity from renewable sources	TERNA SPA (2020, percentage values)	X	7.2 Electricity production that comes from renewable sources
	PROSPERITY	V. Promote mobility and transport sustainability and security	7.1.2 Share of newly registered electric or hybrid cars	ISTAT	-	
8	PEOPLE	II. Guarantee the conditions for human potential development	8.5.2 Rate of non-participation in employment	ISTAT (2021, percentage values)	X	8.5 Unemployment
	PEOPLE	II. Guarantee the conditions for human potential development	8.3.1 Share of employed persons not in regular occupation	ISTAT (2019, percentage values)	X	
	PROSPERITY	I. Promote sustainable economic wellbeing	8.1.1 Annual growth rate of real GDP per capita	ISTAT (2020, percentage values)	X	
	PROSPERITY	III. Ensure full employment and high quality training	8.5.2 Employment rate (20-64)	ISTAT (2021, percentage values)	X	8.5 Employment
	PROSPERITY	III. Ensure full employment and high quality training	8.6.1 People not in education, employment, or training (NEET) (aged 15-29)	ISTAT (2021, percentage values)	X	8.6 Young people neither in employment nor in education and training
	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	8.5.2 Employment rate (20-64) for citizenship	ISTAT (2021, percentage values)	-	
9	PROSPERITY	II. Fund and promote sustainable research and innovation	9.5.2 Researchers (in full-time equivalent)	ISTAT (2020, percentage values)	X	9.5 R&D personnel and researchers
	PROSPERITY	II. Fund and promote sustainable research and innovation	9.5.1 R&D intensity	ISTAT (2020, percentage values)	X	
	PROSPERITY	II. Fund and promote sustainable research and innovation	9.4.1 CO2 emission per unit of value added	ISTAT (2019, tons per million euro)	-	
	PROSPERITY	V. Promote mobility and transport sustainability and security	9.1.2 Freight volumes, by transport mode	ISTAT (2019, thousand)	-	

	PROSPERITY	V. Promote mobility and transport sustainability and security	9.1.2 Passenger volumes, by transport mode	ISTAT (2019, thousand)	-	11.2 Transport performance- <i>Seat-km of public transport</i>
10	PEOPLE	I. Fight poverty and social exclusion, eliminating territorial gaps	10.2.1 People at risk of poverty - Percentage of people living in households with equivalent disposable income, less than 60% of median income	ISTAT (2021, percentage values)	X	1.2 Persons at risk of poverty or social exclusion
	PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Inequality of net income	ISTAT (2020, number)	X	
	PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Disposable income per capita	ISTAT (2020, euro (current prices)	X	10.4 Gini index of disposable income (after taxes and transfers)
11	PEOPLE	III. Promote health and wellbeing	11.5.1 Population at risk of landslides 11.5.1 Population at risk of floods	ISPRA (2020, percentage values)	X	1.5 Affected people due to disasters <i>Proxy: Population exposed to the risk of floods and landslides</i>
	PLANET	II. Ensure the sustainable management of natural resources	11.6.2 Emissions of SO ₂ , NO _x , COVNM, NH ₃ , PM2.5	ISPRA	NUTS 0	
	PLANET	II. Ensure the sustainable management of natural resources	11.6.1 Urban waste sent to landfill out of total urban waste collected	ISPRA (2020, percentage values)	X	
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.7.1 Incidence of urban green areas on urbanised area of cities	ISTAT (2020, m2 per 100 m2 of urbanised areas)	X	
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.a Primary expenditure on environmental protection, use and management of natural resources with reference to biodiversity	ISPRA	NUTS 0	
	PLANET	III. Create resilient communities and territories, protect	11.3.1 Illegal building	CRESME(2021, rate per 100 authorized buildings)	X	

		landscapes and cultural heritage				
12	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per capita	ISTAT (2018, tons per capita)	X	
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per GDP	ISTAT (2018, tons per 1,000 EUR)	X	
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.5.1 Separate collection of urban waste	ISPRA (2020, percentage values)	X	
	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.5.1 Circular material use rate	Eurostat (2019, percentage values)	NUTS 0	
13	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	13.2.2 CO2 and other greenhouse gases emissions	ISPRA - ISTAT	NUTS 0	13.2 Greenhouse Gas Emissions
	PEOPLE	III. Promote health and wellbeing	13.1.1 Population at risk of landslides 13.1.1 Population at risk of floods	ISPRA (2017, percentage values)	X	1.5 Affected people due to disasters <i>Proxy: Population exposed to the risk of floods and landslides</i>
14	PLANET	I. Halt the loss of biodiversity	14.5.1 Marine areas EUAP	Ministry for Ecological Transition (2020, km2)	-	14.5 Protected coastal area as a percentage of total coastal area
15	PLANET	I. Halt the loss of biodiversity	15.1.2 Protected natural areas	ISTAT (2021, percentage values)	X	15.5 Terrestrial protected areas as a percentage of total area
	PLANET	II. Ensure the sustainable management of natural resources	15.3.1 Soil sealing from artificial land cover	ISPRA (2021, percentage values)	X	11.3 Difference between built-up area growth rate and population growth rate <i>Proxy: Soil sealing per capita</i>
	PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	15.3.1 Fragmentation of natural and agricultural land	ISPRA (2020, percentage values)	X	15.5 Estimated soil erosion (<i>Agricultural areas and natural grassland</i>)

	PLANET	I. Halt the loss of biodiversity	15.5 Percentage of species and habitats of community interest in satisfactory conservation status	ISPRA (2020, percentage values)	-	
16	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	16.1.1 Intentional homicide rate	Ministry of the Interior (2020, per 100,000 inhabitants)	X	
	PEACE	III. Ensure legality and justice	Predatory crime index (per thousand population)	ISTAT	-	
	PEACE	III. Ensure legality and justice	16.3.2 Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	Ministry of Justice –Dep. of prison administration (2021, percentage values)	X	
	PEACE	III. Ensure legality and justice	16.3.2 Correctional institution crowding	ISTAT (2021, percentage values)	X	
	PEACE	III. Ensure legality and justice	16.6.2 Length of civil proceedings	Ministry of Justice –Dep. Judicial organization (2021, n. of days)	X	
17	PARTNERSHIP		17.2.1 Net Official Development Assistance, total and to Least Developed Countries, as a proportion of gross national income	Ministry of Foreign Affairs and International Cooperation (2019, percentage values)	NUTS 0	17.2 Official Development Assistance

Source: Istat dashboard SDGs 2022 ⁽²⁵⁾

⁽²⁵⁾ Istat dashboard SDGs

Table 223 - Proposal of additional indicators in coherence with the National monitoring system of NSDS, available at regional level and useful for Piemonte Region (22 indicators in total)

SDG	SDG 2030Agenda	Strategic Area NSDS2022	National Strategic Choice (NSC) NSDS2022	Indicator NSC NSDS2022	Source (year of availability, unit of measurement)
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	PEOPLE	III. Promote health and wellbeing	2.2.2 Overweight or obesity among minors from 3 to 17 years of age	ISTAT (2020, percentage values)
3	Ensure healthy lives and promote well-being for all at all ages	PEOPLE	III. Promote health and wellbeing	3.4.1 Healthy life expectancy at birth	ISTAT (2021, average number of years)
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	4.1.1 Not adequate alphabetical and numerical competence, secondary school	Invalsi (2022, percentage values)
		PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	4.a.1 Physically accessible schools	ISTAT (2021, percentage values)
5	Achieve gender equality and empower all women and girls	PEACE	II. End discrimination in all its forms	5.4.1 Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	ISTAT (2021, percentage values)
7	Ensure access to affordable, reliable, sustainable and modern energy for all	PROSPERITY	VI. Reduce greenhouse gas emissions and decarbonise the economy	7.2.1 Renewable energy share in the gross final energy consumption	GSE S.p.A. - <i>Energy Services Operator</i> (2020, percentage values)
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	PEOPLE	II. Guarantee the conditions for human potential development	8.5.2 Rate of non-participation in employment	ISTAT (2021, percentage values)
		PEOPLE	II. Guarantee the conditions for human potential development	8.3.1 Share of employed persons not in regular occupation	ISTAT (2019, percentage values)
		PROSPERITY	I. Promote sustainable economic wellbeing	8.1.1 Annual growth rate of real GDP per capita	ISTAT (2020, percentage values)
9	Build resilient infrastructure, promote inclusive and sustainable	PROSPERITY	II. Fund and promote sustainable	9.5.1 R&D intensity	ISTAT (2020, percentage values)

	industrialization and foster innovation		research and innovation		
10	Reduce inequality within and among countries	PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Inequality of net income	ISTAT (2020, number)
		PROSPERITY	I. Promote sustainable economic wellbeing	10.1.1 Disposable income per capita	ISTAT (2020, euro (current prices))
11	Make cities and human settlements inclusive, safe, resilient and sustainable	PLANET	II. Ensure the sustainable management of natural resources	11.6.1 Urban waste sent to landfill out of total urban waste collected	ISPRA (2020, percentage values)
		PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.7.1 Incidence of urban green areas on urbanised area of cities	ISTAT (2020, m2 per 100 m2 of urbanised areas)
		PLANET	III. Create resilient communities and territories, protect landscapes and cultural heritage	11.3.1 Illegal building	CRESME(2021, rate per 100 authorized buildings)
12	Ensure sustainable consumption and production patterns	PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per capita	ISTAT (2018, tons per capita)
		PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.2.2 Domestic material consumption per GDP	ISTAT (2018, tons per 1,000 EUR)
		PROSPERITY	IV. Ensure sustainable production and consumption patterns	12.5.1 Separate collection of urban waste	ISPRA (2020, percentage values)
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	PEACE	I. Promote a nonviolent and inclusive society respectful of human rights	16.1.1 Intentional homicide rate	Ministry of the Interior (2020, per 100,000 inhabitants)
		PEACE	III. Ensure legality and justice	16.3.2 Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	Ministry of Justice –Dep. of prison administration (2021, percentage values)

		PEACE	III. Ensure legality and justice	16.3.2 Correctional institution crowding	ISTAT (2021, percentage values)
		PEACE	III. Ensure legality and justice	16.6.2 Length of civil proceedings	Ministry of Justice –Dep. Judicial organization (2021, n. of days)

Source: Istat dashboard SDGs 2022

Table 224 - Number of indicators per SDG Targets

SDG	N. target	Target	N. of additional indicators (PR)
2	2.2	End all forms of malnutrition	1
3	3.4	Reduce mortality from non-communicable diseases and promote mental health	1 (NEW)
4	4.1	Free primary and secondary education	1
4	4.a	Increase the supply of qualified teachers in developing countries	1 (NEW)
5	5.4	Value unpaid care and promote shared domestic responsibilities	1
7	7.2	Increase global percentage of renewable energy	1
8	8.1	Sustainable economic growth	1
8	8.3	Promote policies to support job creation and growing enterprises	1
8	8.5	Full employment and decent work with equal pay	1
9	9.5	Enhance research and upgrade industrial technologies	1
10	10.1	Reduce income inequalities	2 (NEW)
11	11.3	Inclusive and sustainable urbanization	1
11	11.6	Reduce the environmental impact of cities	1
11	11.7	Provide access to safe and inclusive green and public spaces	1 (NEW)
12	12.2	Sustainable management and use of natural resources	2
12	12.5	Substantially reduce waste generation	1 (NEW)
16	16.1	Reduce violence everywhere	1 (NEW)
16	16.3	Promote the rule of law and ensure equal access to justice	2 (NEW)
16	16.6	Develop effective, accountable and transparent institutions	1
TOT		Targets covered (n.)	19
TOT		New targets covered (n.)	7
TOT		Indicators (n.)	22

Source: author's own elaboration

Table 225 - Proposal of other possible additional indicators to cover other SDG Targets, useful for Piemonte Region (23 indicators)

SDG	Additional indicators	New SDG targets covered	Time coverage
1	Housing cost overcharge	1.4 (equal rights)	2004-2021
1	Waiver of health care	1.3 (implement social protection systems)	2017-2021
1	Households who report difficulties with public transport connections in the area where they reside	1.4 (equal rights)	2010-2021
4	Participation in continuing education	4.3 (vocational and tertiary education)	2018-2021
4	High digital skills	4.4 (increase the number of people with relevant skills for financial success)	2015, 2019
4	Schools not physically accessible	4.8 (build and upgrade inclusive and safe schools)	2019-2021
4	Schools with pupils with disabilities with presence of adapted computer stations: secondary school	4.8 (build and upgrade inclusive and safe schools)	2018-2021
6	Water stress level: water withdrawal in proportion to available water resources: Water withdrawals for drinking purposes/ potable use	6.4 (increase water-use efficiency and ensure freshwater supplies)	2005-2018
6	Wetlands of international importance	6.6 (protect and restore water-related ecosystems)	2013, 2018
7	Households very or fairly satisfied with continuity of electric service	7.1 (universal access to modern energy)	2010-2021
7	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	7.2 (share of renewable energy)	2012-2020
7	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	7.2 (share of renewable energy)	2012-2020
8	Number of operational bank branches	8.10 (universal access to banking, insurance and financial services)	2012-2021
9	Value added of small manufacturing enterprises on total manufacturing value added	9.3 (increase access to financial services and markets)	2015-2019
9	Households with fixed and/or mobile broadband connection	9.8 (universal access to information and communications technology)	2010-2021
12	Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)	12.6 (Encourage Companies To Adopt Sustainable Practices And Sustainability Reporting)	2004-2021
12	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)	12.7 (promote sustainable public procurement practices)	2015, 2017, 2020
12	Incidence of tourism on waste	12.b (develop and implement tools to monitor sustainable tourism)	2006-2020
12	Tourist intensity index	12.b (develop and implement tools to monitor sustainable tourism)	2007-2020
12	Presences of open-air accommodation establishments, agritourisms and mountain	12.b (develop and implement tools to monitor sustainable tourism)	2007-2020

	lodges out of total presences in accommodation establishments		
13	Impact of forest fires	13.1 (strengthen resilience and adaptive capacity to climate related disasters)	2005-2021
13	Population residing in flood and landslide hazard areas per km2	13.1 (strengthen resilience and adaptive capacity to climate related disasters)	2015,2017, 2020
15	Mountain vegetation index	15.4 (ensure conservation of mountain ecosystems)	2012, 2018, 2020

Source: author's own elaboration from regional data (Istat, Regional Statics Database and RSDS Piemonte Region)

Table 226 - Number of indicators per SDG Targets

SDG	N. target	Target	N. of additional indicators_2 (PR)
1	1.3	Implement social protection systems	1 (NEW)
1	1.4	Equal rights to ownership, basic services, technology and economic resources	2 (NEW)
4	4.3	Equal access to affordable technical, vocational and higher education	1
4	4.4	Increase the number of people with relevant skills for financial success	1 (NEW)
4	4.8	Build and upgrade inclusive and safe schools	2 (NEW)
6	6.4	Increase water-use efficiency and ensure freshwater supplies	1 (NEW)
6	6.6	Protect and restore water-related ecosystems	1 (NEW)
7	7.1	Universal access to modern energy	1
7	7.2	Increase global percentage of renewable energy	2
8	8.a	Universal access to banking, insurance and financial services	1 (NEW)
9	9.3	Increase access to financial services and markets	1 (NEW)
9	9.8	Universal access to information and communications technology	1 (NEW)
12	12.6	Encourage companies to adopt sustainable practices and sustainability reporting	1 (NEW)
12	12.7	Promote sustainable public procurement practices	1 (NEW)
12	12.b	Develop and implement tools to monitor sustainable tourism	3 (NEW)
13	13.1	Strengthen resilience and adaptive capacity to climate related disasters	2 (NEW)
15	15.4	Ensure conservation of mountain ecosystems	1 (NEW)
TOT		Targets covered (n.)	17
TOT		New targets covered (n.)	14
TOT		Indicators (n.)	23

Source: author's own elaboration

Table 227 - Number of total indicators per SDG Targets

SDG	N. target	Target	N. of indicators (JRC)	N. of indicators (PR)	N. of additional indicators_1 (PR)	N. of additional indicators_2 (PR)
1	1.1	Eradicate extreme poverty	1	1		
1	1.2	Reduce poverty	2	2		
1	1.3	Implement social protection systems				1
1	1.4	Equal rights to ownership, basic services, technology and economic resources				2
1	1.5	Build resilience to environmental, economic and social disasters	1	1		
1	1.6	Mobilize resources to implement policies to end poverty				
1	1.7	Create pro-poor and gender-sensitive policy frameworks				
2	2.1	Universal access to safe and nutritious food				
2	2.2	End all forms of malnutrition	1	1	1	
2	2.3	Double the productivity and incomes of small-scale food producers	2	2		
2	2.4	Sustainable food production and resilient agricultural practices	1	1		
2	2.5	Maintain the genetic diversity in food production				
2	2.6	Invest in rural infrastructure, agricultural research, technology and gene banks				
2	2.7	Prevent agricultural trade restrictions, market distortions and export subsidies				
2	2.8	Ensure stable food commodity markets and timely access to information				
3	3.1	Reduce maternal mortality				
3	3.2	End all preventable deaths under 5 years of age	1	1		
3	3.3	Fight communicable diseases	1	1		
3	3.4	Reduce mortality from non-communicable diseases and promote mental health			1	
3	3.5	Prevent and treat substance abuse				
3	3.6	Reduce road injuries and deaths				

3	3.7	Universal access to sexual and reproductive care, family planning and education				
3	3.8	Achieve universal health coverage	1	1		
3	3.9	Reduce illnesses and death from hazardous chemicals and pollution				
3	3.a	Implement the who framework convention on tobacco control				
3	3.b	Support research, development and universal access to affordable vaccines and medicines				
3	3.c	Increase health financing and support health workforce in developing countries	2	2		
3	3.d	Improve early warning systems for global health risks				
4	4.1	Free primary and secondary education	1	1	1	
4	4.2	Equal access to quality pre-primary education	1	1		
4	4.3	Equal access to affordable technical, vocational and higher education	3	3		1
4	4.4	Increase the number of people with relevant skills for financial success				1
4	4.5	Eliminate all discrimination in education	1	1		
4	4.6	Universal literacy and numeracy	1	1		
4	4.7	Education for sustainable development and global citizenship				
4	4.8	Build and upgrade inclusive and safe schools				2
4	4.9	Expand higher education scholarships for developing countries				
4	4.a	Increase the supply of qualified teachers in developing countries			1	
5	5.1	End discrimination against women and girls	1	1		
5	5.2	End all violence against and exploitation of women and girls	2	2		
5	5.3	Eliminate forced marriages and genital mutilation				
5	5.4	Value unpaid care and promote shared domestic responsibilities	2	1	1	

5	5.5	Ensure full participation in leadership and decision-making	2	2		
5	5.6	Universal access to reproductive health and rights				
5	5.7	Equal rights to economic resources, property ownership and financial services				
5	5.8	Promote empowerment of women through technology				
5	5.9	Adopt and strengthen policies and enforceable legislation for gender equality				
6	6.1	Safe and affordable drinking water	1	1		
6	6.2	End open defecation and provide access to sanitation and hygiene				
6	6.3	Improve water quality, wastewater treatment and safe reuse	3	3		
6	6.4	Increase water-use efficiency and ensure freshwater supplies			1	
6	6.5	Implement integrated water resources management				
6	6.6	Protect and restore water-related ecosystems			1	
6	6.7	Expand water and sanitation support to developing countries				
6	6.8	Support local engagement in water and sanitation management				
7	7.1	Universal access to modern energy	1			1
7	7.2	Increase global percentage of renewable energy	2	1	1	2
7	7.3	Double the improvement in energy efficiency	1	1		
7	7.4	Promote access to research, technology and investments in clean energy				
7	7.5	Expand and upgrade energy services for developing countries				
8	8.1	Sustainable economic growth	1	1	1	
8	8.2	Diversify, innovate and upgrade for economic productivity	1	1		
8	8.3	Promote policies to support job creation and growing enterprises	1	1	1	

8	8.4	Improve resource efficiency in consumption and production			
8	8.5	Full employment and decent work with equal pay	5	5	1
8	8.6	Promote youth employment, education and training	1	1	
8	8.7	End modern slavery, trafficking and child labour			
8	8.8	Protect labour rights and promote safe working environments	1	1	
8	8.9	Promote beneficial and sustainable tourism			
8	8.a	Universal access to banking, insurance and financial services			1
8	8.b	Increase aid for trade support			
8	8.c	Develop a global youth employment strategy			
9	9.1	Develop sustainable, resilient and inclusive infrastructures			
9	9.2	Promote inclusive and sustainable industrialization	1	1	
9	9.3	Increase access to financial services and markets			1
9	9.4	Upgrade all industries and infrastructures for sustainability			
9	9.5	Enhance research and upgrade industrial technologies	4	4	1
9	9.6	Facilitate sustainable infrastructure development for developing countries			
9	9.7	Support domestic technology development and industrial diversification			
9	9.8	Universal access to information and communications technology			1
10	10.1	Reduce income inequalities			2
10	10.2	Promote universal social, economic and political inclusion	1	1	
10	10.3	Ensure equal opportunities and end discrimination			
10	10.4	Adopt fiscal and social policies that promote equality	1	1	
10	10.5	Improved regulation of global financial markets and institutions			
10	10.6	Enhanced representation for developing countries in financial institutions			

10	10.7	Responsible and well-managed migration policies			
10	10.8	Special and differential treatment for developing countries			
10	10.9	Encourage development assistance and investment in least developed countries			
10	10.a	Reduce transaction costs for migrant remittances			
11	11.1	Safe and affordable housing	1	1	
11	11.2	Affordable and sustainable transport systems	4	4	
11	11.3	Inclusive and sustainable urbanization	2	2	1
11	11.4	Protect the world's cultural and natural heritage			
11	11.5	Reduce the adverse effects of natural disasters	*	*	
11	11.6	Reduce the environmental impact of cities	2	2	1
11	11.7	Provide access to safe and inclusive green and public spaces			1
11	11.8	Strong national and regional development planning			
11	11.9	Implement policies for inclusion, resource efficiency and disaster risk reduction			
11	11.a	Support least developed countries in sustainable and resilient building			
12	12.1	Implement the 10-year sustainable consumption and production framework			
12	12.2	Sustainable management and use of natural resources	1	1	2
12	12.3	Halve global per capita food waste	1		
12	12.4	Responsible management of chemicals and waste	1	1	
12	12.5	Substantially reduce waste generation			1
12	12.6	Encourage companies to adopt sustainable practices and sustainability reporting			1
12	12.7	Promote sustainable public procurement practices			1
12	12.8	Promote universal understanding of sustainable lifestyles			
12	12.a	Support developing countries' scientific and technological capacity for sustainable consumption and production			

12	12.b	Develop and implement tools to monitor sustainable tourism			3
12	12.c	Remove market distortions that encourage wasteful consumption			
13	13.1	Strengthen resilience and adaptive capacity to climate related disasters			2
13	13.2	Integrate climate change measures into policies and planning	4	4	
13	13.3	Build knowledge and capacity to meet climate change			
13	13.4	Implement the un framework convention on climate change			
13	13.5	Promote mechanisms to raise capacity for planning and management			
14	14.1	Reduce marine pollution	1		
14	14.2	Protect and restore ecosystems			
14	14.3	Reduce ocean acidification			
14	14.4	Sustainable fishing			
14	14.5	Conserve coastal and marine areas	2		
14	14.6	End subsidies contributing to overfishing			
14	14.7	Increase the economic benefits from sustainable use of marine resources			
14	14.8	Increase scientific knowledge, research and technology for ocean health			
14	14.9	Support small scale fishers			
14	14.a	Implement and enforce international sea law			
15	15.1	Conserve and restore terrestrial and freshwater ecosystems	2	2	
15	15.2	End deforestation and restore degraded forests			
15	15.3	End desertification and restore degraded land	**	**	
15	15.4	Ensure conservation of mountain ecosystems			1
15	15.5	Protect biodiversity and natural habitats	2	2	
15	15.6	Promote access to genetic resources and fair sharing of the benefits			
15	15.7	Eliminate poaching and trafficking of protected species			

15	15.8	Prevent invasive alien species on land and in water ecosystems			
15	15.9	Integrate ecosystem and biodiversity in governmental planning			
15	15.a	Increase financial resources to conserve and sustainably use ecosystem and biodiversity			
15	15.b	Finance and incentivize sustainable forest management			
15	15.c	Combat global poaching and trafficking			
16	16.1	Reduce violence everywhere			1
16	16.2	Protect children from abuse, exploitation, trafficking and violence			
16	16.3	Promote the rule of law and ensure equal access to justice			2
16	16.4	Combat organized crime and illicit financial and arms flows			
16	16.5	Substantially reduce corruption and bribery	1	1	
16	16.6	Develop effective, accountable and transparent institutions	3	3	1
16	16.7	Ensure responsive, inclusive and representative decision-making			
16	16.8	Strengthen the participation in global governance			
16	16.9	Provide universal legal identity			
16	16.a	Ensure public access to information and protect fundamental freedoms			
16	16.b	Strengthen national institutions to prevent violence and combat terrorism and crime			
16	16.c	Promote and enforce non-discriminatory laws and policies			
17	17.1	Mobilize resources to improve domestic revenue collection			
17	17.2	Implement all development assistance commitments	1		
17	17.3	Mobilize financial resources for developing countries			
17	17.4	Assist developing countries in attaining debt sustainability			
17	17.5	Invest in least developed countries			

17	17.6	Knowledge sharing and cooperation for access to science, technology and innovation	1	1		
17	17.7	Promote sustainable technologies to developing countries				
17	17.8	Strengthen the science, technology and innovation capacity for least developed countries	1	1		
17	17.9	Enhance sdg capacity in developing countries				
17	17.a	Promote a universal trading system under the wto				
17	17.b	Increase the exports of developing countries				
17	17.c	Remove trade barriers for least developed countries	1	1		
17	17.d	Enhance global macroeconomic stability				
17	17.e	Enhance policy coherence for sustainable development				
17	17.f	Respect national leadership to implement policies for the sustainable development goals				
17	17.g	Enhance the global partnership for sustainable development				
17	17.h	Encourage effective partnerships				
17	17.i	Enhance availability of reliable data				
17	17.j	Further develop measurements of progress				
TOT		TARGETS covered (n.)	52	47	19	17
TOT		NEW TARGETS covered (n.)			7	14
TOT		INDICATORS (n.)	83	75	22	23

Source: author's own elaboration

Note: The table includes the number of indicators per SDG Targets: in the first dataset (JRC); in the second dataset (available indicators at the regional level) – Chapter 2; in the third dataset of additional indicators in coherence with the National monitoring system (useful for Piemonte Region); in the fourth dataset of other proposal indicators (usefull for Piemonte Region) – Chapter 3.

Two particular cases are:

(*) SDG Target **11.5 REDUCE THE ADVERSE EFFECTS OF NATURAL DISASTERS**

we use (in Chapter 2)

Population exposed to the risk of floods and landslides in relation to SDG Target **1.5 (exposure to vulnerability)** but the same indicator can be used to measure the adverse effects of natural disasters.

(**) SDG Target **15.3 END DESERTIFICATION AND RESTORE DEGRADED LAND**

we use (in Chapter 2)

Estimated soil erosion (Agricultural areas and natural grassland) in relation to SDG Target **15.5 (degradation of habitats)** but the same indicators can be used to measure the rate of degraded land.

Table 228 - Summary table of indicators: fit for purpose, not fit for purpose or fit without data (by JRC dataset); replaced indicators (1-to-1) or alternative indicators (from national or regional dataset); additional indicators (from national or regional sources)

SDG	JRC Indicators	Fit for purpose	Non-Fit for purpose	Fit – No data	1-to-1 replacement with	Alternative indicator	New indicators
1	Persons living in households with very low work intensity	x					
2	Affected people due to disasters			x (experimental)		2.b Population exposed to the risk of floods and landslides	
3	Material and social deprivation			x (only NUTS 1)		3.b Severe material deprivation	
4	Persons at risk of poverty or social exclusion	x					
5	Gross Value Added (GVA) of agriculture, livestock and fishing			x (only Basque country)	4.a Gross Value Added (GVA) of agriculture, forestry and fishing		
6	Organic farming: areas with different crops	x (old data)				6.b Share of utilised agricultural area (UAA) cultivated with organic crops	
7	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing	x					
8	Overweight rate			x (only Sweden)	8.a Overweight rate		
9	Deaths due to Covid-19			x (only Spain)	9.a Deaths due to Covid-19		
10	Self reported unmet needs for medical examination			x (only NUTS 1)		10.b Satisfaction with health services (family doctors and public hospital services)	

11	Health personnel	x					
12	Hospital beds	x					
13	Infant mortality	x					
14	Women 30-34 years old with higher education level	x					
15	Students enrolled in tertiary education	x					
16	Participation in education	x					
17	Pupils enrolled in early childhood education	x					
18	Early leavers from education and training	x					
19	Participation rates in selected education levels	x					
20	Distribution of pupils and students enrolled in general and vocational programmes	x					
21	Fatal victims of gender-based violence at the hands of their partners or expartners			x (only Spain)	21.a Fatal victims of gender-based violence at the hands of their partners or ex partners		
22	Victims of violence against women			x (only Spain)	22.a Victims of violence against women		
23	Female research and development personnel	x					
24	Inactive population rate due to caregiving			x (only Andalusia)	-	-	

	responsibilities						
25	Women in parliament and government			x	25.a Women in parliament		
26	Female achievement/disadvantage index	x					
27	Gender gap in part-time employment incidence	x					
28	Water bodies that exceed a standardized quality rating			x (only Navarra)		28.b Percentage of water bodies achieving the ecological quality objective	
29	Groundwater that exceed a standardized quality rating			x (only Navarra)		29.b Groundwater monitoring	
30	Population served by safely managed drinking water supply services			x (only Flanders)		30.b Efficiency of drinking water distribution networks	
31	Population connected to wastewater with at least secondary treatment			x (only Navarra)		31.b Urban waste water system with secondary or advanced treatment	
32	Electricity production that comes from nuclear power		x		-	-	
33	Electricity production that comes from renewable sources	x (experimental)			33.a Electricity production that comes from renewable sources		
34	Energy intensity			x (only Baque country)	34.a Energy intensity		
35	People affected by			x (only Spain)	-	-	

	energy poverty						
36	Occupational accidents			x (only Spain)	36.a Fatal accidents and permanent disability		
37	Economic activity	x					
38	Unemployment	x					
39	Firm creation	x					
40	Employment	x					
41	GDP at current market prices	x					
42	GVA at basic prices	x					
43	Long-term unemployment (12 months and more)	x					
44	Compensation of employees	x					
45	Young people neither in employment nor in education and training			x	45.a Young people neither in employment nor in education and training		
46	GVA of the industry with respect to the GVA of the total sectors (current price)			x (only Spain)		46.b Added value of manufacturing industry to total economy	
47	Gross Domestic Expenditure on R&D	x					
48	R&D personnel and researchers	x					
49	Employment in high-technology manufacturing as a percentage of total manufacturing employment	x					

50	Patent applications to the EPO	x					
51	Unemployment of people with disabilities			x (only Spain)		51.b Employees with disabilities	
52	Gini index of disposable income (after taxes and transfers)	x					
53	Households expenses dedicated to housing costs	x					
54	Transport performance			x (experimental)	54.a Transport performance Seats-km of public transport		
55	Daily accessibility	x					
56	Stock of vehicles (passenger cars)	x					
57	Difference between built-up area growth rate and population growth rate			x (experimental)		57.b Soil sealing per capita	
58	Land use	x					
59	PM2.5 Emissions	x					
60	Household and commercial waste generation per inhabitant			x (only Portugal)	60.a Urban waste generation per inhabitant		
61	Victims in road accidents	x					
62	Carbon footprint			x (only Flanders)		62.b CO2 equ per capita	
63	Food waste			x (only NUTS 1)	-	-	
64	Hazardous Waste			x (only Spain)	64.a Production of special hazardous waste		
65	PM10 Emissions	x					

66	CO2 Emissions	x					
67	Greenhouse Gas Emissions	x					
68	Cooling and heating degree days	x					
69	Estuarine with high/very high water quality		x				
70	Protected coastal area as a percentage of total coastal area		x				
71	Coastal areas with good/very good water quality		x				
72	Terrestrial protected areas as a percentage of total area	x (experimental)			72.a Terrestrial protected areas as a percentage of total area		
73	Estimated soil erosion	x					
74	Land Abandonment	x					
75	Forest area over total surface area			x (only Spain)	75.a Forest area over total surface area		
76	Transparency index			x (experimental)		76.b Index on transparency, participation and collaboration in cohesion policies	
77	Participation in the last elections	x					
78	Quality of Government Index	x					
79	Extract from QGI an indicator on corruption	x					
80	Official Development Assistance			x	-	-	

81	Imports from developing countries			x	81.a Imports from developing countries		
82	PCT co-patent applications that are done with foreign regions	x					
83	Individuals who used the internet for interaction with public authorities	x					
1							Waiver of health care
2							Housing cost overcharge
3							Households who report difficulties with public transport connections in the area where they reside
4							Overweight or obesity among minors from 3 to 17 years of age
5							Healthy life expectancy at birth
6							Not adequate alphabetical and numerical competence, secondary school
7							Participation in continuing education
8							High digital skills
9							Schools not physically accessible
10							Schools with pupils with disabilities with presence of adapted computer stations:

							secondary school
11							Physically accessible schools
12							Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children
13							Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use
14							Wetlands of international importance
15							Households very or fairly satisfied with continuity of electric service
16							Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)
17							Consumption of energy from renewable sources in the transport sector (as a percentage of

							gross final energy consumption)
18							Renewable energy share in the gross final energy consumption
19							Annual growth rate of real GDP per capita
20							Share of employed persons not in regular occupation
21							Rate of non-participation in employment
22							Number of operational bank branches
23							Value added of small manufacturing enterprises on total manufacturing value added
24							R&D intensity
25							Households with fixed and/or mobile broadband connection
26							Inequality of net income
27							Disposable income per capita
28							Urban waste sent to landfill out of total urban waste collected
29							Incidence of urban green areas on urbanised area of cities
30							Illegal building
31							Domestic material

							consumption per capita
32							Domestic material consumption per GDP
33							Separate collection of urban waste
34							Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)
35							Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)
36							Incidence of tourism on waste
37							Tourist intensity index
38							Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments
39							Impact of forest fires

40							Population residing in flood and landslide hazard areas per km ²
41							Mountain vegetation index
42							Intentional homicide rate
43							Prisoners waiting for first judgment as a percentage of the total number of adult prisoners
44							Correctional institution crowding
45							Length of civil proceedings

Source: author's own elaboration

Table 229 - Summary table of the total 120 indicators (Chapters 2 and 3) in relation to those used in the monitoring system of the Regional Sustainable Development Strategy of the Piemonte Region, 2022 (Annex 2 of RSDS) ⁽²⁶⁾ and in the Position Paper of Piemonte in relation to the SDGs of the 2030Agenda, 2021 ⁽²⁷⁾ (Annex 2-Focus2 of this Report)

SDG	n.	Total indicators	Used in the RSDS monitoring system	Used in the last PositionPaper system
1	1	Persons living in households with very low work intensity		X
1	2	Population exposed to the risk of floods and landslides	X	
1	3	Severe material deprivation	X	X
1	4	Persons at risk of poverty or social exclusion	X	
2	5	Gross Value Added (GVA) of agriculture, forestry and fishing		
2	6	Share of utilised agricultural area (UAA) cultivated with organic crops	X	X
2	7	Productivity (Gross Value Added per worker) in agriculture, forestry and fishing		
2	8	Overweight rate	X	
3	9	Deaths due to Covid-19		
3	10	Satisfaction with health services (family doctors and public hospital services)		
3	11	Health personnel		
3	12	Hospital beds	X	
3	13	Infant mortality		
4	14	Women 30-34 years old with higher education level		
4	15	Students enrolled in tertiary education	X	
4	16	Participation in education	X	
4	17	Pupils enrolled in early childhood education		
4	18	Early leavers from education and training	X	
4	19	Participation rates in selected education levels	X	
4	20	Distribution of pupils and students enrolled in general and vocational programmes		
5	21	Fatal victims of gender-based violence at the hands of their partners or ex partners		
5	22	Victims of violence against women		
5	23	Female research and development personnel		
5	25	Women in parliament		X
5	26	Female achievement/disadvantage index		
5	27	Gender gap in part-time employment incidence		
6	28	Percentage of water bodies achieving the ecological quality objective (high or good) out of the total number of surface water bodies (rivers and lakes)	X	X
6	29	Groundwater monitoring		
6	30	Efficiency of drinking water distribution networks	X	X

⁽²⁶⁾ Annex 2 RSDS

⁽²⁷⁾ Position Paper 2021

6	31	Urban waste water system with secondary or advanced treatment	X	
7	33	Electricity production that comes from renewable sources	X	X
7	34	Energy intensity	X	X
8	36	Fatal accidents and permanent disability		
8	37	Economic activity		
8	38	Unemployment	X	
8	39	Firm creation	X	
8	40	Employment	X	X
8	41	GDP at current market prices		
8	42	GVA at basic prices		
8	43	Long-term unemployment (12 months and more)	X	
8	44	Compensation of employees		
8	45	Young people neither in employment nor in education and training	X	X
9	46	Added value of manufacturing industry to total economy		
9	47	Gross Domestic Expenditure on R&D	X	
9	48	R&D personnel and researchers	X	X
9	49	Employment in high-technology manufacturing as a percentage of total manufacturing employment	X	
9	50	Patent applications to the EPO		
10	51	Employees with disabilities	X	
10	52	Gini index of disposable income (after taxes and transfers)		X
11	53	Households expenses dedicated to housing costs		
11	54	Transport performance - Seats-km of public transport	X	
11	55	Daily accessibility		
11	56	Stock of vehicles (passenger cars)	X	
11	57	Soil sealing per capita	X	X
11	58	Land use	X	
11	59	PM2.5 Emissions	X	
11	60	Urban waste generation per inhabitant	X	
11	61	Victims in road accidents		X
12	62	CO2 equ per capita	X	
12	64	Production of special hazardous waste	X	
13	65	PM10 Emissions	X	
13	66	CO2 Emissions	X	
13	67	Greenhouse Gas Emissions	X	
13	68	Cooling and heating degree days		
15	72	Terrestrial protected areas as a percentage of total area	X	X
15	73	Estimated soil erosion		
15	74	Land Abandonment		
15	75	Forest area over total surface area	X	

16	76	Index on transparency, participation and collaboration in cohesion policies		
16	77	Participation in the last elections		
16	78	Quality of Government Index		
16	79	Extract from QGI an indicator on corruption		
17	81	Imports from developing countries		
17	82	PCT co-patent applications that are done with foreign regions		
17	83	Individuals who used the internet for interaction with public authorities		
1	1	Waiver of health care		
1	2	Housing cost overcharge	X	
1	3	Households who report difficulties with public transport connections in the area where they reside		
2	4	Overweight or obesity among minors from 3 to 17 years of age		
3	5	Healthy life expectancy at birth		X
4	6	Not adequate alphabetical and numerical competence, secondary school		
4	7	Participation in continuing education	X	
4	8	High digital skills		
4	9	Schools not physically accessible		
4	10	Schools with pupils with disabilities with presence of adapted computer stations: secondary school		
4	11	Physically accessible schools		
5	12	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children		X
6	13	Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use	X	X
6	14	Wetlands of international importance		
7	15	Households very or fairly satisfied with continuity of electric service		
7	16	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	X	X
7	17	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	X	
7	18	Renewable energy share in the gross final energy consumption	X	
8	19	Annual growth rate of real GDP per capita		X
8	20	Share of employed persons not in regular occupation		
8	21	Rate of non-participation in employment	X	X
8	22	Number of operational bank branches		
9	23	Value added of small manufacturing enterprises on total manufacturing value added		
9	24	R&D intensity	X	
9	25	Households with fixed and/or mobile broadband connection		
10	26	Inequality of net income		X

10	27	Disposable income per capita	X	
11	28	Urban waste sent to landfill out of total urban waste collected	X	X
11	29	Incidence of urban green areas on urbanised area of cities	X	X
11	30	Illegal building		
12	31	Domestic material consumption per capita		X
12	32	Domestic material consumption per GDP		X
12	33	Separate collection of urban waste	X	
12	34	Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)		
12	35	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)		
12	36	Incidence of tourism on waste		
12	37	Tourist intensity index		
12	38	Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments	X	
13	39	Impact of forest fires	X	
13	40	Population residing in flood and landslide hazard areas per km ²	X	
15	41	Mountain vegetation index	X	
16	42	Intentional homicide rate		X
16	43	Prisoners waiting for first judgment as a percentage of the total number of adult prisoners		X
16	44	Correctional institution crowding		
16	45	Length of civil proceedings		
TOT	120		53	28

Source: author's own elaboration

Table 230 - Statistical synthesis of the analysed additional indicators at the Piemonte regional level: positive, negative or stable trend

SDG	Additional indicators	SDG target(s)	Time coverage	Trend: posit/negat/stable
1	Waiver of health care	1.3 (implement social protection systems)	2017-2021	-
1	Housing cost overcharge	1.4 (equal rights)	2004-2021	+
1	Households who report difficulties with public transport connections in the area where they reside	1.4 (equal rights)	2010-2021	-
2	Overweight or obesity among minors from 3 to 17 years of age	2.2 (end malnutrition)	2011-2020	=
3	Healthy life expectancy at birth	3.4 (premature mortality)	2009-2021	+
4	Not adequate alphabetical and numerical competence, secondary school	4.1 (primary and secondary education)	2019, 2021, 2022	
4	Participation in continuing education	4.3 (vocational and tertiary education)	2018-2021	+
4	High digital skills	4.4 (increase the number of people with relevant skills for financial success)	2015, 2016, 2019	+
4	Schools not physically accessible	4.8/4.a (build and upgrade inclusive and safe schools)	2019-2021	+
4	Schools with pupils with disabilities with presence of adapted computer stations: secondary school	4.8/4.a (build and upgrade inclusive and safe schools)	2018-2021	+
4	Physically accessible schools	4.a (education facilities and inclusive learning environments)	2019-2021	-
5	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	5.4 (unpaid work)	2018-2021	-
6	Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use	6.4 (increase water-use efficiency and ensure freshwater supplies)	2005-2018	=
6	Wetlands of international importance	6.6 (protect and restore water-related ecosystems)	2013, 2018	<i>No trend</i>
7	Households very or fairly satisfied with continuity of electric service	7.1 (universal access to modern energy)	2010-2021	-
7	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	7.2 (share of renewable energy)	2012-2020	+
7	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	7.2 (share of renewable energy)	2012-2020	+

7	Renewable energy share in the gross final energy consumption (excluding transport sector)	7.2 (share of renewable energy)	2012-2020	+
8	Annual growth rate of real GDP per capita	8.1 (economic growth)	2004-2020	-
8	Share of employed persons not in regular occupation	8.3 (job creation)	2004-2019	-
8	Rate of non-participation in employment	8.5 (productive employment)	2018-2021	-
8	Number of operational bank branches	8.10 (universal access to banking, insurance and financial services)	2012-2021	-
9	Value added of small manufacturing enterprises on total manufacturing value added	9.3 (increase access to financial services and markets)	2015-2019	-
9	R&D intensity	9.5 (promote innovation)	2004-2020	+
9	Households with fixed and/or mobile broadband connection	9.8 (universal access to information and communications technology)	2010-2021	+
10	Inequality of net income	10.1 (income growth)	2004-2020	-
10	Disposable income per capita	10.1 (income growth)	2004-2020	+
11	Urban waste sent to landfill out of total urban waste collected	11.6 (environmental impact)	2004-2020	+
11	Incidence of urban green areas on urbanised area of cities	11.7 (green and public spaces)	2015-2020	+
11	Illegal building	11.3 sustainable urbanization)	2004-2021	-
12	Domestic material consumption per capita	12.2 (management of natural resources)	2015-2018	-
12	Domestic material consumption per GDP	12.2 (management of natural resources)	2015-2018	-
12	Separate collection of urban waste	12.5 (reduction, recycling and reuse waste)	2004-2020	+
12	Number of EMAS-registered organizations/enterprises (Eco-Management and Audit Scheme)	12.6 (Encourage Companies To Adopt Sustainable Practices And Sustainability Reporting)	2004-2021	+
12	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)	12.7 (promote sustainable public procurement practices)	2015, 2017, 2020	-
12	Incidence of tourism on waste	12.b (develop and implement tools to monitor sustainable tourism)	2006-2020	-
12	Tourist intensity index	12.b (develop and implement tools to monitor sustainable tourism)	2012-2019	+

12	Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments	12.b (develop and implement tools to monitor sustainable tourism)	2012-2020	+
13	Impact of forest fires	13.1 (strengthen resilience and adaptive capacity to climate related disasters)	2005-2021	-
13	Population residing in flood hazard areas per km2	13.1 (strengthen resilience and adaptive capacity to climate related disasters)	2015, 2017, 2020	=
13	Population residing in landslide hazard areas per km2	13.1 (strengthen resilience and adaptive capacity to climate related disasters)	2015, 2017, 2020	=
15	Mountain vegetation index	15.4 (ensure conservation of mountain ecosystems)	2012, 2018, 2020	=
16	Intentional homicide rate	16.1 (reduce all forms of violence)	2004-2020	+
16	Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	16.3 (rule of law and equal access to justice)	2010-2021	+
16	Correctional institution crowding	16.3 (rule of law and equal access to justice)	2004-2021	+
16	Length of civil proceedings	16.6 (effective and transparent institutions)	2012-2021	=

Source: author's own elaboration

Note: "no trend" is indicated in relation to the only indicator where the trend could not be measured because the data is 0.

Synthesis of the analysed additional indicators at the Piemonte regional level, at the last year of analysis, in relation to the Italian/North-West Italy regions average and the Target to 2030/2050 (where possible)

For time series where available data are prior to 2000, trend analyses consider only data from 2000 onwards.

Out of these 44 indicator trends (excluding 'Wetlands of international importance'):

- for **21** indicators the trend is **positive**
- for **17** the trend is **negative**
- for **6** the trend is (approximately) **stable**

Table 231 - Synthesis of the analysed additional indicators at the Piemonte regional level, at the last year of analysis, in relation to the Italian/North-West Italy regions average and the Target to 2030/2050 (where possible)

SDG	Additional indicators	Year of availability	Source	Unit of measurement	Piemonte Region	Italy	N-W Italy
1	Waiver of health care	2021	ISTAT, Regional Statics	percentage	11.6	11.0	11.9
	Housing cost overcharge	2021	ISTAT – EU Silc , Regional Statics	percentage	7.3	7.2	7.6
	Households who report difficulties with public transport connections in the area where they reside	2021	ISTAT, Regional Statics	percentage	27.9	30.6	27.1
2	Overweight or obesity among minors from 3 to 17 years of age	2020	ISTAT, Regional Statics	percentage	23.6	26.3	22.0
3	Healthy life expectancy at birth	2021	ISTAT, Regional Statics	average number of years	60.8	60.5	61.2
4	Not adequate alphabetical and numerical competence, secondary school	2022	Invalsi, National learning surveys; ISTAT	percentage	39.8		
	Participation in continuing education	2021	ISTAT, Regional Statics	percentage	10.4	9.9	10.5
	High digital skills	2019	ISTAT, Regional Statics	percentage	23.6	22.0	25.3
	Schools not physically accessible	2021	ISTAT, Regional Statics	percentage	48.0	44.9	-
	Schools with pupils with disabilities with presence of adapted computer stations: secondary school	2021	ISTAT, Regional Statics	percentage	76.5	76.1	71.9
	Physically accessible schools	2021	ISTAT, Regional Statics	percentage	38.1	33.1	-
5	Ratio of employment rate for women aged 25-49 with at least one child aged 0- 5 to the employment rate of women 25-49 years without children	2021	ISTAT, Regional Statics	percentage	77.2	73.0	76.8
6	Water stress level: water withdrawal in proportion to available water resources - Water withdrawals for drinking purposes/ potable use	2018	ISTAT, Regional Statics	number (million m3)	650.4	9,220	2,357
	Wetlands of international importance	2018	ISPRA	number (hectares)	0	80,836	3,930
7	Households very or fairly satisfied with continuity of electric service	2021	ISTAT, Regional Statics	percentage	92.5	93.9	94.8

	Consumption of energy from renewable sources in the thermal sector (as a percentage of gross final energy consumption)	2020	GSE S.p.A. - <i>Energy Services Operator</i>	percentage	18.5	19.9	16.1
	Consumption of energy from renewable sources in the transport sector (as a percentage of gross final energy consumption)	2020	GSE S.p.A.	percentage	10.6	10.7	10.8
	Renewable energy share in the gross final energy consumption (excluding transport sector)	2020	GSE S.p.A.	percentage	20.6	19.1	17.0
8	Annual growth rate of real GDP per capita	2020	ISTAT, Regional Statics	percentage	-8.8	-8.5	-8.8
	Share of employed persons not in regular occupation	2019	ISTAT, Regional Statics	percentage	10.0	12.6	10.2
	Rate of non-participation in employment	2021	ISTAT, Regional Statics	percentage	13.2	19.4	12.1
	Number of operational bank branches	2021	ISTAT, Regional Statics	rate per 100.000 inhabitants	40.8	36.5	42.0
9	Value added of small manufacturing enterprises on total manufacturing value added	2019	ISTAT, Regional Statics	percentage	34.7	41.3	39.4
	R&D intensity	2020	ISTAT, Regional Statics	percentage	2.34	1.51	1.61
	Households with fixed and/or mobile broadband connection	2021	ISTAT, Regional Statics	percentage	77.5	79.5	80.5
10	Inequality of net income	2020	ISTAT, Regional Statics	number (ratio of incomes)	4.7	5.9	5.2
	Disposable income per capita	2020	ISTAT, Regional Statics	number (euro - current prices)	20,899	18,805	21,928
11	Urban waste sent to landfill out of total urban waste collected	2020	ISPRA	percentage	12.6	20.1	9.7
	Incidence of urban green areas on urbanised area of cities	2020	ISTAT, Regional Statics	rate (m2 per 100 m2 of urbanised areas)	11.7	8.5	10.9
	Illegal building	2021	CRESME	rate (per 100 authorized buildings)	4.1	15.1	4.3
12	Domestic material consumption per capita	2018	ISTAT, Regional Statics	rate (tons per capita)	8.5	8.1	-
	Domestic material consumption per GDP	2018	ISTAT, Regional Statics	rate (tons per 1,000 EUR)	0.3	0.3	-
	Separate collection of urban waste	2020	ISPRA	percentage	64.5	63.0	68.7
	Number of EMAS-registered organizations/enterprises	2021	ISPRA	number	67	1,038	318

	(Eco-Management and Audit Scheme)						
	Percentage of public institutions that acquire products and/or services by adopting minimum environmental criteria (CAM), in at least one procurement procedure (Green Purchasing or Green Public Procurement)	2020	ISTAT, Regional Statics	percentage	21.8	26.7	24.4
	Incidence of tourism on waste	2020	ISPRA	rate (Kg per inhabitants equivalent)	2.1	4.7	-
	Tourist intensity index	2020	ISTAT, Regional Statics	rate (per 1000 Inhabitants)	1,539	3,495	2,059
	Presences of open-air accommodation establishments, agritourisms and mountain lodges out of total presences in accommodation establishments	2020	ISTAT, Regional Statics	percentage	24.0	22.6	18.7
13	Impact of forest fires	2020	ISTAT, Regional Statics	rate (per 1.000 km2)	0.4	5.0	0.3
	Population residing in flood hazard areas per km2	2020	ISTAT, Regional Statics	rate (inhabitants per km2)	8.4	22.6	16.0
	Population residing in landslide hazard areas per km2	2021	ISTAT, Regional Statics	rate (inhabitants per km2)	3.3	4.3	4.1
15	Mountain vegetation index	2020	ISPRA	percentage	85.5	88.8	81.5
16	Intentional homicide rate	2020	Ministry of the Interior	rate (per 100,000 inhabitants)	0.7	0.5	0.5
	Prisoners waiting for first judgment as a percentage of the total number of adult prisoners	2021	Ministry of Justice –Dep. of prison administration	percentage	12.1	15.8	13.6
	Correctional institution crowding	2021	ISTAT, Regional Statics	percentage	101.9	106.5	117.1
	Length of civil proceedings	2021	Ministry of Justice –Dep. Judicial organization	number (of days)	213	426	253

Source: author's own elaboration, from national and regional database

Annex 2. In depth focus

FOCUS 1: The governance e the relations with other institutional levels

One of the axes on which the Piemonte Region is working, for the territorialization of the RSDS and for the monitoring of the SDGs, is **governance** within and outside the Region. In particular, the Region, in addition to supporting internal relations between its Directorates, has also initiated and strengthened several collaborations with other institutional levels:

- **International level:** Piemonte's contribution to the Voluntary Local Review (VLR)

The Piemonte Region participated to the Italian Voluntary Review on the occasion of the High Level Political Forum 2022. The Piemonte Region provided its VLR together with other 11 Italian Regions, reporting on its RSDS. The VLR was designed and drafted jointly with the Metropolitan City of Turin, highlighting connections guaranteeing the coherence necessary to successfully territorialize, at all levels, the objectives of the 2030 Agenda for sustainable development ⁽²⁸⁾.

*This activity, in the REGIONS 2030 Project, aims to create knowledge on the use of monitoring frameworks for SDGs at the regional level, exploiting a surge in conducted and published **Voluntary Local Reviews** (VLRs). In recent years, an increasing number of local and regional governments (LRGs) around the globe are conducting and publishing VLRs (Piemonte is one of these) as a means to monitor their progress towards the achievement of the SDGs at the subnational level and develop designated related policies. To date, 126 VLRs have been published worldwide by 1081 LRGs. Out of those, 452 VLRs have been prepared by European cities and regions with a rather even geographical distribution observed among its sub-regions (Northern, Southern, Western), yet with a gap for Eastern Europe. In view of this movement that is gaining growing attention, it is necessary to contribute to the ongoing dialogue between regional practitioners, authorities and researchers on the use of framework indicators developed by institutions and organizations (among which the JRC itself) and customized by regions when implemented into the local context.*

- **National level:** integrated NSDS monitoring

At the national level, Piemonte collaborates with MASE and participates in the Panel for the definition of indicators useful for monitoring NSDS and the territorialization of indicators for integrated monitoring at regional and metropolitan level.

- **Regional level:** territorialization of RSDS, and the indicators for the monitoring, in the Piemonte Mountain Strategy

The Directorate for the Environment, Energy and Land Planning is working on the territorialization of the RSDS, through the drafting of the Piemonte Mountain Strategy (managed by the *Mountain Development Department*). This Strategy includes information on the monitoring of territorialized objectives at the local scale for mountain territories.

- **Metropolitan level:** territorialization of RSDS indicators for AMSvS-CmTo monitoring

In 2020, the Metropolitan City of Torino (in collaboration with IRES Piemonte) started the setting up process of the Metropolitan Agenda for Sustainable Development, in coherence with the RSDS. The Agenda constitutes a territorialization tool of the RSDS. For the monitoring of sustainability targets, the Agenda takes into account the set of national (NSDS monitoring) and regional (RSDS monitoring) indicators for an integrated monitoring, starting from the 2030 Agenda, European and National targets, up to the readings of sustainability targets at the regional and metropolitan scale (taking into account the scalability and retrievability of data).

⁽²⁸⁾ Voluntary National and Local Review

FOCUS 2: The contribution of RSDS of Piemonte to SDGs monitoring

As part of the RSDS elaboration activities, the Piemonte Region has started a path to identify, select and analyse indicators useful for monitoring its own sustainability goals, concerning the characteristics of the regional territory (problems/strengths) and in coherence with the 17 Goals of the 2030 Agenda, the European targets identified in the EU Strategies (e.g. Green Deal, etc.) and the targets/goals of the RSDS.

This pathway (which saw the collaboration with IRES Piemonte and the Regional Agency for Environmental Protection - ARPA Piemonte) started in 2018 and is now evolving and being implemented.

When drafting the RSDS and selecting its indicators, the Piemonte Region followed a two steps approach.

In a first instance, it conducted an **SDGs positioning** (2020; 2021).

In 2020, the National Panel for Indicators for the Implementation of the SDGs selected 43 indicators for monitoring National Strategic Choices in association with the 17 Goals of the 2030 Agenda. This selection was made within the indicators that SISTAN (National Static System) makes available on the ISTAT-SISTAN SDGs platform, functional to monitoring the implementation of the 2030 Agenda at both the national and international level. These 43 **IAEG-SDGs indicators from ISTAT-SISTAN** (called ISTAT-SISTAN SDGs Indicators) constituted the reference for the identification of the set of indicators to be used for monitoring the SDGs and, at the regional level, for measuring the Positioning of Regions regarding the Goals of 2030 the Agenda.

In 2021, the National Panel redefined the set of indicators, increasing their number from 43 to 52. They are related to the Strategic Areas (Peace, People, Prosperity, Planet, Partnership) and to the Strategic Choices in which the NSDS is structured. Many of the indicators adopted in 2020 remained unchanged (36), some were removed (7) and others, added (4).

As of 2022, the set of indicators for monitoring the SDGs at the national level is composed of 55 indicators targeting the Strategic Choices of the SDGs (in coherence with the 5 "P" - the Strategic Areas in which the SDGs are structured - and the 17 Goals of 2030 Agenda).

Afterwards, building on the measures worked within the revision process of the NSDS, the Piemonte Region complemented the NSDS dashboard by identifying indicators targeting the regional and sub-regional levels. Indicators were then associated to the different RSDS strategic objectives and targets contained in each Strategic Macro-Area (*Annex 2 of RSDS*). Such an exercise was made possible thanks to a joint partnership involving the Piemonte Region, Social and Economic Research Institute of Piemonte (IRES) and the Regional Environmental Protection Agency (ARPA). It also made it possible to devise a vertical, integrated monitoring framework going from local to national, up to the 2030 Agenda and vice-versa.

In particular, the Sustainable Growth and Territorial Development Department of IRES Piemonte has been working alongside the Piemonte Region since 2018, in an ongoing and cooperative manner, in order to design and draft the RSDS, as well as to identify and analyse indicators for monitoring the regional sustainability goals. The collaborative relations, in particular between the Sustainable Development Department of the Piemonte Region and the Sustainable Growth and Territorial Development Department of IRES Piemonte, which have been consolidated for some time now, have made it possible to work in a joint and integrated manner and in close synergy. This has allowed continuity in the work and evolution in the process, from the planning to the implementation phase of the Strategy and for the monitoring process and analysis of SDGs at the regional level.

The stages of the contribution of Piemonte to SDGs monitoring can be summarised by listing the following products:

- **2019 – Knowledge of the sustainability of Piemonte. The ARPA-IRES sustainability workshop on Piemonte's AITs.** Workshop experience between IRES and ARPA Piemonte for integrated measurements and readings, starting from socio-economic and environmental data on an inter-municipal scale (*Ambiti di Integrazione Territoriale – AIT*; into which the Regional Territorial Plan divides the territory of Piemonte), of three very different case-study territories of Piemonte (²⁹).

⁽²⁹⁾ Knowledge for the sustainability of Piemonte/ Conoscenza per la sostenibilità del Piemonte 2019

- **2020 - Position paper – Piemonte's positioning towards the 2030 Agenda Goals.** It is the first document analysing indicators associated with the Goals of Agenda 2030; the selection of indicators was the result of joint work done by the National Panel on Indicators for Monitoring the SDGs (MATTM, now MASE, MAECI, MEF, ISTAT and ISPRA). The indicators selected were 43 IAEG-SDGs of the Istat-Sistan system (called Istat-Sistan SDGs Indicators). From this first selection of indicators at the national scale, the data available at the regional scale were analysed and the 'positioning' of the Region was measured towards the Goals of the 2030 Agenda and regarding the national rank, for comparison with the other Italian regions, and regarding the general national average ⁽³⁰⁾.

- **2021 - Position paper – Piemonte's positioning towards the 2030 Agenda Goals.** It is the second position paper to measure Piemonte's positioning against the Goals of the 2030 Agenda; as with the previous paper, the methodology used was the same, but the indicators changed, from 43 to 52. The indicators selected by the National Panel for monitoring the NSDS were analysed at the regional scale (depending on the scalability of the data) to identify their positioning against the Goals of the 2030 Agenda and in the national rank ⁽³¹⁾.

In 2022, the set of indicators for NSDS monitoring was slightly revised: the current indicators used in the integrated monitoring at national level are 55.

- **2022 - Tools for monitoring RSDS.** These tools are an integral part of the RSDS and focus on identifying and measuring specific indicators (selected on a regional scale by a joint work with the IRES Piemonte Observatories and with the support of ARPA Piemonte), in order to place the Region towards National, European and Global sustainability challenges and to help at the same time to understand local phenomena related to the sustainability goals that the Region has set in its own Strategy. The set also takes into account the indicators for monitoring the NSDS and, at the same time, is enriched with additional indicators that can be scaled up to the local level for territorialized measures of sustainability goals (depending on data availability) ⁽³²⁾.

- **2023 - 2024. Centre for the Sustainable Development of Piemonte - observe, connect, share and orient.** Start of the *Centre* designing process and working methodology, with the identification of the stakeholders to be involved, for the monitoring of sustainability goals (2023); start of the Centre's operational activities (from 2024).

⁽³⁰⁾ Position paper 2020

⁽³¹⁾ Position paper 2021

⁽³²⁾ Tools for monitoring RSDS/ Strumenti per il monitoraggio della SRSvS 2022

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