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## Introduction

The present document illustrates the case study “vineyard landscape of Piedmont: Langhe-Roero and Monferrato”, which is a territorial context modelled in the century by local communities in Southern Piedmont (Italy). Whereas in the past, this territory was economically rather marginal, over the latest years it has become remarkably rich and with great potentialities for growth and development. This was possible in part thanks to the UNESCO candidacy process, that begun in the early 2000s and concluded in 2014 with the inclusion of the site into the World Heritage List as a UNESCO Cultural Landscape (WHC, 2014). The inscription into the WHL list has increased the visibility of the Langhe-Roero and Monferrato area as a “living cultural landscape”, characterised by a rich array of tangible and intangible cultural resources while at the same time being exposed to natural hazards, especially landslides and floods.

The aim of the report is to present the area to the students, and guide them in the design of a territorial development strategy that includes tourism as one of the main pillars, and that is able to proactively interact with the existing planning and management instruments that already have an influence on the area. The results of the activity should address public and private stakeholders actively involved in the development of the Langhe-Roero and Monferrato area at the different territorial levels (from the municipalities up to the regional administration), with the purpose of helping them envisioning more sustainable policies and actions. In this light, this report provides the students with knowledge and information concerning the main features and development potentials of the area, as well as the challenges that characterise the latter, altogether representing as many inputs to the development of a territorial development strategy

More in detail, the document is structured into four sections. The first section introduces the main features of the Langhe, Roero and Monferrato area and of its vineyard landscape, including its climate and geological features, natural and environmental factors, tangible and intangible heritage, socio-economic information and infrastructure and mobility. The second section reflects upon with tourism development within the case study area, with particular attention to the pressure generated by increasing tourism flows and the innovative perspectives and tools towards that aims at a more collaborative and sustainable turn. The third section illustrates the recent challenges that characterise the activity of spatial planning in the area, and how the spatial planning instruments that are in place should take into account the inscription of the area in the UNESCO WHL and its touristic development. Finally, a last section elaborates on how long-term spatial planning strategies should act to valorise the tourism potential of the area, while at the same time tackling the multiple challenges that its growing exposure to tourism brings along with it. It also mentions the need to dedicate specific actions to react to and mitigate the impact of climate change in the area.

## General profile of the Langhe, Roero and Monferrato area

The vineyard landscape of Langhe, Roero and Monferrato is a famous wine region located in Northern Italy, between the provinces of Asti, Cuneo and Alessandria. This landscape was modelled for centuries by the local communities for the cultivation and production of excellent and certified wines, like “Barbera” and “Nebbiolo”, for which there is a high demand all over the world. Situated in southern Piedmont and adjoining the Liguria Apennines, the vineyard landscape extends and counts 100 Municipalities where live about 300,000 inhabitants. It is far 90 minutes by car from Turin and 120 minutes from Milan. The vineyard landscape of Piedmont was included in the UNESCO World Heritage List (WHL) in 2014 for its natural and cultural components. The perimeter of the UNESCO site consists of six core zones and two buffer zones. The UNESCO perimeter was designed according to landscape studies by specialists and technicians, according to the Landscape Ambits (LAs) and Landscape Units (LUs) by the Regional Landscape Plan of Piedmont (RLP)<sup>1</sup>. Specific measures were adopted by Piedmont Region to preserve, valorise and manage this landscape, and receipt them within the Municipal Plans<sup>2</sup>. The core zones express the Outstanding Universal Value (OUV), whereas the buffer zones 1 and 2 protect the OUV value and connect the elements of the wine-making process: from cultivation to production, from wine conservation to the commercialization of the final product<sup>3</sup>.

Most of the Municipalities of Asti, Cuneo and Alessandria provinces are included in the core zones and the buffer zones of the UNESCO site:

- “Langa of Barolo” (core zone 1) is a singular geomorphological context, where the companies of famous wines have been developed;
- “Grinzane Cavour Castle” (core zone 2) is a historical castle with an experimental vineyard of European importance;
- “Hills of Barbaresco” (core zone 3) is known for social-productive companies of Barbaresco wine;
- “Nizza Monferrato and Barbera” (core zone 4) are medieval commercial settlements with strong links among winemakers associations;
- “Canelli and Asti spumante” (core zone 5) is characterized by several architectural, urban and industrial elements about the cultivation and production of wine;
- “Monferrato of the Infernot” (core zone 6) is characterized by vernacular architectures inside geomorphologic conformations, known as infernot, for the storage of wine.

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<sup>1</sup> Landscape Regional Plan of Piedmont. <https://www.regione.piemonte.it/web/temi/ambiente-territorio/paesaggio/piano-paesaggistico-regionale-ppr>

<sup>2</sup> DGR No. 26-2131, September 21, 2015. Guidelines for the adaptation of regulatory plans and building regulations to the protection guidelines for the UNESCO Site: the wine-growing landscapes of Piedmont Langhe-Roero and Monferrato. <https://www.regione.piemonte.it/web/temi/ambiente-territorio/paesaggio/sito-unesco-dei-paesaggi-vitivinicoli-piemonte-misure-strumenti-tutela>

<sup>3</sup> Nomination file and other useful materials on the vineyard landscape of Piedmont: Langhe-Roero and Monferrato. <https://whc.unesco.org/en/list/1390/documents/>, <https://www.paesaggivitivinicoliunesco.it/en/associazione/il-percorso-di-candidatura/>

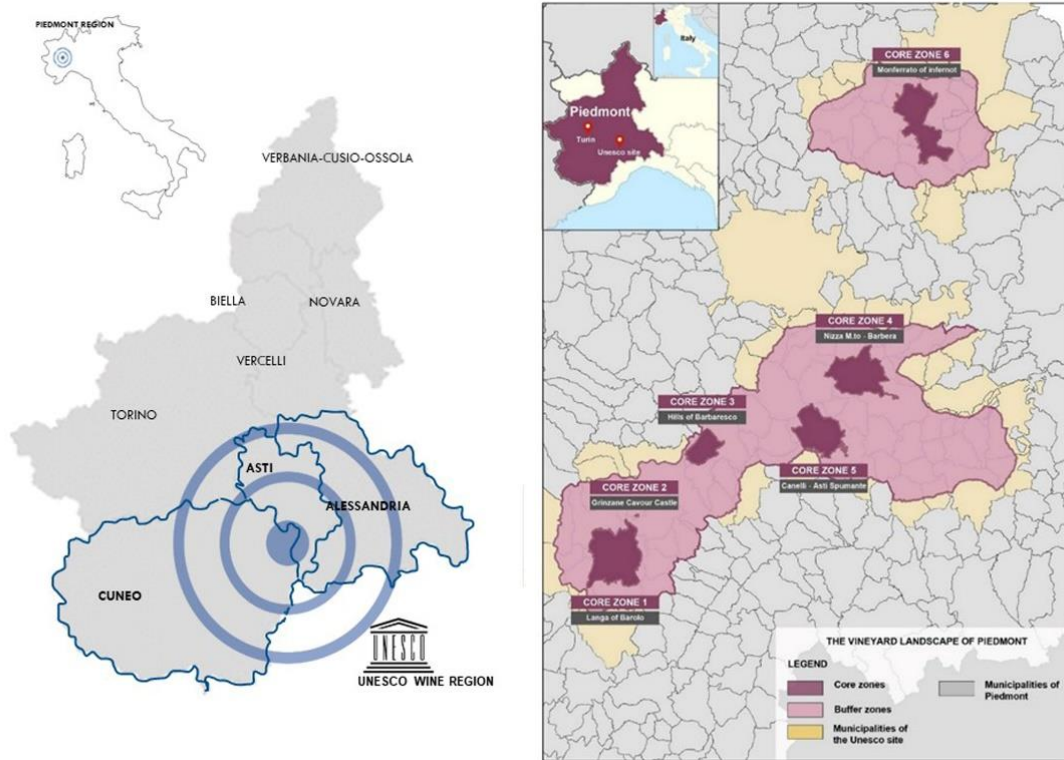


Figure 1. Territorial localisation of the case study at the national and regional level.  
Source: Assumma (2021).

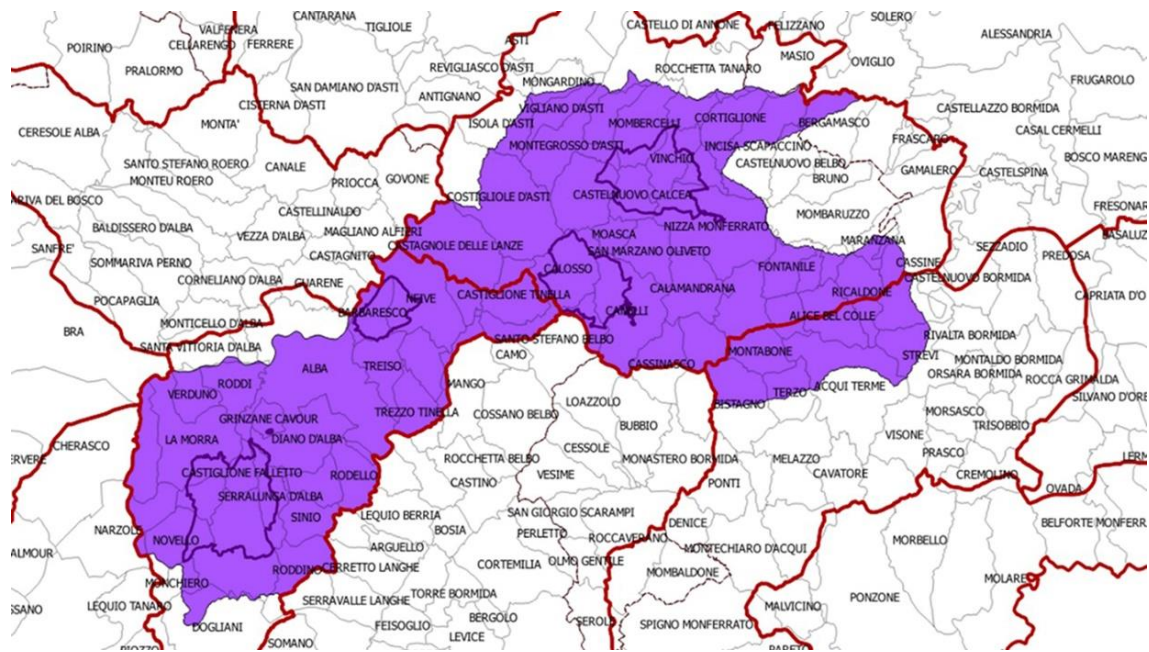


Figure 2. Localisation of the UNESCO site (violet color) with respect to the municipalities (grey color) and landscape ambits (red color).  
Source: Own elaboration based on *Geoportale Piemonte*.

The following Table provides an overview of the Municipalities included within the UNESCO site. In detail, the population recorded in 2014 has been provided, because it coincides with the year of inscription of this territory within the UNESCO WHL list, and the same indicator recorded during the COVID-19 pandemic scenario. In recent years, some Municipalities were merged or aggregated into unions and communities (i.e. Unione dei Comuni and Comunità Montane), according to the Italian Law no. 56 2014. For example, the Municipality of Cuccaro Monferrato was suppressed in 2019 and then merged with the Municipality of Lu as a new Municipality called “Lu and Cuccaro Monferrato”.

Table 1. Main information about the municipalities of the vineyard landscape area.

UNESCO site	Municipalities	Provinces	Population (2014)	Population (2020)	Area (Km2)
Core zone 1	Barolo	Cuneo	743	679	5,69
	Castiglione Falletto	Cuneo	719	696	4.72
	Diano d'Alba	Cuneo	3,558	3618	17.54
	La Morra	Cuneo	2,754	2722	24.17
	Monforte d'Alba	Cuneo	2,094	1978	25.27
	Novello	Cuneo	998	969	11.71
	Serralunga d'Alba	Cuneo	569	551	8.39
	Sinio	Cuneo	536	487	8.60
	Treiso	Cuneo	809	768	9.60
	Trezzo Tinella	Cuneo	341	312	10.53
	Verduno	Cuneo	566	527	7.16
	<b>TOTAL</b>			<b>13,687</b>	<b>13,307</b>
Core zone 2	Grinzane Cavour	Cuneo	2,010	1,989	3.81
<b>TOTAL</b>			<b>2,010</b>	<b>1,989</b>	<b>3.81</b>
Core zone 3	Barbaresco	Cuneo	670	612	7.76
	Neive	Cuneo	3,431	3,319	21.30
<b>TOTAL</b>			<b>4,101</b>	<b>3,931</b>	<b>29.06</b>
Core zone 4	Agliano Terme	Asti	526	1,578	15.45
	Belveglio	Asti	348	326	5.28
	Castelnuovo Calcea	Asti	748	727	8.20
	Mombercelli	Asti	2,299	2,114	14.23
	Montegrosso d'Asti	Asti	2,343	2,313	15.42
	Nizza Monferrato	Asti	10,476	10,285	30.36
	Vaglio Serra	Asti	276	279	4.76
	Vinchio	Asti	616	568	9.29
<b>TOTAL</b>			<b>17,632</b>	<b>18,190</b>	<b>102.99</b>
Core zone 5	Calosso	Asti	1,288	1,210	15.72
	Canelli	Asti	10,604	10,271	23.43
	Santo Stefano Belbo	Cuneo	4,014	3,952	23.57

UNESCO site	Municipalities	Provinces	Population (2014)	Population (2020)	Area (Km2)
<b>TOTAL</b>			<b>15,906</b>	<b>15,433</b>	<b>62.72</b>
Core zone 6	Camagna Monferrato	Alessandria	534	478	9.25
	Cella Monte	Alessandria	502	495	5.55
	Frassinello Monferrato	Alessandria	516	490	8.43
	Olivola	Alessandria	123	116	2.69
	Ottiglio	Alessandria	649	614	14.54
	Ozzano Monferrato	Alessandria	1,462	1,381	15.18
	Rosignano Monferrato	Alessandria	1,585	1,493	19.28
	Sala Monferrato	Alessandria	363	323	7.58
	Vignale Monferrato	Alessandria	1,020	963	18.73
<b>TOTAL</b>			<b>6,754</b>	<b>6,353</b>	<b>101.23</b>
Buffer zone 1	Acqui Terme	Alessandria	20,110	19,845	33.30
	Alba	Cuneo	31,353	31,516	53.59
	Alice Bel Colle	Alessandria	822	730	12.21
	Bergamasco	Alessandria	753	711	13.44
	Bistagno	Alessandria	1,932	1,802	17.59
	Cassine	Alessandria	2,975	2,915	33.09
	Castiglione Tinella	Cuneo	893	836	11.63
	Cherasco	Cuneo	9,052	9,335	81.54
	Dogliani	Cuneo	4,831	4,722	35.68
	Mango	Cuneo	1,316	1,303	20.03
	Masio	Alessandria	1,423	-	22.23
	Monchiero	Cuneo	594	568	4.99
	Montelupo Albese	Cuneo	534	478	6.43
	Monticello d'Alba	Cuneo	2,314	2,365	10.24
	Narzole	Cuneo	3,425	3,528	26.18
	Neviglie	Cuneo	390	364	7.93
	Occimiano	Alessandria	1,345	1,264	22.46
	Ricaldone	Alessandria	683	628	10.52
	Roddi	Cuneo	1,594	1,600	9.35
	Roddino	Cuneo	389	417	10.58
	Rodello	Cuneo	974	965	8.90
	Santa Vittoria d'Alba	Cuneo	2,767	2,853	10.08
	Strevi	Alessandria	2,044	1,896	15.29
	Terzo	Alessandria	905	853	8.80
Asti	Asti	76,673	75,051	15.13	

UNESCO site	Municipalities	Provinces	Population (2014)	Population (2020)	Area (Km2)
	Belveglio	Asti	348	326	5.28
	Calamandrana	Asti	1,767	1,678	12.79
	Cassinasco	Asti	611	593	11.84
	Castagnole delle Lanze	Asti	3,810	3,665	21.56
	Castel Boglione	Asti	618	596	11.86
	Castel Rocchero	Asti	398	394	5.63
	Castelletto Molina	Asti	185	139	3.07
	Castelnuovo Belbo	Asti	894	825	9.55
	Coazzolo	Asti	305	293	4.05
	Cortiglione	Asti	561	531	8.43
	Costigliole d'Asti	Asti	5,971	5,731	36.94
	Fontanile	Asti	571	537	8.13
	Incisa Scapaccino	Asti	2,335	2,115	20.70
	Isola d'Asti	Asti	2,099	2,026	13.50
	Maranzana	Asti	286	241	4.370
	Moasca	Asti	488	502	4.16
	Mombaruzzo	Asti	1,106	1,025	22.40
	Mongardino	Asti	948	873	6.86
	Montabone	Asti	336	319	8.54
	Montaldo Scarampi	Asti	778	739	6.63
	Quaranti	Asti	185	166	2.86
	Rocca d'Arazzo	Asti	946	900	12.56
	Rocchetta Palafea	Asti	349	347	7.84
	Rocchetta Tanaro	Asti	1,447	1,404	15.91
	San Marzano Oliveto	Asti	1,032	1,015	9.68
	Vigliano d'Asti	Asti	863	816	6.65
<b>TOTAL</b>			<b>199,328</b>	<b>194,341</b>	<b>783</b>
Buffer zone 2	Altavilla Monferrato	Alessandria	481	423	11.33
	Casale Monferrato	Alessandria	34,703	33,596	86.21
	Castelletto Merli	Alessandria	485	459	11.59
	Cella Monte	Alessandria	502	495	5.55
	Cereseto	Alessandria	440	404	10.44
	Conzano	Alessandria	992	953	11.61
	Cuccaro Monferrato*	Alessandria	339	-	5.22
	Fubine Monferrato	Alessandria	1,663	1,589	25.53
	Lu	Alessandria	1,143	1,373	21.88

UNESCO site	Municipalities	Provinces	Population (2014)	Population (2020)	Area (Km2)
	Ponzano Monferrato	Alessandria	365	329	11.65
	Serralunga di Crea	Alessandria	561	523	8.84
	Terruggia	Alessandria	935	926	7.27
	Treville	Alessandria	283	273	4.60
	Casorzo	Asti	641	607	12.65
	Grana	Asti	632	585	5.89
	Grazzano Badoglio	Asti	619	607	10.47
	Moncalvo	Asti	3,091	2,826	17.42
	Penango	Asti	499	458	9.56
<b>TOTAL</b>			<b>48,374</b>	<b>46,426</b>	<b>277.71</b>
<b>Overall TOTAL</b>			<b>307,792</b>	<b>299,970</b>	<b>1,493.90</b>

Source: *ISTAT* and *comuni-italiani.it*.

Notes: Cuccaro Monferrato is a former municipality, merged into the municipality of Lu. Suppression date: 31/1/2019.



Figure 3. Twinning initiative between the Hong Hani Rice Terrace (China) and the vineyard landscape of Piedmont (Italy).

Moreover, a twinning program was launched between the WHL sites of UNESCO. The vineyard landscape of Langhe-Roero and Monferrato and the Honghe Hani Rice Terraces in the Yunnan region of China are the first UNESCO sites to realize a collaboration agreement (2017) in the context of the Italy-China Cultural Forum. The Honghe Hani Rice Terraces became UNESCO site in March 2013, whereas the Piedmontese vineyard landscape in June 2014. The twinning between these UNESCO site aims to boost their development, promoting cooperation in the fields of cultural and tourism, agriculture, economy, trade, and sustainability. Education, research, institutions and industrial districts are involved in this cooperation initiative. In the field of tourism, the two UNESCO sites will promote cultural exchanges, seminars and conferences, research and study projects on common topics, and share information and materials to

promote knowledge on their Outstanding Universal Value (OUV). Particular attention is devoted to the agricultural economy, which represents the main commonality between the two sites.

## From past to present (environmental, cultural, social, and economic contexts towards sustainability)

### Climate and geology

This territorial context is dominated by a sub-continental cold temperate climate thanks to the nearness of the Alpine arch and the influence of mild and humid currents from the Ligurian Sea. The presence of valleys and hills at different altitudes and windiness create a variety of microclimates<sup>4</sup> unique in all Piedmont. For example, the Dogliani area has a cooler climate, being closest to the Alps, whereas the Barolo and Barbaresco areas have intermediate temperatures. Climate, soil and the human action are three important elements for the “terroir” of this territory. The increasing natural hazards are causing “short” harvest as no suspension between a grape variety and another, and serious damages to cultivations and local economy. Wine makers are also fighting against endogenous and exogeneous parasites that threaten the harvest and the bio-cultivation. Therefore, they are adapting cultivation techniques and monitoring through technology, to prevent a loss of the wine quality and level, imbalances and inadequate accelerations.

The orography of the case study is typical of the Alps and the Apennines system. It can be reconducted to the Miocene period, 15 million years ago, due to the collision between the European and African plates which, by retreating, deposited a substrate of clay, limestone marl, blue clayey marl and sulfur gypsum (Piana et al., 2017). The Barolo area is characterized by two different geological eras: (1) the Elveziano era characterises the municipal terrains of Serralunga d’Alba, Castiglione Falletto and Monforte d’Alba; (2) The Tortonian era the terrains of La Morra, Verduno and Barolo. Alta Langa is the highest part of the Langhe and it is rich in marl, limestone and clay. Its microclimate is cool in summer and rigid in winter. The combo between the materials and the rigid temperatures decreases the vineyards fertility and strengthens the wine complexity. The Roero is the youngest context than the others. It was formed in the Pliocene era, 5 million years ago, and is characterised by soft and sandy soils. The steep rocky slopes are particular elements of the Roero and the soil is rich in marine fossils (Piana et al., 2017). In particular, the Roero geology is variegated and originated from the deviation of the Tanaro river due to the erosive action of another river. The Roero water network has begun to shrink towards the new valley of the Tanaro, generating deep gorges and sandy soil canyons (Rota, 1986). The erosion produced scenic and suggestive places called Rocche (Bertello et al., 2001). The Rocche develop diagonally throughout the Roero area. In the land of marine origin predominates vineyards; whereas in the land with deposits of continental formation, there are cereal and forage crops alternated by wooded areas (Accigliaro et al., 1997). The different typology of terrain, in combination with climate and human action, influence surely the wine quality and characteristics.

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<sup>4</sup> To consult both climate and environmental data please see the website of the Environmental Regional Agency of Piedmont (Arpa Piemonte). <http://www.arpa.piemonte.it/>

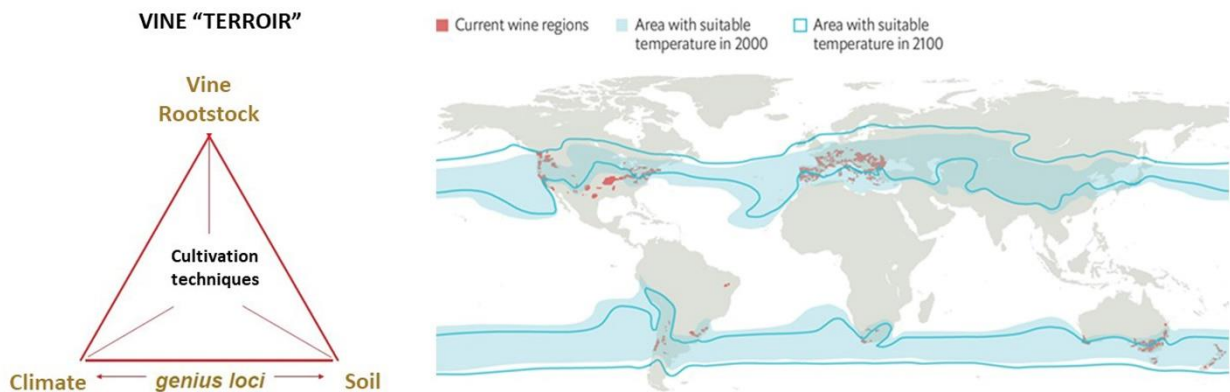


Figure 4. Relationship between vine terroir and climate change.

Source: Own elaboration based on Schultz and Jones (2010), and *The Economist* (2019).

## Nature and environment

In this paragraph useful information are given on natural and environmental features of the vineyard landscape of Langhe-Roero and Monferrato, following the Landscape Ambits configuration provided by the Landscape Regional Plan of Piedmont (LRP)<sup>5</sup>.

The main characteristics of the Alta Langa are influenced by the proximity of the Mediterranean bioregion and by the richness of calcareous substrates. For example, within the small Regional Natural Park “Sorgenti del Belbo” there is an eco-mosaic populated by oaks, pines, chestnut and other species. It is also relevant the presence of rare flowers, like orchids and beech at low altitudes. The Scots pine in this area is very important because it finds the main extra-alpine populations at the national level.

The Basse Langhe landscape is characterized by hilly slopes where specialized viticulture predominates, drawing its origin from the tectonic uplift of ancient marine deposits. After the sudden raising of these lands, this context was modelled by the erosive action of waterways and superficial runoff, which is associated with the anthropic action linked to the vineyards. The northernmost fine deep-sea deposits are characterized by modest height differences and by moderate slopes, whereas the sandstone that emerge proceeding towards the south cause an increase in altitudes and slopes. In the narrow intracollinary valley bottoms, in addition to non-irrigated cereals (wheat) and small grassy surfaces, there are woods of oak and rare woods linear oak-hornbeam and formations of downy oak, cerrete and few invasive woods in the marginal areas, where viticulture is difficult to manage. The large and discontinuous reliefs extend towards the higher elevations of the Alta Langa and abruptly interrupted to the west towards the plain, determine vast visual spaces where the dense weave of the rows of vines dominates the design of the plots in the winter rest period, while, in the summer and above all autumn, the landscape is covered with extraordinary and varied colours according to the answer chromaticity of the vines. Particularly attractive is the viewpoint that can be enjoyed from the roads that run along the ridge lines, on which the rural settlements develops. In this area, the mining activities are dedicated to the cultivation of quarries of clay and aggregates. There are no

<sup>5</sup> Factsheets of Landscape Ambits of the Landscape Regional Plan of Piedmont. [https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2019-03/d\\_Schede\\_degli\\_ambiti\\_di\\_paesaggio.pdf](https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2019-03/d_Schede_degli_ambiti_di_paesaggio.pdf)

significant naturalistic emergencies in the area, except for some sites important for the presence of orchids (i.e. Serra dei Pini, in the municipality of Montelupo Albese).

The Roero is quite different from the territory of the Langhe. The latter, in the last decade, have undergone an irreversible process of intensification crops related to wine and tourism sectors which has compromised the balance of the ecosystem. By contrast, the Roero is still definable as a balanced ecosystem in which the climate, the fauna, the flora, the landscape, the crops and humans still resist, and that are able to absorb the impact of both human activities and deforestation. Particularly, the micro-ecosystem of the Rocche is very delicate: “*Different microclimates coexist in a few hundred meters above sea level: pines and downy oaks, typical of dry vegetation, they grow on top of the ridges while at the bottom of the ravines, stagnant water creates humid habitats and luxuriant*” (Cavallo, 2006). Agriculture and forestry areas are subjected to mutual interference and points of contact linked to continuous changes over time. The agriculture continuously subjected to human activities, which are predominant along the axis of the Tanaro river, they exploit the protective and thermoregulatory effects of band of natural vegetation, whereas the forestry system has endured over time, and continues to undergo, the spontaneisation of species escaped from cultivation. The Roero green system also has a substantial task as the protection of the soil from degradation by both meteoric and wind power, because the Rocche area is easily erodible. It is therefore clear how any change in the composition of the wooded belt, or its stable degradation or its consistent downsizing and deforestation, as occurred in passed through anthropogenic causes in the south-eastern regions of Roero, can only have a negative impact on the stability of the entire ecosystem (Cavallo, 2006; Pontiglione, 2018). The Roero landscape, in addition to the features previously described, derived from the hydrographic network, is distinguished from a series of micro-landscapes resulting from the action anthropogenic on the territory. In the area of the Municipality of Ceresole d’Alba, many artificial reservoirs, defined as *peschiere*, dug in past times for irrigation purposes, as well as, in more recent times, the so-called ‘hilly lakes’, obtained through the occlusion of impluviums and valley furrows. Both hold a significant amount of rainwater which makes them comparable to real ponds which, thanks to the impermeable nature of the soil, is preserved permanently and has allowed the development of a local fish farming. Fauna, flora, climatic conditions and chemical-geological connotations some soils have developed strong reciprocal interactions over time which lead to an environmental condition in which all the aforementioned constituents are in fundamental balance e they generate an ecosystem that, in the medium term, can be defined as stable (Cavallo, 2006; Pontiglione, 2018).

In the Astigiano context, the areas of naturalistic importance are protected according to the constraints in force (e.g., Valle Andona, Valle Botto, or Boschi di Valmanera). They are mainly linked to forests, such as oak-hornbeam, oak and downy oaks, sometimes with Scots pine. They are also characterized by rare species, like the *Quercus crenata*, a rare species of Mediterranean oak. Other areas of naturalistic interest are the “Monferrato woods”, which they include forest of the Meinia river basin and the high Versa stream. They are also characterized by the presence of semi-natural areas. It should be noted the presence of a part of the protected area “Stagni di Belangero” (SCI)<sup>6</sup>, the floodplain area of the Tanaro river with the presence of partially renaturalized quarry lakes, in which some amphibians species are present, as well as migratory birds. It is detected that, in the Silva di Migliandolo area, there is a nesting area of a poultry colony of bee-eaters active from April to September and which, near the chapel of Sant’Evasio, there is the homonymous well from the early twentieth century.

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<sup>6</sup> SCI – Sites of Comunitary Interest. For more please see Habitats Directive and Bird Directive. [https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm](https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm)

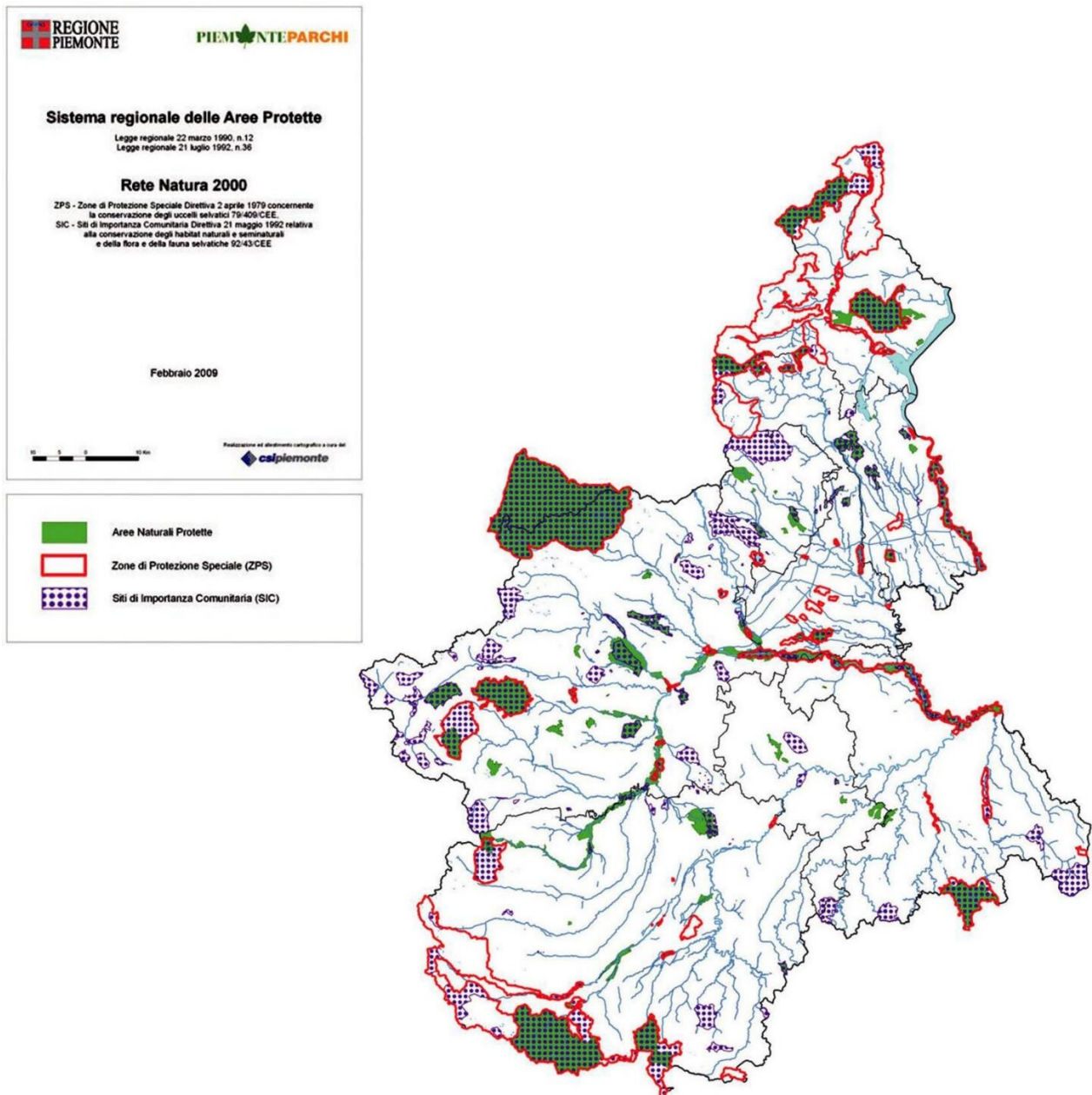


Figure 5. State of conservation of Natura 2000 sites in Piedmont region.

Source: *Arpa Piemonte*.

The Monferrato is characterized by hilly relief and especially in the southern part. For example, Casorzo (270 m), Altavilla Monferrato (250 m), Cuccaro Monferrato (230 m), Fubine (190 m) develop with slight slopes and record accentuated differences in height, differentiating from the northernmost area of Verrua Savoia (290 m), Moncestino (290 m), Gabiano (300 m), in contact with the hills of the Po river, which presents greater slopes. The terrain is affected by the different composition of the deposits, derived from sedimentation in more or less deep waters. On the deposits richer in silts and clays the forms are sweeter, the slopes and unevennesses are less relevant, while where the grain sizes predominate sands, the relief rises in steep slopes that develop on greater differences in height. This morphological distinction also conditioned the land use, which is predominantly agrarian in the first case (corn, wheat, vineyards and wood arboriculture), while it becomes mainly forest in the second case. Regarding the composition of the woods, there are chestnut groves in recession with reserves of oaks (e.g., English oak, oak, downy oak, and

sometimes Turkey oak). The clayey reliefs of Coniolo show their typical morphology and are subject to frequent instability phenomena intrinsic to the lithology of the deposit referable to the Apennine. Here the land use is characterized by marginal agriculture, where a residual viticulture takes place alternates with the progressive expansion of the broad-leaved forest, with a prevalence of scrubs invasion, sycamore maple, ash, cherry, hazel and hawthorn. The secondary waterways of Po river, which run in a west-east direction, are surrounded by intra-hill valley floors where dry agriculture prevails with a dominance of cereal, poplar and grassland. To the north-east the Po plain widens, strongly characterized by the rice cultivation. In proximity of the waterway, maiculture and poplar cultivation prevail. These surfaces, affected by frequent flooding, are made up of recent deposits formed by sands and locally also from gravels with low water retention capacity and present plots with irregular arrangement, testifying to the changes in the course of river that have succeeded each other over time. Finally, in the floodplain area, in addition to poplar cultivation, spontaneous formations of willows and poplars next to *robinieti* can be found, but also invasive exogeneous species (e.g., *Sicyos angulatus*, or *Reynoutria japonica*). There is a diffuse presence of white mulberries. Finally, it should be noted the presence of mining activities for the cultivation of quarries of clay, gypsum and aggregates.

## Tangible cultural assets

The road system of Alta Langa context is characterized by an ancient Roman road from Alba led to Acqui Terme, which enters the area from the west, crosses the Belbo valley and in Castino it points in the direction of Vesime, thus reaching the Bormida valley. There are two Roman centers (i.e. Alba Pompeia and Pollentia) that influenced the development of the supra-local road network. At least three Roman roads are documented: one in direction of Acqui Terme for Vesime and Terzo, a second towards Asti, going up the valley of the Tanaro, a third towards Pollenzo and, still following the Tanaro valley, towards Vado-Vada Sabatia.

There are essentially two categories into which distinguishing the ancient configuration of the Middle Age villages (i.e. *villenove*): some settlements developed in the ridges in a nested way around the castle, some others are larger and developed in the valley even if they are always characterized by the presence of castles. Alta Langa context depended on the jurisdiction of the Marquises of Monferrato. The architecture heritage was influenced by the renaissance culture of the main Italian courts.

In the Middle Age, the road to Cortemilia and Cairo Montenotte, controlled by the Marquises of the Carretto, was used to reach the Ligurian ports. The city of Alba, together with what was once its municipal district, from the fourteenth to the seventeenth centuries, it was part of the marquiseate of Monferrato, and therefore found itself to gravitate culturally on the more properly "Po Valley" area. Moreover Alba, a city of great interest from the point of view urban and territorial planning, because it is the only Piedmont's city to maintain a turreted aspect. Despite it has a central role, Alba had not the opportunity to influence the settlement structure of its hilly hinterland. The Municipality of La Morra, one of the few *villenove* founded by the municipality of Alba, departs from that configuration. The only inhabited area to make a partial exception is Dogliani, an important agricultural centre that gradually shifted its settlement centre towards the valley. From a cultivation point of view, the area is characterized by the consistent presence of vineyards that maintained the historical structure.

The complex settlement of the Roero context took place between the tenth and fourteenth centuries and became the main reference to understand the territorial structure, also for the finding of sedimented

traces of various internal migrations and subsequent colonization processes. This system of traces, between abandonment and recompositing, constitutes an issue of great interest in the enhancement of the Outstanding Universal Value of the UNESCO site.

In the Monferrato, there are two Roman roads: the first ran parallel to the course of the Po and touched the villages of Camino, Pontestura and Casale (Vardacate), and then continue in the direction of Valenza and Bassignana. The second coincides with the route between Moncalvo and Pontestura, part of the road that led from Asti to Vercelli. In medieval and modern ages, a new transversal axis became increasingly important that connected Casale with the upper Monferrato and crossed the Tanaro at Felizzano. It should be emphasized that the area corresponds to the core of the Marquisate of Monferrato, which survived independently until the Treaty of Utrecht (1713). There are evident traces of the Marquisate in both art and architecture. The general settlement characteristics are profoundly different between the hilly area and the areas close to the Po axis. In the first case, the settlement is centralized, on the high ground or on the ridge; During the nineteenth and twentieth centuries, with the progressive planning of the railway network, the first commercial settlements appeared in the valley, based on agriculture and wine productions. The historical settlement structure dates to the final Middle Age and seems occasionally oriented by the foundation and re-foundation of some settlements (e.g., Brusasco, Villamiroglio, Montemagno, or Pontestura) and from strengthening of castles (e.g., Montiglio, Gabiano, Moncalvo, or Conzano). In the area of Casale Monferrato, the settlements have evident characteristics of colonization, thus assuming the form of newly founded and preordained matrix village (e.g., Frassineto Po, Borgo San Martino, Occimiano, or Mirabello) or they were sometimes developed starting from the presence of agricultural castle with large land holdings. As far as the cultivation is concerned, the hilly area has a wine-growing vocation widely historicized. The area in which it maintains a significant landscape value is however limited to the hills overlooking the valley of the Grana stream, where still survive the cultivation of a native vine (Ruchè), the typical area of the Grignolino and the Barbera and Malvasia grapes on the slopes of Casorzo. The area between Ozzano, Coniolo and Casale, due to the composition of the marl deposits, is interested by mining activities related to the aggregates.

## Intangible cultural heritage

The wines of the Langhe, from Barbera to Barolo, contribute to the primacy of excellence of this territory together with other local products, from the White Truffle of Alba, in honour of which a fair is held every year which attracts hundreds of visitors all over the world, to the Nocciola Tonda Gentile delle Langhe, made famous by the products of the historic Piedmont's company "Ferrero".

The Roero area counts several popular legends linked to the Masche. One of the most significant is the tale of Masca Micilina, a woman accused of witchcraft and burned alive during the Middle Age, near what has become the homonymous fortress. The Masche belongs to the magical-religious sphere of pagan cults, and they are figured out as diabolical creatures that populate the woods and the most inaccessible areas of the territory. Their cult was practiced to avoid misfortunes and sufferings of the community. A popular representation has recently performed in an annual event (Rambaudi, 2005). The territory of the Roero is disseminated by votive pillars to the Saints and the Virgin, expression of an agrarian cult for the prosperity of cultivations.

In the Langhe-Roero and Monferrato context there are very famous cultural events. The Douja D'Or is a food and wine tour around the most evocative squares, streets and historic houses of Asti including

tastings, master classes and special menus in restaurants as well as exhibitions, art, culture and the experiences. In the Piedmont's dialect *douja* means an ancient terracotta used to decant, store and serve wine. The Carnival mask Gianduja is in fact represented with the *douja* for cheerful drinks. In Asti, the *Douja d'Or* is synonymous with the wine festival since 1967 as one of the most prestigious events of Italian wine, with rich cultural events linked to the world of art, music, theatre and literature inspired by the world of wine.

The World Market of the White Truffle of Alba is an ideal place to appreciate and acquire truffles from the Langhe, Monferrato and Roero areas. During this event there is the Alba Truffle Show, where Cooking Shows with star chefs, sensory paths with truffles, wine tasting experiences, education initiatives are performed. Among the certified Piedmont's cheeses, for example, the Robiola di Roccaverano is the protagonist of one of the traditional gastronomy experiences: the historic *Merenda Sinoira*, a convivial snack made up of bread, cold cuts, cheese, wine, that farmers ate in mid-afternoon after a long day of work in the fields. A typical sweet is the *Murazzano*, a warm pie made with local hazelnuts. The "CHEESE" is an international slow food event held in Bra on the exposition of cheeses as occasion of both social and economic restart. As contemporary art, the "big benches" by Chris Bangles have great visual impact and support for local communities. They have also a specific meaning: sitting on each of those out-of-scale benches becomes a child again to look at the world around us from a different perspective.

## Socio-economic aspects

In the Table 2 are given some useful data about the main economic sectors of the case study. Local economy is one of the most important aspects that contribute to the economic attractiveness of the Langhe-Roero and Monferrato and of its landscape. This arises from the relevant literature in the field (OECD, 2001; Cassatella & Peano, 2010; Heijman & van der Heijden, 2013). The agriculture sector mirrors the existing relationships between rural landscape and the economic system, by considering agriculture employments and local investments (Gottero and Cassatella, 2017; Schaller et al., 2018). The tourism sector can deal with the landscape attractiveness through tourism flows and accommodation (Terkenli, 2014). The real estate sector benefits from the landscape attractiveness, especially when real estate properties are near to natural amenities and agricultural fields (Tyrväinen, L. & Miettinen, 2000). In the context of economic evaluation, landscape is retained a pure public good and a positive externality because can generate multiple benefits on local community, as well as on property and terrains values (Pearce & Turner, 1990). The forest management sector represents the benefits delivered by forestry management and activities for local economic development (Assumma et al., 2019). The poles of Bra and Alba are the reference points for the various economic development realities of Roero and part of the Langhe, based both on the food (e.g., Ferrero S.p.A.) and textile (e.g., Miroglio S.p.A.) industries, and on activities that exploit the landscape and food and wine resources offered by the territory (Giacone, 2017).

The Table 2 collects some economic data that can help to know the performances of the municipalities and thus the economic attractiveness generated by the core and buffer zones of the UNESCO site. The data considers both the UNESCO perimeter and the Municipalities, since the core and buffer zones are not homogeneous and the Municipalities are also characterised by a different degree of participation with different relapses.

Table 2. Economic dataset of the municipalities of the vineyard landscape area.

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
Core zone 1	Barolo	71	171	1	65	399.53	8711	19,103	410	94	1,500	958,097	0	46
	Castiglione Falletto	54	172	0	48	305.73	3298	7,978	111	55	1,350	467,665	0	29
	Diano d'Alba	208	279	2	162	877.82	3016	6,811	188	98	1,600	1,308,907	0	322
	La Morra	295	431	4	229	1,513.86	14,350	31,922	582	194	1,650	1,738,602	0	135
	Monforte d'Alba	210	247	4	192	1,380.79	13,109	29,319	460	123	1,500	2,121,045	0	502
	Novello	91	72	0	72	668.68	5,195	9,695	123	40	1,400	893,501	0	206
	Serralunga d'Alba	72	180	0	69	556.71	10,419	20,200	282	60	1,500	975,205	0	130
	Sinio	63	17	2	38	423.91	3,468	9,167	158	89	1,200	195,587	0	287
	Treiso	98	208	0	92	558.29	2,727	6,573	130	94	1,350	1,141,419	0	186
	Trezzo Tinella	66	145	1	61	490.96	645	1,899	88	585	1,250	690,704	0	315
	Verduno	52	79	0	43	415.01	3,118	7,118	92	1,272	1,300	510,282	0	50
<b>TOTAL</b>		<b>1,280</b>	<b>2,001</b>	<b>14</b>	<b>1071</b>	<b>7,591.29</b>	<b>68,056</b>	<b>149,785</b>	<b>2,624</b>	<b>2,704</b>	<b>15,600</b>	<b>1,000,092</b>	<b>0</b>	<b>2,208</b>
Core zone 2	Grinzane Cavour	54	17	0	41	236.98	0	0	26	0	1,500	249,146	0	2
<b>TOTAL</b>		<b>54</b>	<b>17</b>	<b>0</b>	<b>41</b>	<b>236.98</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>1,500</b>	<b>249,146</b>	<b>0</b>	<b>2</b>
Core zone 3	Barbaresco	83	297	0	82	455.65	3,618	8,215	122	55	1,500	955,970	0	103
	Neive	252	296	2	207	1,204.51	5,069	9,729	267	88	1,400	1,875,733	0	162
<b>TOTAL</b>		<b>335</b>	<b>593</b>	<b>2</b>	<b>289</b>	<b>1,660.16</b>	<b>8,687</b>	<b>17,944</b>	<b>389</b>	<b>143</b>	<b>2,900</b>	<b>1,415,851</b>	<b>0</b>	<b>265</b>

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
Core zone 4	Agliano Terme	206	188	1	180	1,099.23	1,447	5,811	309	50	950	996,880	0	29
	Belveglio	18	10	0	6	168.47	0	0	10	0	750	143,702	1	203
	Castelnuovo Calcea	81	66	0	73	409.38	616	1,327	49	33	760	601,990	0	99
	Mombercelli	139	35	0	82	519.7	42	65	42	21	1,050	641,280	2	468
	Montegrosso d'Asti	170	81	0	127	828.89	922	3,427	107	0	1,050	1,835,071	0	170
	Nizza Monferrato	310	356	2	257	1,783.89	4,702	11,975	252	123	1,350	1,540,295	0	144
	Vaglio Serra	28	13	0	24	114.37	0	0	18	0	810	218,961	0	231
	Vinchio	126	34	0	113	419.16	240	585	49	16	810	444,204	0	325
<b>TOTAL</b>		<b>1,078</b>	<b>783</b>	<b>3</b>	<b>862</b>	<b>5,343.09</b>	<b>7,969</b>	<b>23,190</b>	<b>836</b>	<b>243</b>	<b>7,530</b>	<b>802,798</b>	<b>3</b>	<b>1,669</b>
Core zone 5	Calosso	204	403	1	197	1,060.51	498	1,804	74	26	750	1,161,137	0	109
	Canelli	327	398	2	278	1136.8	5,430	12,860	288	146	1,350	1,160,362	0	300
	Santo Stefano Belbo	375	834	0	344	620.37	8,176	15,139	239	276	1,350	2,530,838	0	542
	<b>TOTAL</b>	<b>906</b>	<b>1635</b>	<b>3</b>	<b>819</b>	<b>2,817.68</b>	<b>14,104</b>	<b>29,803</b>	<b>601</b>	<b>448</b>	<b>3,450</b>	<b>1,617,446</b>	<b>0</b>	<b>951</b>
Core zone 6	Camagna Monferrato	36	4	0	20	529.83	0	0	6	0	890	363,509	0	166
	Cella Monte	41	43	0	27	309.8	0	0	26	20	730	297,281	0	64
	Frassinello Monferrato	40	48	0	27	490.8	0	0	6	0	890	374,737	0	27
	Olivola	17	21	0	12	152.33	0	0	10	10	840	146,592	0	29

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
	Ottiglio	39	39	1	24	522.26	0	0	12	0	810	533,352	0	483
	Ozzano Monferrato	50	52	0	25	905.78	503	676	28	0	890	603,265	0	200
	Rosignano Monferrato	76	130	0	42	1,158.85	2,313	2,988	53	10	890	808,089	0	122
	Sala Monferrato	47	60	0	37	503.90	0	0	0	0	730	399,460	0	101
	Vignale Monferrato	68	112	0	52	1,097.86	1,813	3,365	249	140	870	805,984	0	233
<b>TOTAL</b>		<b>414</b>	<b>509</b>	<b>1</b>	<b>266</b>	<b>5,671.41</b>	<b>4,629</b>	<b>7,029</b>	<b>390</b>	<b>180</b>	<b>7,540</b>	<b>481,363</b>	<b>0</b>	<b>1,425</b>
Buffer zone 1	Acqui Terme	225	116	3	141	1,056.06	47,915	134,248	1,648	59	970	1,784,905	1	979
	Alba	372	545	7	232	2,751.47	73,330	169,268	1,880	172	2,250	2,464,704	0	542
	Alice Bel Colle	156	274	0	143	266.19	0	0	51	0	730	2,446,419	0	246
	Bergamasco	60	4	0	5	700.27	0	0	14	10	890	419,594	0	258
	Bistagno	119	45	1	71	623.19	0	0	17	8	990	645,951	0	525
	Cassine	241	182	2	166	1,681.86	694	1,065	80	29	890	1,721,810	0	798
	Castiglione Tinella	170	579	1	166	952.9	1,092	2,888	78	43	1,300	2,244,700	0	212
	Cherasco	364	35	0	59	5,412.74	18,534	34,724	621	0	1,800	3,056,788	0	1,143
	Dogliani	313	281	3	236	886.39	3,033	7,313	345	141	1,300	642,913	1	880
	Mango	175	480	0	163	1,021.96	1,244	3,277	98	18	1,250	1,539,786	0	477
	Masio	112	15	2	30	1,175.72	0	0	8	0	960	162,245	2	427
	Monchiero	33	1	0	21	210.95	0	0	37	0	1,200	199,312	0	109

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
	Montelupo Albese	58	10	0	35	318.06	3,202	13,333	129	42	1,100	175,869	0	182
	Monticello d'Alba	77	39	1	42	276.80	625	1,752	50	0	1,400	166,660	1	287
	Narzole	138	16	0	43	1,710.46	2,719	9,023	234	0	1,350	1,074,096	1	331
	Neviglie	80	204	0	69	448.53	1,281	2,771	67	39	1,100	962,215	0	175
	Occimiano	43	18	0	3	1,731.71	0	0	8	0	960	418,463	0	15
	Ricaldone	118	206	0	117	718.29	0	0	25	25	940	70,552	0	177
	Roddi	79	17	0	49	490.17	2,099	6,381	116	41	1,400	461,973	0	3
	Roddino	59	22	3	26	393.08	277	863	56	26	1,250	172,590	0	360
	Rodello	62	38	1	38	538.30	0	0	15	0	1,250	209,547	0	294
	Santa Vittoria d'Alba	74	43	0	56	378.96	4107	10,915	155	0	1,350	251,824	0	203
	Strevi	107	167	0	90	750.84	169	435	35	0	940	1,533,906	0	207
	Terzo	77	12	0	51	326.70	0	0	13	13	940	474,139	0	252
	Asti	766	156	68	104	5,207.27	42,852	97,682	1,674	192	3,100	1,587,892	0	3,874
	Belveglio	18	10	0	6	168.47	0	0	10	0	750	143,702	1	203
	Calamandrana	132	63	0	100	644.67	3,881	8,432	165	40	1,050	556,624	0	211
	Cassinasco	79	60	0	71	321.15	0	0	15	0	740	399,318	0	550
	Castagnole delle Lanze	249	177	0	179	1,245.30	1,410	3,164	101	38	1,050	1,102,185	0	156

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
	Castel Boglione	122	221	0	117	692.91	348	877	49	37	630	423,656	0	155
	Castel Rocchero	65	58	1	58	297.73	0	0	20	20	750	347,053	0	118
	Castelletto Molina	20	32	0	20	189.20	0	0	27	0	750	424,945	0	40
	Castelnuovo Belbo	69	14	0	45	392.49	238	355	40	0	750	424,333	0	253
	Coazzolo	52	63	0	50	326.36	0	0	19	13	810	257,665	0	13
	Cortiglione	38	1	0	18	177.33	0	0	12	12	810	297,372	0	367
	Costigliole d'Asti	405	449	0	286	2,067.23	4,510	11,023	359	88	1,350	2,152,317	0	264
	Fontanile	82	204	0	75	566.89	319	2,389	48	23	810	636,124	0	68
	Incisa Scapaccino	106	35	0	36	662.34	0	0	22	12	1,050	786,556	0	777
	Isola d'Asti	109	40	0	47	726.77	3,850	10,871	134	44	990	660,990	0	112
	Maranzana	45	30	0	41	221.58	0	0	12	6	810	528,576	0	158
	Moasca	63	28	0	54	363.53	0	0	22	16	810	316,513	0	9
	Mombaruzzo	136	164	0	114	919.71	2,376	6,519	96	55	950	897,897	0	705
	Mongardino	54	38	0	35	271.40	0	0	12	0	790	323,761	0	175
	Montabone	45	28	0	39	572.09	382	894	51	39	790	510,120	0	247
	Montaldo Scarampi	53	8	0	26	174.50	0	0	0	0	810	264,126	0	276
	Quaranti	36	3	0	34	163.35	0	0	0	0	810	484,750	0	38
	Rocca d'Arazzo	46	3	0	11	234.02	0	0	75	8	790	342,006	0	650

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agricul-ture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
	Rocchetta Palafea	69	58	0	54	299.02	0	0	5	0	790	112,594	0	244
	Rocchetta Tanaro	78	23	2	19	518.45	579	1,141	64	8	900	560,395	0	623
	San Marzano Oliveto	121	137	2	100	579.81	1,150	5,128	65	0	810	619,227	0	24
	Vigliano d'Asti	74	8	0	39	229.36	0	0	17	11	810	418,379	0	115
<b>TOTAL</b>		<b>6,444</b>	<b>5,460</b>	<b>97</b>	<b>3,830</b>	<b>43,054.53</b>	<b>222,216</b>	<b>546,731</b>	<b>8,894</b>	<b>1,328</b>	<b>53,770</b>	<b>762,354</b>	<b>7</b>	<b>19,507</b>
Buffer zone 2	Altavilla Monferrato	26	3	0	11	600.45	0	0	0	0	730	415,128	0	214
	Casale Monferrato	202	125	0	29	5,327.50	17,217	32,732	425	0	1,200	2,050,833	2	355
	Castelletto Merli	45	33	0	15	552.39	166	278	24	18	890	346,094	0	319
	Cella Monte	41	43	0	27	309.80	0	0	26	20	730	297,281	0	64
	Cereseto	39	23	0	19	693.99	1,949	2,821	60	53	730	332,720	0	94
	Conzano	47	0	0	9	801.44	73	165	22	7	970	357,142	0	44
	Cuccaro Monferrato*	32	12	1	23	383.63	0	0	16	0	890	207,201	0	35
	Fubine Monferrato	52	6	0	9	1,139.71	744	4,112	80	47	990	493,878	0	518
	Lu	111	79	0	41	1,585.10	0	0	42	0	890	712,684	0	171
	Ponzano Monferrato	25	64	0	15	364.29	311	582	23	3	940	405,676	0	518
	Serralunga di Crea	26	18	0	9	413.02	439	982	90	15	730	241,158	0	257

UNESCO site	Municipalities	Agriculture					Tourism				Real estate		Forest	
		No. of agriculture firms	No. of agriculture workers	No. of BIO-agriculture firms (2013)	No of PDO/PGI firms*	Utilized Agriculture Surface (ha)	No of tourism arrives	No of tourism presences	No of total beds	No of beds in farmhouses	Real estate value of properties (€/m2)	Average agriculture value (€/ha)	No of forestry firms	Forestry Surface (ha)
	Terruggia	22	29	0	6	463.39	0	0	213	0	950	249,439	0	15
	Treville	13	40	0	8	262.91	0	0	6	0	730	181,725	0	80
	Casorzo	57	29	0	42	1,076.35	44	145	30	6	740	570,870	0	14
	Grana	20	24	0	10	424.82	0	0	15	4	790	64,791	0	13
	Grazzano Badoglio	40	73	1	26	592.33	471	818	49	0	900	412,964	0	157
	Moncalvo	79	40	1	43	1,064.88	3,739	8,365	250	73	1,100	648,591	0	223
	Penango	61	33	0	39	701.31	6,837	12,462	162	38	790	415,000	0	26
<b>TOTAL</b>		<b>938</b>	<b>674</b>	<b>3</b>	<b>381</b>	<b>16,757.31</b>	<b>31,990</b>	<b>63,462</b>	<b>1,533</b>	<b>284</b>	<b>15,690</b>	<b>466,843</b>	<b>2</b>	<b>3,117</b>
<b>Overall TOTAL</b>		<b>11,116</b>	<b>11,206</b>	<b>120</b>	<b>7,284</b>	<b>81,007.30</b>	<b>347,693</b>	<b>813,187</b>	<b>14,799</b>	<b>3,290</b>	<b>101,380</b>	<b>935,250</b>	<b>12</b>	<b>28,304</b>

Source: *Censimento dell'Agricoltura – ISTAT (2010)*, *Regione Piemonte (2014)*, *Osservatorio del Mercato Immobiliare – Agenzia delle Entrate (2014)*, *Regione Piemonte – SIFOR (2012)*.

Notes: PDO and PGI mean firms that produce respectively Products with Denomination Origin and with Protected Geographic Indication.

## Infrastructures and mobility

The Langhe-Roero and Monferrato context is far about 27 minutes from the metro station Torino Lingotto and not so far from Milan airport. Part of the case study is connected to the trans-European corridor Genoa-Rotterdam-Lisbon-Kiev, thus allowing the empowering of logistic pole systems, commercial exchanges and economic competitiveness at European scale.

The mobility is closely related to both road and railway transports. There is a deficit in the supply of bus lines service and a general social and environmental degradation. In addition, some minor intermediate railway stations are completely abandoned, in favor of the most used train lines, like the connections Turin-Genoa and the Asti-Turin. The case study has weak relations with Lombardy region and Milan, due to few rail connections, the limitation of some lines (e.g., line Asti-Acqui Terme), or even the suspension (e.g., line Asti-Chivasso). The current infrastructure network is dated and does not allow the passage of high speed train transportation. This issue influences in part the choice of transport modality to move inside and outside the territory. The features related to the occurrence of natural hazards (e.g., floods, or landslides)<sup>7</sup> must be taken into account for the safety of both local community, workers and tourists.

Despite the criticalities existing in the transport sector, there are some emerging initiatives, such as the planning of shuttle lines to visit the wine places, the adoption of sustainable mobility solutions within the main cities (e.g., Asti), or even a UNESCO Railway that passes through the places of the vineyard landscape of Piedmont. Region Piedmont provides studies and useful data on the mobility by car per provinces<sup>8</sup>.

The case study is characterized by a recent out-flow migration of local community in the main cities of the region and abroad, mainly due to education and job opportunities. The few populated municipalities located in hilly and inner areas risk to become "ghost" towns and therefore physically, socially and economically isolated. The National Strategy for Internal Areas (SNAI)<sup>9</sup> is careful to the provision of essential services to avoid and limit the ongoing depopulation of inner and rural areas and it can represent an opportunity for the little municipalities of the he Langhe-Roero and Monferrato.

The presence of the railway heritage detains a great historic-cultural value, such as the train lines Bra-Alba, Alba-Asti, Asti-Castagnole delle Lanze (Giacone, 2017), the railway of Bernina, Merano-Valles, or even the "railway of wonders" (i.e. Ferrovia delle Meraviglie) through Cuneo, Ventimiglia, and Nizza, that was envisioned by Camillo Benso di Cavour, during the Savoy kingdom (nineteenth century), to connect Piedmont with France, to unify lands of mountains and sea. It was built in 1882 and inaugurated in 1928. Several historic rail lines are converted for tourism purposes. The regeneration of abandoned historic rail stations can trigger tourism opportunities in relation to the other transport infrastructures of the territory.

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<sup>7</sup> Regione Piemonte, Piano di Assetto Idrogeologico (PAI). <https://www.regione.piemonte.it/web/temi/protezione-civile-difesa-suolo-opere-pubbliche/difesa-suolo/strumenti-per-difesa-suolo/piano-per-lassetto-idrogeologico-pai>; Regione Piemonte, Piano di Gestione Rischio Alluvioni (PGRA).

<https://www.regione.piemonte.it/web/temi/protezione-civile-difesa-suolo-opere-pubbliche/difesa-suolo/strumenti-per-difesa-suolo/piano-gestione-rischio-alluvionale-pgra>

<sup>8</sup> Regione Piemonte (2017). Report sulla mobilità veicolare in Piemonte.

[https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2019-04/report\\_2017\\_sulla\\_mobilita\\_veicolare\\_in\\_piemonte\\_asti.pdf](https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2019-04/report_2017_sulla_mobilita_veicolare_in_piemonte_asti.pdf)

<sup>9</sup> Strategia Nazionale per le Aree Interne, Agenzia per la Coesione Territoriale <https://www.agenziacoesione.gov.it/strategia-nazionale-aree-interne/>

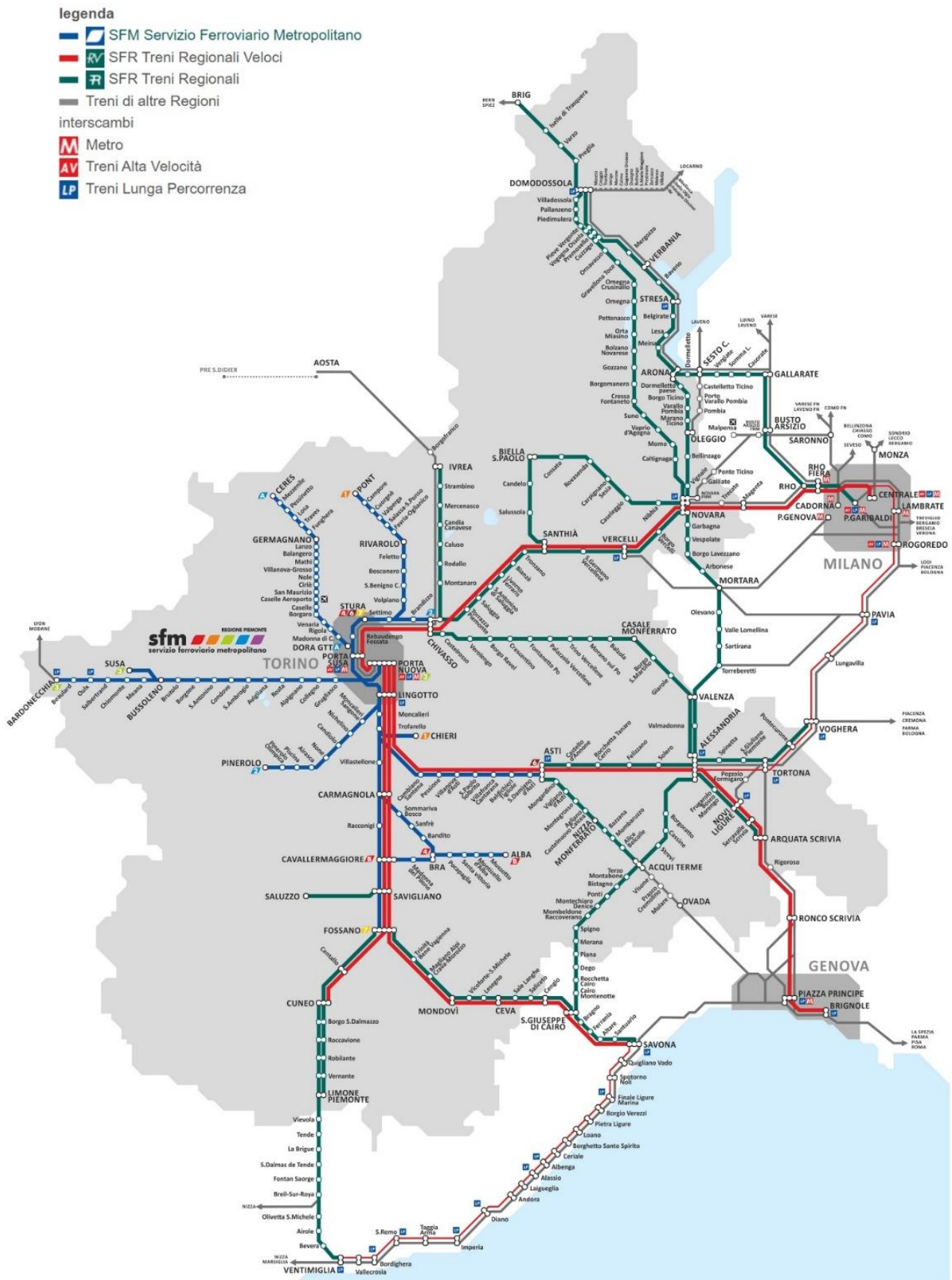


Figure 6. Railway stations inside and outside the case study.  
 Source: Servizio Ferroviario Regionale del Piemonte.

Some municipalities, such as Alba, are increasing their attention toward sustainable mobility with the adoption of Urban Sustainable Mobility Plan (PUMS), according to the European Eltis guidelines, in order to satisfy the mobility of people and businesses in the cities and their territories for a better quality of life. In fact, the traffic of heavy vehicles in the Langhe-Roero and Monferrato context is a very topical issue in terms of environmental impact and road safety. In this sense, some green logistics projects (e.g., Ecolog) are moving, in an experimental way, to provide suitable solutions that combine the needs of tourism with those of the wine sector. The objective is to reduce the CO2 emissions by daily heavy vehicle traffic by 50%. This will promote green tourism and e-commerce, with benefits on air quality and wine supply chain from a more efficient and contextually more sustainable logistics service for the environment.

Given the increasing number of electrical vehicles in the area, a network of electric charging stations was installed, thanks to the collaboration between the Association that manages the UNESCO site Langhe-Roero and Monferrato and EnelX. This represents a step forward in an area where there is already a wide accessibility to electric bicycles and where sustainable mobility is increasingly becoming a focal element in its management.

## Tourism development in the vineyard landscape area

### Tourism – steps forward

The Observatory of Langhe, Roero and Monferrato is the result of the collaboration signed in 2020 between VisitPiemonte DMO, Unioncamere Piemonte, Langhe-Monferrato-Roero Tourism Agency, International Alba White Truffle Fair Authority and Banca d'Alba. It is a public-private strategic partnership model that can be replicated in other Piedmont areas, as a territorial governance tool, useful to guide investment in training plans for Piedmont's economic operators and training/information actions for residents. It wants to respond to the need to measure the tourist and economic impact that an international level event such as the International White Truffle Fair of Alba has on the case study and, more generally, in Piedmont by developing specific analyses through for example big data, statistical surveys, or the Spend Index, that measures and monitor the degree of spending in the territory.

The Turin and Langhe initiative was carried out by the Local Tourism Authority (LTA) of Turin and Province, with the contribution of CRT Foundation, City of Turin, Sagat, Cities of Alba and Bra, which promotes Turin and Langhe tourism brand as unique in order to increase tourist flows at the international level.

On October 31, 2017, Alba was nominated by UNESCO Creative City of Gastronomy, thus becoming part of a network of virtuous cities in which creativity, in various fields, has improved the standard of living of population and economy. The UNESCO Creative Cities network was created in 2004 and counts currently 180 cities in 72 countries of the world, and foresees 7 areas for which to be recognized as creative: Gastronomy, Crafts, Literature, Cinema, Design, Media Arts and Music. Nine Italian cities have been nominated, of which Alba for Gastronomy and Turin for Design. Alba has close collaborative relationships with the network cities and it is involved in numerous projects, born to share good practice and network, fully embodying the spirit and the purpose of the network itself.

### Innovative tourism

Strong attention is paid to the development of innovative tourism products and improvement of the offer available on the market today. The goal is to encourage the creation of tourism products focusing on directed interventions addressed to specific targets and segments of the market. The offices are working on the Junior tourism market, on the luxury segment, on corporate tourism in the food sector, on the development of e-bikes, on the creation of related offers to cultural tourism. Junior tourism is getting stronger in the summer with the arrival of many families since Northern Europe, looking not only for food and wine, but also on outdoor experiences and child-friendly entertainment. Concerning the luxury tourism, LTA has started a strategic collaboration with Tuscany, finalized to create high-end tourism products to be offered to long haul travellers. "Piemonte on Food" is a platform that proposes visits to companies food industry and cellars, expanding the offer and diversifying the areas affected by the initiative. Cycle tourism is increasing its role in the sector, with particular focus on the integration of existing itineraries, paths and tracks to be collected in a single promotional showcase. The cultural offer, spanning from the Romanesque churches to the Asti museums, enriches significantly the tourism offer of the area. The "Romanesque Hill

Network” project is coordinated by the InCollina Association to enhance the heritage of Romanesque churches in the area between Po and Monferrato<sup>10</sup>.

Network of itineraries lead tourists and visitors to discover smaller towns, extraordinary viewpoints and solitary centuries-old country chapels. The itineraries develop through ridge roads such as the long hills of Langa, winding ups and downs among the thousand waves of Monferrato, steep paths in the “canyons” of the *Rocche* of the Roero<sup>11</sup>. For more about tourism statistics please see the report by Ente Turismo LRM (2019)<sup>12</sup>.

## Tourism pressure

The inclusion of Langhe-Roero and Monferrato in the UNESCO WHL list resulted in a conspicuous rise in tourists flows as well as in an increase in the number of cultural, food and wine events, spanning from food and wine tourism, mainly characterised by “fly by” flows, especially by people who live nearby the area and neighboring regions, to religious tourism, thanks to the presence of architectures and religious assets enhanced by itineraries and paths, up to more sustainable tourism forms like cycle-tourism and family outdoor experiences that contributes to an integrated mobility, inside and outside the area, as well as to appreciate “slowly” the landscape scenic value.

The phenomenon has been consolidated with different concentrations and focused in specific poles of the UNESCO site, thus creating imbalances with the remaining municipalities. The “Tourism Carrying Capacity” (TCC) is a complex concept that was defined in 2000 by the WTO (World Tourism Organization) as: “*the maximum number of people who visit the locality in the same period without compromising its environmental, physical, economic characteristics and socio-cultural and without reducing the satisfaction of tourists*”<sup>13</sup>. Today, the TCC has evolved from the first definition to become a tool of analysis and management of tourist flows aimed at verifying the levels of use of a certain tourist destination (Cimnaghi et al., 2015). The general idea is that the TCC is composed by a set of skills: sociological, physical, environmental, functional, and so on.

Whereas these increasing tourism fluxes undoubtedly constitute an important economic asset for the area, they also open up a set of challenges that need to be tackled carefully, in order to preserve the cultural, environmental and landscape quality of the area. The UNESCO site attracts every year an increasing number of tourists from all over the world for food and wine tasting, and this has raised the need for managing tourism flows starting from a more integrated and sustainable mobility. More in detail, these tourists are in most cases from abroad and with little capacity for independent mobility in the area. Hence the need to understand how to address innovation in tourist mobility, going beyond the private-car model. The limited availability of tourist-friendly transport in an area where inhabitants and tourists travel by their own means due to the scarcity of an adequate public transport system constitutes a serious challenge. The impact of private motorised means of transport on an area that is unique in the world and needs to be preserved and developed sustainably is indeed a challenge, that needs to be weighted vis-à-vis tourists’ mobility needs and the quality of their experience. At the same time, the attractiveness of the various places

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<sup>10</sup> Rete Romanica di Collina. <https://www.turismoincollina.it/scopri/rete-romanica-di-collina/>

<sup>11</sup> Tourism itineraries. <https://www.visitlrm.it/it/itinerari/>

<sup>12</sup> Report Ente Turismo LRM (2019).

[http://www.langheroero.it/allegati/EnteTurismo\\_LMR\\_Relazione\\_Assemblea%20Soci\\_2019\\_DEF\\_190805115828.pdf](http://www.langheroero.it/allegati/EnteTurismo_LMR_Relazione_Assemblea%20Soci_2019_DEF_190805115828.pdf)

<sup>13</sup> UNWTO Tourism Highlights (2000). <https://www.e-unwto.org/doi/book/10.18111/9789284403745>

of the UNESCO area is differential, leading to an uneven concentration of tourists that favour selected locations – e.g., the municipalities of Barolo and Barbaresco, and the city of Alba. This generate infrastructure congestion problems, as well as an uneven distribution of the economic benefits of tourism, while also unevenly concentrating the negative impact of tourism pressure on the territory.

In May 2018 the Association for the Heritage of Vineyard Landscapes of Langhe-Roero and Monferrato organized a conference in Alba on “Tourism and UNESCO sites: Tourist Carrying Capacity as a tool for management sustainable”. This conference highlighted the need to safeguard cultural heritage, according to both sustainability and resilience principles. It means that the preservation of the whole heritage must be related to the ability of the territory itself to recover the resources over time. In this sense, the TCC can be considered a suitable tool to manage tourism destinations (Bruno, 2017).

In order to face these and other challenges that the increasing tourism fluxes are bringing along with them, a number of planning and management instruments have been developed. As it will be further detailed in the section that follows, despite their apparent fragmentation, through time it has been possible to develop a number of synergies between them, and to consolidate them within a more or less coherent, multilevel governance framework aimed at the sustainable spatial planning of the area.

## Recent challenges of spatial planning in the Langhe-Roero and Monferrato

The increasing tourism pressures that have characterised the Langhe-Roero and Monferrato area since the new Millennium and, more in particular, since its inclusion in the UNESCO World Heritage List, require to be tackled through an integrated, multilevel governance framework devoted to this task. However, despite the long tradition boasted by the country in relation to Tourism and the fact that, with 94 million tourists per year (2018), Italy is the third most visited country in international tourism arrivals<sup>14</sup>, the country spatial governance and planning system does not include instruments and regulations specifically dedicated to the development, management and regulation of tourism and of the impact of this activity over its cultural, environmental and landscape heritage.<sup>15</sup>

Overall, traditional spatial planning activities appears ill-equipped to deal with tourism challenges. The land-use regulation approach that has characterised the country through time has mostly focused – especially outside the main urban areas – on the provision of increasing land-use and development rights (Cotella & Berisha, 2021), and does not seem able neither to promote tourism in those inner area that would benefit from increasing tourism dynamics as an engine for development, nor to strategically re-orient tourism activities in those areas that are endangered due to overtourism.

Despite the lack of a comprehensive and integrated approach to tourism, a number of instruments exists that, when coordinated and fine-tuned, may represent an asset in this concern. Each Italian region is required to produce a Regional Territorial Plan (RTP), an instrument that should present the main orientation for socio-economic and spatial development as well as address environmental protection, infrastructures and other sectoral issues. The RTP is legally binding for the sub-regional levels, which themselves have to establish coherent plans. At the same time, municipalities (alone or joined in unions) are obliged to prepare Municipal General Regulatory Plans (PRGC), i.e. instruments that define land-use prescriptions for the whole territory of the municipalities they concern. The PRGCs are legally binding for public and private actors, they indicate the main communication routes, public areas, areas for public buildings, protection for the environment and landscape, etc., and prescribe, through implementation regulations, the physical and functional status of the individual zones of the territory. Through the relation between regional and municipal planning, there is the possibility to approach tourism challenges from a multilevel perspective, with the Regional Territorial Plan that may approach them from a territorial, wider scale standpoint, to then either suggest guidelines for their tackling or enforce specific prescriptions on the matter.

Importantly, the country is also provided with a consolidated system of Landscape planning that, at the regional level, runs in parallel and establishes synergies with the spatial planning activity. As a matter of fact, the country has a long tradition in landscape planning that dates back to the 1940s and, since 2004, Italian regions are responsible for producing Regional Landscape Plans (RLP). These instruments were

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<sup>14</sup> According to estimates by the Bank of Italy of 2018, the tourism sector directly generates more than 5% of the national GDP (13% considering also the indirectly generated GDP) and represents over 6% of the employment (Bank of Italy, 2019). Italy also contains more World Heritage Sites than any other country in the world.

<sup>15</sup> As the Italian spatial governance and planning system is highly regionalised, some regions constitute an exception in this concern, e.g., Valle d'Aosta and its Tourism Development Programmes, the Provincial programme for Tourism Development of Alto Adige, or the Tourism Strategic Plans produced by some large cities affected by overtourism (e.g., Rome).

introduced to adopt to the European Landscape Convention (Council of Europe, 2000) and since then constitute the essential compulsory step for the conservation, planning and management of the regional landscape. RLPs extend to the whole regional territory, with the provision of different degrees of protection in relation to the recognition of landscape values and the consequent assignment of landscape quality objectives, as well as recovery interventions in degraded areas. These objectives imply that the protection of landscape should not be restricted to mere conservation and preservation, but should extend to the regulation of all human interventions intended to affect landscape. More in detail, RLPs have two main purposes: (1) a cognitive purpose, focusing on the analysis of regional landscape features (natural, cultural, property) and transformation dynamics in order to identify the risk factors and vulnerabilities of the landscape, and to address other acts of programming, planning and land protection; (2) a directive purpose with legally binding measures (*prescrizioni*), requirements for adaptation measures (*direttive*) and simple recommendations (*indirizzi*) for sub-regional plans and sectoral plans.

In the following subsections, the Region Piedmont Landscape Plan will be presented, with particular reference to the attention it dedicated to the Langhe, Roero and Monferrato area. Then, the UNESCO site Management Plan will be introduced.

## The Regional Landscape Plan

The candidacy of the UNESCO site started in the early 2000s, in parallel to the development of Region of Piedmont's RLP. The design of the UNESCO perimeter was performed according to the identification of Landscape Ambits (LAs) and Units (LUs) by the plan. The area was not designated as a protected landscape (which would have implied strong prescriptive regulation), but subject to a special set of rules, agreed with the local authorities, in order to assure the protection of the landscape values and to demonstrate this will to the UNESCO Committee. Interestingly, the municipalities accepted to carry out variances of their comprehensive masterplans on a voluntary basis, in order to be game-players in the phase of the WHS candidature. After the nomination, the guidelines for the municipal planning and building codes (Regione Piemonte, 2015) represented a sort of focus area of the RLP, and an anticipation of its come into force (2017).

The RLP devotes a particular attention to the scenic features of the landscape, providing for the identification and regulation of viewpoints, panoramic routes, landmarks, skylines, and such (Cassatella, 2015). Guidelines for the management of landscape scenery are also provided, in order to guide local authorities in the process at the local scale.<sup>16</sup> In the UNESCO Site these guidelines were replicated, tested and further developed, due to the keen local awareness and interest in enhancing landscape attractiveness. One of the main tasks of the process is the viewshed analysis, which provides maps of the areas visible from the vantage points (or panoramic routes) so allowing for accurate design reviews and controls in the authorisation process of interventions.

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<sup>16</sup> These guidelines are listed by UNESCO among the implementation tools for implementing the HUL Recommendation. See The UNESCO Recommendation on the Historic Urban Landscape Report of the Second Consultation on its Implementation by Member States (UNESCO World Heritage Centre, 2019).

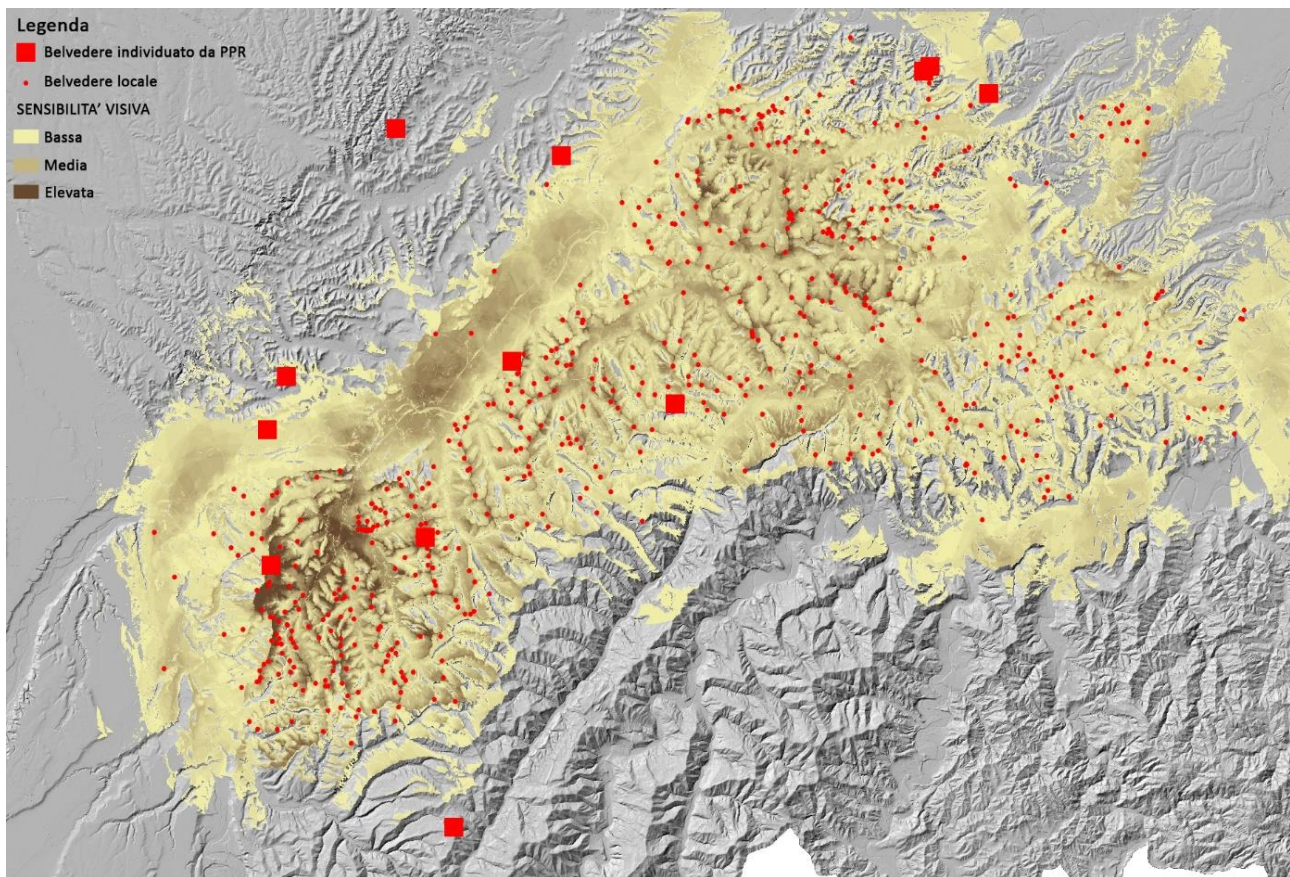


Figure 7. Cumulative visibility in the Langhe area.

Notes: In squares, the viewpoints identified by the RLP, in points, those added by the municipalities.

Source: elaboration by C. Cassatella and P. Guerreschi on data from Piedmont Region (2015).

The control of the landscape visual impact of interventions in the area is particularly challenging due to two factors: the high degree of intervisibility among centres and landmarks (a special character of this hilly landscape, which contributes to its charm) and the administrative fragmentation of a territory characterised by very small municipalities, most often counting less than 500 inhabitants, with the consequence that each intervention authorized by a municipality is very likely to impact on others in terms of sights. To overcome this issue, local authorities agreed on creating one map of the cumulative intervisibility for the entire Site, which were elaborated by the Region, taking into account all the viewpoints identified and nominated locally by the municipalities, in a collaborative process. The resulted map is to be used by each municipality in its reviews of visual impact assessment of interventions, allowing for taking care of the intervisibilities at a wider scale.

The attention for enhancing landscape scenery also resulted in direct interventions aimed at removing detrimental factors: a mitigation of the visibility of industrial buildings and the demolition of obsolete technical structures were carried out thanks to regional funding, and to the support of private foundations' funding. Landscape scenery here is intended both as an asset for the touristic attractiveness, and as a perceivable expression of the local identity. The processes experienced in the Langhe Roero and Monferrato UNESCO Site show that the enhancement of landscape scenery can be an occasion for integrating top-down planning regulations and bottom-up initiatives. Landscape planning detains a catalyst power for communities.

## The UNESCO Management Plan

UNESCO defines cultural landscapes as *“a great variety of Landscapes that are representative of the different regions of the world. Combined works of nature and humankind, they express a long and intimate relationship between peoples and their natural environment”*. UNESCO aims to conserve and valorise these landscapes by including them in the WHL list. The UNESCO candidacy process of a site requires a “Dossier” and a “Management Plan” (MP) with the function of protecting and managing the State of Conservation (SOC) of the value over time.

The complexity of wine regions management is a widely debated topic, since it must deal cultural heritage protection, environmental compatibility and spatial planning (Pettenati, 2019). Indeed, the candidacy process required a strong cooperation between actors and stakeholders and cognitive, legal, political and financial resources for envisioning a winning strategy of valorisation and management (Figure 8). The site candidacy led to the foundation of a management body, namely “Association for the heritage of the vineyard landscape of Langhe, Roero and Monferrato” (2011) with the purpose of coordinating and implementing the MP, as well as of promoting governance, cultural promotion and awareness activities for an integrated planning between the Municipalities included in the UNESCO site. It is composed by Piedmont region, the Alessandria, Asti and Cuneo provinces and the municipalities and are characterised by a strong communication network with the promoters of each project.

In addition, the Association has a technical office for the monitoring of the impacts on territory and landscape and also for the achievement of MP strategies and projects implementation. The monitoring requires the building of a comprehensive and geo-referenced knowledge. In fact, the Region of Piedmont collaborates with several agencies and foundations (e.g., Sitad, Arpa Piemonte, then-SITl) for populating information about the relevant component of the site according to a multidisciplinary approach. The main objectives of the Association are: (1) reduction of territorial fragmentation through the design of large-scale cohesion projects; (2) favouring of cooperation between public and private sectors across transparency, accountability and sharing; and c) development of marketing strategies to balancing tradition and innovation.

The MP provides also a monitoring plan of which the Region of Piedmont is the main responsible, since it must organise and prioritise the projects executive process, integrate both Icomos and UNESCO recommendations within sets of key performance indicators (KPI) (environment, history and culture, and perception), and even provide period reports to check the monitoring process. The key performance indicators were integrated in a web-GIS called Interactive Visualization Tool (InVito) to test the monitoring (Valle & Soldano, 2017) and also employed in an Impact Assessment by UNESCO recognition where media impacts, quality of life, cultural tourism growth of entrepreneurship recorded high impact.

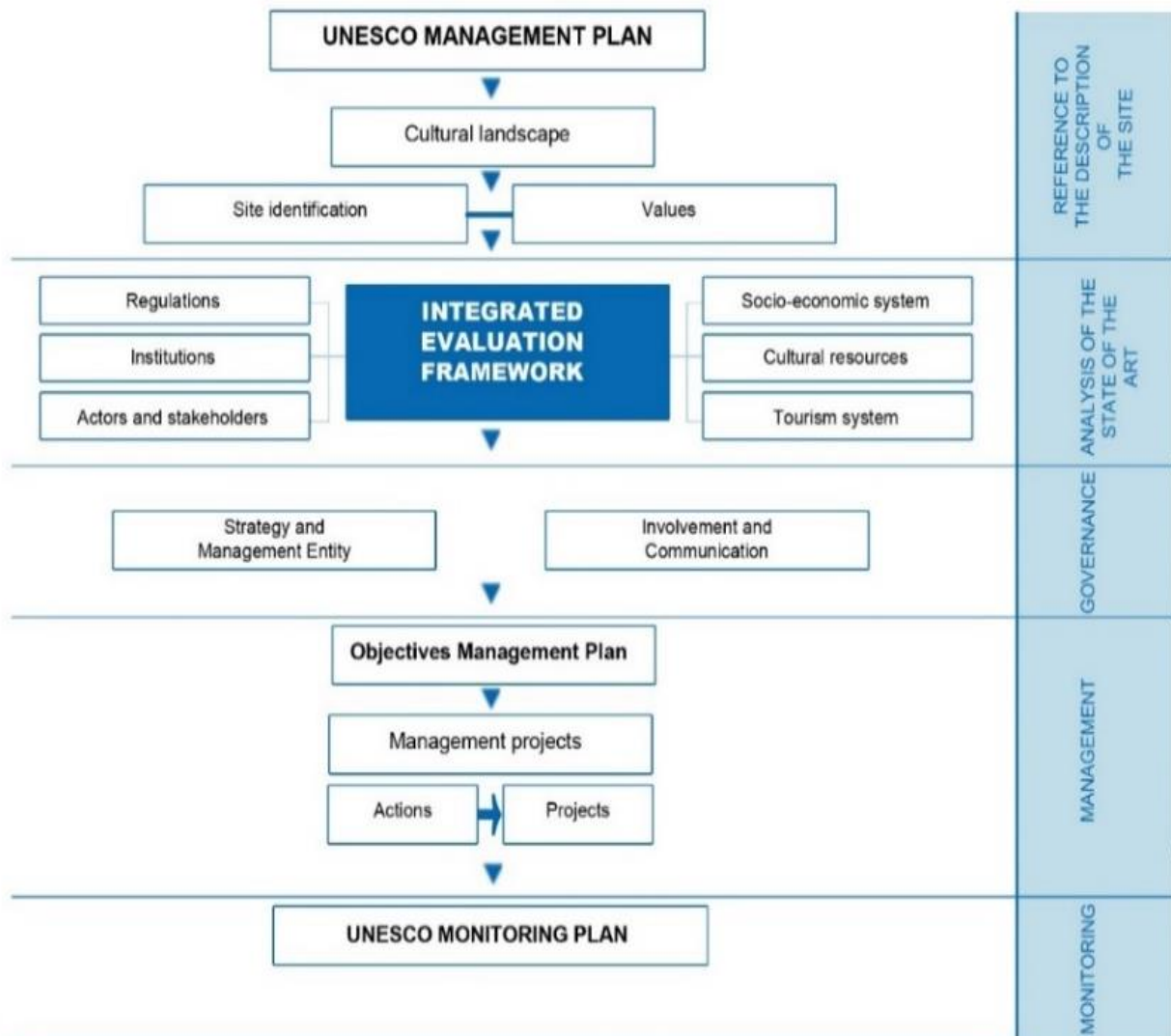


Figure 8. Structure of the UNESCO Management Plan of the case study.

Source: own elaboration based on Valle and Soldano (2017), and Assumma (2021).

The MP of the Langhe Roero and Monferrato area is considered as innovative since it deals with both tangible and intangible assets management and human activities development (see Table 3). More in detail, the MP identifies four strategic objectives to conserve and manage the OUV value:

- Harmonious landscape (Where to design), meaning that actors and stakeholders have to implement sets of actions for a more conscious spatial planning;
- Social landscape (Where to live) refers to the need to preserve the local identity and the belonging sense to the site, and also attracting new social capital;
- Economic landscape (Where to work), refers to the identification of sustainable solutions that can favour entrepreneurship to contrast economic pressures and with benefits to local development;
- Efficient landscape (Where to manage): for managing effectively resources availability and improving cooperation between institutions and local communities. Each strategy provides

the implementation of specific projects. Therefore, governance must accompany the management process especially at this stage.

Table 3. Structure of the UNESCO Management Plan of the Langhe-Roero and Monferrato.

Objectives	Priority axes
Harmonious landscape (where to design)	<ul style="list-style-type: none"> <li>• Processing and systematization of guidelines for recovery and planning;</li> <li>• Rehabilitation and recovery of city centres and their building heritage;</li> <li>• Creating lookouts and observation points;</li> <li>• Sharing opportunity, training and research institution.</li> </ul>
Social landscape (Where to live)	<ul style="list-style-type: none"> <li>• landscape protection increases the sense of belonging and identity in local communities, encouraging human capital into the site.</li> </ul>
Economic landscape (Where to work)	<ul style="list-style-type: none"> <li>• Local productive heritage;</li> <li>• Creation of museums and tourism centres;</li> <li>• Improving and consolidating the local tourist offer;</li> <li>• Promotion of cultural and tourist resources;</li> <li>• Rationalization of signage;</li> <li>• Viewpoints valorisation.</li> </ul>
Efficient landscape (Where to manage)	<ul style="list-style-type: none"> <li>• Coordination of territorial databases and artefacts and structures census;</li> <li>• Strengthening of research and training centres;</li> <li>• Research studies on winemaking heritage;</li> <li>• Proposing “slow” tourism routes;</li> <li>• Dissemination of information between partners at international scale.</li> </ul>

Source: own elaboration based on UNESCO World Heritage Centre (2014).

## Long-term strategy for spatial planning of the vineyard landscape area

The introduced instruments – i.e. the Region of Piedmont’s RLP and the UNESCO site’s MP – together with the statutory spatial planning instruments – i.e. the RTP and the PRGCs of the involved municipalities – and with other sectoral and/or episodic interventions – i.e. the NRRP, the EU Cohesion Policy Programming Period 2021-27 etc. – constitute important elements of what could consolidate as an integrated multilevel territorial governance framework aimed at the sustainable spatial planning of the Langhe-Roero and Monferrato area. In order for this to happen, however, a number of challenges still need to be faced:

- **The revision of the Regional Territorial Plan of Piedmont** – The Piedmont Region is currently undertaking the revision of its RTP<sup>17</sup>. The presently valid RTP has been approved in 2011, and did not include any reference to the UNESCO landscape of Piedmont Langhe-Roero and Monferrato, as the latter has been officially created only in 2014. The challenge concerns to valorise the opportunities offered by the inclusion of the area in the WHL, as a “living cultural landscape”. This activity should build on the area’s cultural resources, both tangible and intangible, as well as on its natural and economic specificities. More in detail, it should explicitly aim at the valorisation of food and wine tourism, cultural heritage, sport and recreational activities. At the same time, it should tackle the challenges concerning tourism pressure in specific places where the media exposure is higher rather than the remaining municipalities of this territorial context.
- **Update of the PRGCs of the municipalities of the area to the guidelines of Regional Landscape Plan** – This second issue is tightly connected to the one above, as both the RTP and the RLP are produced by the Region. In particular, as already highlighted in the presentation of the Italian Spatial Planning system, the RLP is one of the main instruments through which spatial planning can tackle tourism issues, through the voluntary undertaking of its guidelines by the municipalities. In this sense, the municipalities belonging to the UNESCO site must update their General Regulatory Plans according to regional guidelines specifically designed for the Langhe-Roero and Monferrato.<sup>18</sup>
- **Establish synergies with the National Recovery and Resilience Plan and the EU Programming period 2021-2027**<sup>19</sup> – The third issue at stake concerns the delivery on the ground of the EU Recovery and Resilience Facility and, more in particular, of the interventions that have been included in the National Recovery and Resilience Plan (NRRP). The latter includes a large number of interventions and actions that have been proposed by municipalities to the Central Government, through the National Association of Italian Municipalities (ANCI). The challenge here concerns, on the one hand, to deliver on the ground actions that can contribute to valorise the tourism potential of the area in a synergic

<sup>17</sup> Regional Territorial Plan of Piedmont. <https://www.regione.piemonte.it/web/temi/ambiente-territorio/territorio/piano-territoriale-regionale-ptr>

<sup>18</sup> DGR No. 26-2131, September 21, 2015. Guidelines for the adaptation of regulatory plans and building regulations to the protection guidelines for the UNESCO Site: the wine-growing landscapes of Piedmont Langhe-Roero and Monferrato. <https://www.regione.piemonte.it/web/temi/ambiente-territorio/paesaggio/sito-unesco-dei-paesaggi-vitivinicoli-piemonte-misure-strumenti-tutela>

<sup>19</sup> Piemonte Cuore d’Europa. <https://piemonte2021-2027.eu/>

way, while at the same time acting to tackle the main challenges that the increase of tourism pressures brings along with them. On the other hand, it also concerns the rather low institutional capacity of small and medium municipalities of the country to efficiently and effectively deal with the unprecedented amount of resources that the NRRP will deliver on territories.

- **Cooperation of local actors and stakeholders for the design of strategic plan for territorial development** – In 2021 a Strategic Plan for the development of the Astigian territory was designed<sup>20</sup>, in the context of the *Piemonte Cuore d'Europa* Initiative, in order to identify a set of priority axes useful to present projects and ask financings in the context of the National Plan for Recovery and Resilience.

These challenges should be dealt with through a long-term strategic approach, taking into account a number of future-oriented, cross-cutting issues:

- First of all, the adopted instruments (the RTP, but also other ad hoc introduced strategies) should attempt to manage the tourism pressures that are incrementally increasing in those territories that, since the inclusion of the area in the UNESCO WHL, had benefited from a higher international media exposure (e.g., the municipalities of Barolo and Barbaresco etc.), in order to redistribute these pressures on the territory in a more homogeneous way.
- To support the above action, interventions specifically dedicated to accessibility and mobility are needed. The latter should focus on the introduction of green mobility means in the area, as for instance electric bus and minibus, feeders, the UNESCO heritage railway etc. At the same time, it should reduce the concentration of mobility paths towards the main centres, to diffuse accessibility potentials on the territory in a way that all municipalities of the area may benefit more homogeneously.
- Finally, a last issue concerns the challenges related to the increasing impact of climate change. Dedicated strategies are needed to favour the relocation of vineyards to higher territories, in order to preserve the quality of the products while at the same time avoiding to impact on the landscape and environmental system of the area.

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<sup>20</sup> News about the Strategic Plan for the development of the Astigian territory at <https://www.lastampa.it/asti/2021/08/05/news/sanita-infrastrutture-logistica-ecco-il-piano-di-sviluppo-astigiano-1.40568369/>, <https://www.atnews.it/2021/05/22-progetti-per-7-linee-strategiche-cosi-lastigiano-progetta-il-suo-futuro-144101/>

## Actionable policy recommendations

The report presented and discussed the opportunities and challenges concerning the sustainable spatial planning of tourism activities in the vineyard landscape of Langhe-Roero and Monferrato. On the basis of the analysis, a number of actionable policy recommendations have been developed, with in mind the enhancement of the sustainable development of the area. Overall, they see tourism as an instrument through which to make sustainable development goals achievable on the ground, an objective that should be achieved through the joint action of a large and heterogeneous set of public and private actors. As a consequence, the target groups addressed through these recommendations are differential, and concerns local and regional authorities responsible for strategic and spatial planning of the territory of Langhe-Roero and Monferrato, the Association responsible for the management of the UNESCO Site, various private stakeholders whose activities are connected in one way or another with tourism and the like, etc.

As highlighted in the text, despite the absence of any specific instruments in the Piedmont region devoted to tourism planning and management, both spatial and landscape planning have been used to support the design of a more sustainable development of tourism in the analysed area. The fact that, in Italy, spatial planning competences are jointly managed by the central and the regional levels, indeed influenced the process, with the Piedmont region that has acted as the main player. More in particular, the Region has been responsible to draft both the Regional Territorial Plan and the Regional Landscape Plan, and is currently in the process of producing a renewed version of the former that will take into account the provisions of the latter to a full extent. At the same time, these spatial and landscape planning processes have also influenced the candidacy and management of the UNESCO site, with the Region of Piedmont that played and still plays a very important role in the coordination and management of all activities ongoing in the vineyard landscape. The strong leadership of the Regional Government has also manifested through constant attempts to engage with the local municipalities as well as with other actors on the territory, belonging to both the private sector and the civil society. This is clear in the UNESCO site Management Plan (and in the structure of the Association), that highlights the importance of cooperation between decision makers, private stakeholders, local associations and citizens, in order to enhance the visibility of the area at the international level, while at the same time preserving its intrinsic value. On their side, the municipalities belonging to the vineyard landscape had answered to the Regions' call with a proactive, flexible attitude, and were keen to territorialise the guidelines received from the Region in the review of their municipal plans through specific rules of protection (such as camouflage actions for barns), despite the Italian bureaucratic apparatus is considered very rigid and centralized. At the same time, some limits still persist, as for instance the fact that the employment of these protection rules – as well as the measures of the UNESCO Management Plans – concerns only the specific perimeter of the UNESCO site, partially overlaying the municipalities, in so doing producing differences of regulations and investments between municipalities as well as within the same municipality.

When it comes to the development of actionable policy recommendations, one must consider that the vineyard landscape of the Langhe-Roero and Monferrato area has suffered from intense cultivation threatening the environment and possibly hindering future tourism prospects leading to soil erosion, the loss of biodiversity and an imbalance in the local ecosystem. Given that the area has been inscribed in the UNESCO World Heritage List and tourism has been growing exponentially in the region, the need to create sustainable processes and to develop opportunities for innovation is of paramount importance. Increasingly, there is the growing need for a well-established synergy between the primary sector and tourism that can guarantee and

foster sustainable competitive advantages. Given the need to protect the natural resources of the vineyard landscape while developing sustainable tourism in the area with differentiating and unique tourism products, the following policy recommendations are proposed in order to ensure sustainable wine tourism development in the region:

1. Adopt of sustainable agricultural practices in the vineyards (e.g. encourage the adoption of biodynamic agricultural practices; establish biological corridors; restrict the use of pesticides and encourage the use of vegetation surface covers; provide education and training to local farmers/winemakers on sustainable farming practices and encourage green labels/certifications etc.).
2. Develop authentic and engaging tourism experiences using the area's rich natural resources (e.g., develop enogastronomic tourism, nature based gastronomic kitchen; food workshops; culinary immersive experiences; slow food tourism; offer water sports activities in the Tanaro river; establish green corridors/paths for hiking or biking; develop natural beauty products; offer engaging agrotourism experiences, such as the tourists picking grapes during harvest season and learning about the winemaking process etc.).

Another challenge that has emerged in the analysis is the lacking integration of tourism offer among different assets (wine-related, cultural, natural, sport) and the fragmentation and lack of coordination among local actors, leading to low productivity and missed opportunities to drive economic income. To overcome this limitation, the general goal is to foster integration and interconnection in the tourist offer, pushing dialogue and opportunities among representative actors. Online and on-site services should be both addressed due to their influence in the tourist holiday:

3. Create a unified website for the Langhe-Roero and Monferrato UNESCO area, which includes one section for touristic offer (accommodation, itineraries, visiting sites) and one section dedicated to actors' interaction and collaboration. The section related to the touristic offer for visitors should contribute to show the local offer and eventually booking services (i.e., accommodation, bike services, wine tastings). The other section should allow local actors to show their offer to each other, eventual possibilities for collaboration, available offer. The action could be led by the Associazione per il Patrimonio dei Paesaggi Vitivinicoli di Langhe-Roero e Monferrato.
4. Enhance cooperation with other world-wide renowned wine areas. Cooperate internationally to create an "interconnected wine offer" from the French and German wine regions to the LMR area and then to the other Italian wine regions located on the eastern, central and southern parts of the country. This could allow visits to the different sites with an integrated offer package. The discovery and experience in both sites can create a wider knowledge of these landscapes. Partnerships should be created between accommodation in the three regions and transport providers to facilitate tourist displacements.

When it comes to transportation and mobility issues, the main identified problems in the area are a minimal incident of public transport and the congestion of roads and parking lots due to private car mobility. To tackle these challenges, it may be worth to:

5. Develop a system of multimodal hubs on the outskirts of the LRM area. The hubs should consist of a system for charging a fee if a tourist would want to enter the area in a car, a parking lot for them to leave their car there if they wouldn't want to pay the fee, a bike/e-bike sharing station and a bus station to provide alternative and more sustainable modes of transportation between the municipalities inside the area. To make the multimodal hubs functional, selected municipalities inside the area would also establish e-bike sharing

stations. To make the solution a reality, action should be taken by local municipalities, which will need to cooperate between themselves and also private transport operators to make the system function effectively. Ente Turismo LMR can help to organize it as an actor overseeing the whole area, which is also very interested in developing new and better ways of managing tourist movements inside of it.

When it comes to the governance models and mechanisms, these appears to be a lack of communication and insufficient inter-municipality relations across the three key areas of interest. A potential solution to mitigate these issues could be to:

6. Establish a local development organization that focuses on the UNESCO World Heritage Site and its core and buffer zones of Langhe, Roero, and Monferrato. This association should be in charge of organizing a collaborative work structure among all sorts of stakeholders and raising awareness about sustainable development. This statement is expressly emphasized in the most recent Regional Innovation Report, the necessity of a board approach in Piedmont, and it has been accepted by regional development policy committees. This local development association (LDA) will work with the mentioned stakeholders to establish a strategic development plan for the towns indicated. The members of this association will have different fields of expertise, being a sustainable enterprise organism, in order to create a touristic destination brand for the region, to be promoted worldwide.

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