

CASE STUDIES REPORT //

**Territorial impacts of
COVID-19 and policy answers in
European regions and cities**

Lombardy region (Italy)

Case Study Report // September 2022

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The final version of the report will be published as soon as approved.

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Abbreviations

| | |
|------------|--|
| A&E | Accident and Emergency Department |
| ASL | Aziende Sanitarie Locali – Local Health Authorities |
| ASST | Aziende Socio Sanitarie Territoriali – Local Social and Healthcare Agencies |
| ATB | Azienda Trasporti Bergamo – Bergamo Transportation Company |
| ATS | Azienda per la Tutela della Salute – Health Protection Agencies |
| BRT | Bus Rapid Transit |
| COC | Centri Operativi Comunali – Municipal Operations Centres |
| CCM | Centro Nazionale per la Prevenzione e il Controllo delle Malattie – National Centre for Disease Prevention and Control |
| COVID-19 | Coronavirus Disease 19 |
| CST | Centro Studi sul Territorio – Territorial Studies Center |
| CTS | Comitato Tecnico Scientifico – Scientific and Technical Committee |
| DIH | Digital Innovation Hub |
| EU | European Union |
| EUR | Euro |
| GDP | Gross Domestic Product |
| GP | General Practitioners |
| ICT | Information and Communication Technologies |
| IRCCS | Istituti di Ricovero e Cura a Carattere Scientifico – Scientific Institutes for Research and Treatment |
| ISTAT | Istituto Nazionale di Statistica – Italian National Institute of Statistics |
| IT | Information Technology |
| LAU | Local Administrative Units |
| MIUR | Ministero dell'Istruzione, Università e Ricerca – Ministry of Education, Universities and Research |
| NEET | Not [engaged] in Education, Employment or Training |
| NGO | Non-Governmental Organization |
| NHS | National Healthcare System |
| NUTS | Nomenclature of Statistical Territorial Units |
| PhD | Doctor of Philosophy |
| PNRR | Piano Nazionale di Ripresa e Resilienza – National Recovery and Resilience Plan |
| RSA | Residenze Sanitarie Assistenziali – Nursing homes and residential care facilities |
| SARS-CoV-2 | Severe Acute Respiratory Syndrome Coronavirus 2 |
| SME | Small or Medium-Sized Enterprise |
| SpA | Società per Azioni – Joint-stock company |
| TEB | Tramvie Elettriche Bergamasche – Bergamo Electric Tramways |
| TPL | Trasporto Pubblico Locale – Local Public Transport |
| UTES | Units for Social Emergency |
| WHO | World Health Organisation |

Introduction

This case study report examines the policy response to COVID-19 within the Lombardy region (Northern Italy). The report explores which 'proactive' policies have been introduced in response to the pandemic and assesses whether the crisis presented a 'window of opportunity' for regional and local authorities to promote specific spatial planning and territorial targeted policy agendas. The case report is structured around the following core sections:

1. **Regional Characteristics:** Outlines the key socio-economic and governance characteristics of the region.
2. **Impact of COVID-19:** Highlights the socio-economic impacts of the pandemic on the region.
3. **Covid Policy Response:** provides an overview of the regional policy response in relation to three core policy thematic areas – the just transition (social policies), green transition (climate policies) and smart transition (innovation policies).
4. **Covid Policy Impacts:** assesses the main socio-economic, governance and financial impacts of the policy measures introduced.
5. **Future Policy Directions:** examines the medium- and long-term direction of policy in the region and analyses whether the policies identified can be upscaled to other EU regions.
6. **Policy Recommendations:** provides policymakers and practitioners with policy, governance, territorial and financial recommendations.
7. Research Methods

Research Methods

In the first phase, this study was conducted via a multi-method design based on cross-referencing the database and the research directed in recent years at the CST-DiathesisLab¹ and the collection of sources and data relating to the pandemic period. Experience gained from living in the Italian epicenter of contagion made it possible to assemble a reliable chart of the spread of COVID-19 (Casti et al., 2021). These sources were supplemented by targeted bibliographic and documentary studies on the epidemic at the national level and a collection of statistical data at both national and regional levels. Interviews and direct field observation were conducted to complete the analysis. It should be emphasized that the results of the COVID-19 research made it possible to identify a number of socio-territorial factors – defined as local fragilities – that brought to light the anisotropy of territories and the impact of Lombardy's spatial layout on the spread of the virus. Lombardy is marked by a mobile and urbanized living environment, in a historical context of polycentric and rhizomatic urban stratification, which facilitated viral spread. COVID-19 severity was found in conjunction with other factors such as high air pollution rates and serious deficiencies of the territorial health system, unprepared to deal with the emergency. Direct experience of the pandemic between February and May 2020 enabled our team to gain a clearer understanding of the reaction of inhabitants and the local media coverage of outbreaks.

The second phase of analysis was based on the implementation of 7 semi-structured online interviews with representatives from public and private entities throughout the areas where contagion intensity was highest. Among these were also delegates from sectors which were found to impact contagion more severely: namely the sectors of mobility and of health. Such interviews supplied crucial data to our cognitive framework for charting the policies implemented and the recommendations. Table 1 shows the parties involved in this survey. The list includes the most relevant public authorities – related to health, mobility, private enterprise, and public administration – at regional (NUTS2), and local (LAU2) levels. In addition to the mayors of the municipalities of Bergamo and Clusone (Seriana Valley) and the directors of two hospital departments in Milan and Bergamo, private sector stakeholders were interviewed, more specifically the Fassi Group, one of the key players in the Seriana Valley, and the TEB S.p.A. and ATB Mobilità S.p.A, which represent the public transport sector in Bergamo and Lombardy.

¹ A workshop for geographical research and cartographic testing at the University of Bergamo.

Table 1 List of interviews conducted

| | Sector | Stakeholder | Date |
|---|-----------------------|-----------------------------------|-------------|
| 1 | Public Health | Local Health Authority in Milan | 29 Dec 2021 |
| 2 | Public Health | Local Health Authority in Bergamo | 5 Jan 2022 |
| 3 | Public Administration | Municipality of Clusone | 7 Jan 2022 |
| 4 | Public Administration | Municipality of Bergamo | 10 Jan 2022 |
| 5 | Private Sector | Fassi Group Representative | 10 Jan 2022 |
| 6 | Public Transport | TEB S.p.A. | 11 Jan 2022 |
| 7 | Public Transport | ATB Mobilità S.p.A. | 12 Jan 2022 |

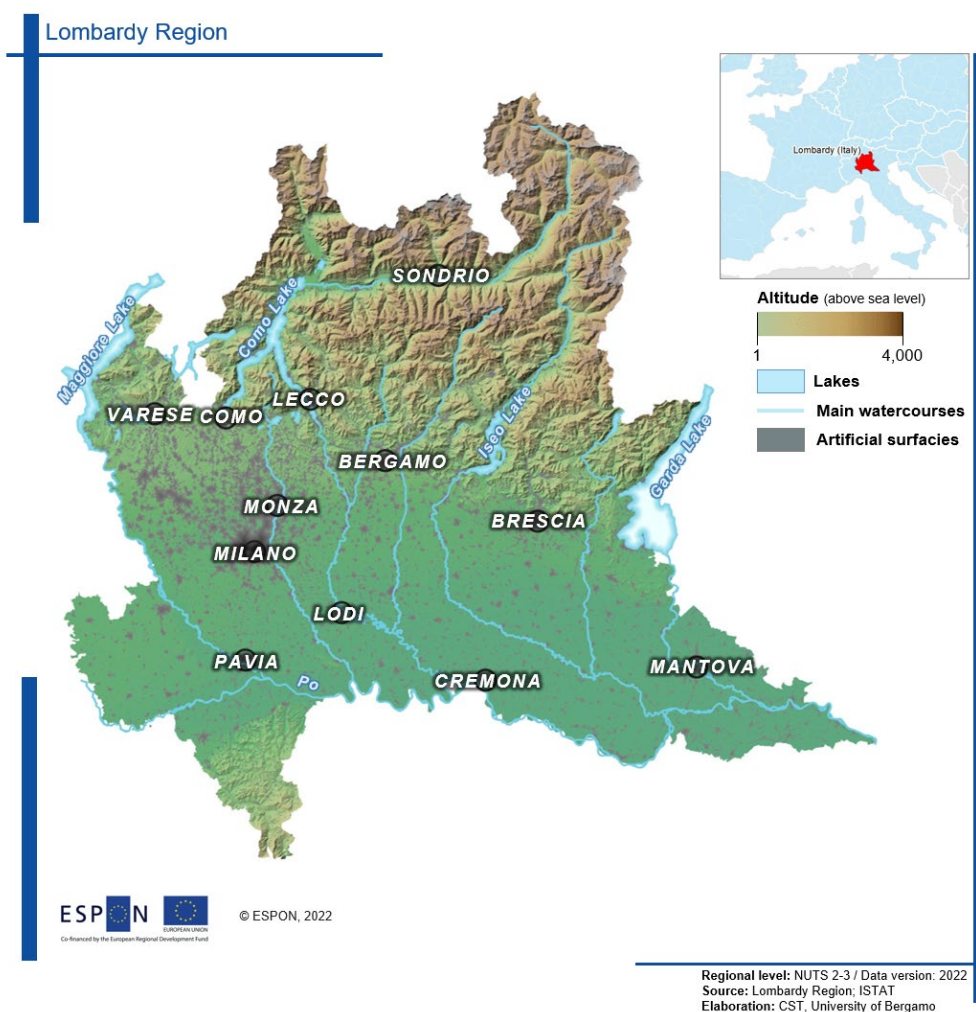
1. Characteristics of the case study area

The Lombardy region is located in the center of the Po Valley, the northern part of Italy, and is bordered to the north by the EU's Alpine frontier with Switzerland. It is a densely populated area, with about 10 million inhabitants, distributed over 23 864 km², with about 418 inh. per km². The territory presents a recognizable physical-geographical north-south layout: the mountainous context of the alpine and pre-alpine arc (41% of the territorial surface); the hilly belt (12%); and the dry and irrigated plain that extends, in the south, up to the river Po (41%), reaching the Emilian Apennine range of Oltrepò Pavese. The hydrographic network is characterized by waterways, all of alpine origin (Ticino, Adda, Oglio, Mincio), which shape valley furrows and feed lake basins (i.e., Lakes Maggiore, Como, Iseo and Garda).

From a climatic-morphological point of view, the Po Valley – being delimited for a large part by the Alps and the Apennines – makes up a vast basin that prevents air circulation and favors stagnation. These climatological features of the Po Valley make it harder for pollutants produced by industrial and agricultural activities and dense urbanization to be dispersed (Lombardy Region, 2018; PoliS, 2020).

With about 10 million residents and the highest level of urbanization in Italy (Munafò, 2020), Lombardy is the most populated Italian region and hosts 16.7% of the national population. This territory is divided into residential areas, production sites, infrastructure, and commercial spaces. The regional area shows a high anthropization rate (ISTAT, 2020). For these reasons it is the main economic, logistical, and relational area of the country: it has a thriving business system embedded in the international trade network, and functions as a hub due to the road, air, and rail connections with the rest of Europe.

Map 1 Lombardy region



1.1 Economic features

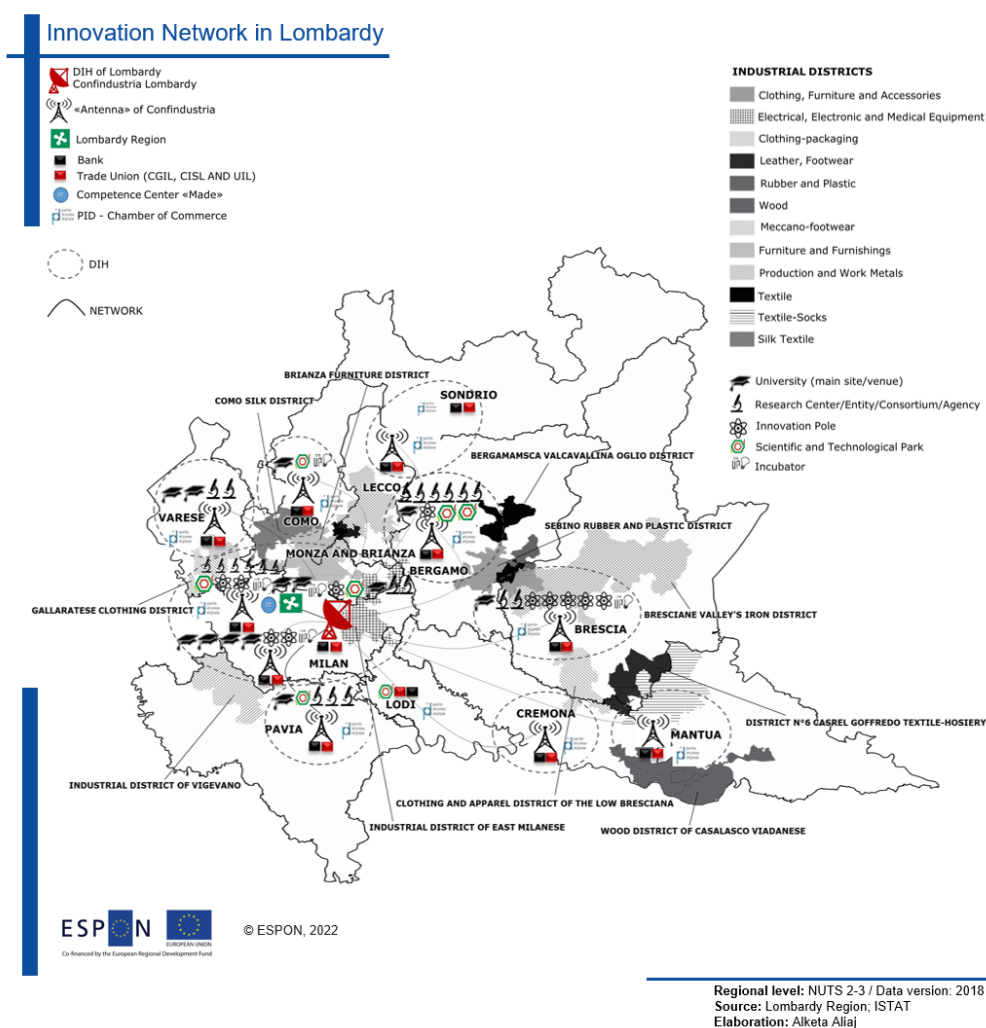
While Lombard economy comprises a range of sectors, from agricultural and animal farming to heavy and light industry and the service sector, its distinctive field remains manufacturing. This is its core sector, also in relation to the possibility of creating and implementing innovations and carrying out research and development activities. However, it should be borne in mind that within the service sector, the trade and finance sector is also essential, as evidenced by the presence in Milan of the Borsa Italiana, one of the leading European stock exchanges. To this we should add the relevance of banking, transport, communication, and business services.

Lombardy's manufacturing system – flourishing in the mechanical, electronic, metallurgical, textile, chemical and petrochemical, pharmaceutical, food, publishing, footwear, and furniture sectors – is still one of the most developed in Italy and Europe, with more than 800,000 businesses. Statistics on the size of businesses show that micro and small enterprises continue to be the backbone of the Region's productive fabric, since they make up more than 99% of Lombard companies. In terms of distribution, there is considerable sub-regional diversity in the economic activities of businesses in Lombardy: the province of Milan – which alone concentrates more than 40% of Lombardy's industrial enterprises – is home to several multinational and financial companies, health institutions, universities, and research centres. The provinces of Varese, Como, Lecco, Monza and Brianza and Bergamo all have a strong manufacturing sector, but also a high share of employment services. Lodi and Brescia are characterized by both manufacturing and agriculture, while in the provinces of Sondrio, Cremona, Pavia and Mantua, the agricultural sector prevails. Finally, it should be noted that the Lombardy region holds leadership in some key economy sectors such as design, fashion, and furniture. In particular, the attractiveness of the Lombardy labour market favours the geographic concentration of economic activities and population and exerts locational pressures in some leading areas of the regional economy, in Brescia and Milan.

As regards the value of gross domestic product (GDP) – deriving from the production of goods and services – per inhabitant, in 2019, in Lombardy this indicator was equal to 39.7 thousand euros and its growth rate (0.7%) was lower than the previous year (1.5%). Despite this, Milan remained the leading Italian province in terms of value added per capita (€50.1 thousand), while the incidence of the unobserved economy on total value added was the lowest among Italian regions (9.6%). In 2019, Lombardy ranked eighth in Europe in terms of GDP per capita, which places it above the European average.

Most of the companies based in Lombardy belong to 16 specialised industrial districts – local production systems characterised by a high concentration of companies specialised in traditional *Made in Italy* sectors, but also in those where new technologies are dominant – and 6 meta-districts, i.e., production areas of excellence with strong links to the world of research and innovation. The meta-districts concern food and non-food biotechnologies, design, fashion, new materials, and ICT. Since 2004, with the Programme Agreements signed between the Lombardy Region and the Ministry of Education, Universities and Research (MIUR), several High Technology Districts have been identified in the agri-food, aerospace, sustainable building, automotive, energy and related to renewable and assimilated sources, biotechnology, ICT, advanced materials, fashion and design, precision mechanics, metallurgy, and capital goods sectors. Recently, as part of the preparation of the Intelligent Specialisation Strategy for access to the Funds of the 2014-2020 Community Programme, by rationalising and moving from a vision of vertical sectors to one of competence systems, the Lombardy Region has identified, new areas of specialisation that partly take up the experience gained with the meta-district networks and strategic sectors and represent pursuable priorities linked to particularly promising application areas around which to concentrate the available resources and aimed at the continuous search for answers to the needs of businesses and society as a whole. The Industry 4.0 National Plan (2017-2020) has led to the creation of numerous region-wide facilities, such as Digital Innovation Hubs, Competence Centres and Digital Business Points, guiding companies towards their technological and organisational transformation.

Map 2 Innovation network facilities of Lombard DIHs coordinated by Confindustria



In terms of employment, Lombardy accounts for 19.3% of national employment (more than 4 million employed in the period from January to September 2020). In the last decade of the pre-Covid era, Lombardy's employment grew twice as fast as the national average (7.3% compared to 3.7%) and the regional business fabric was progressively characterised by a remarkable propensity for innovation. Employment in high-tech manufacturing and knowledge-intensive service sectors accounted for over 5% of total employment, compared with a national average of less than 4%. In addition, Lombardy is home to more than 3,200 (26.7% of the national territory) innovative start-ups; in particular, the birth rate of knowledge-intensive start-ups in the region is among the highest in Europe. The Lombardy region records several knowledge-intensive start-ups (per 100,000 inhabitants) of 38.6% in 2017, ranking after the Rhône-Alpes region in France (48.0%) and Cataluña in Spain (46.7%); it is followed, vice versa, by the German territories of Bayern (28.5%) and Baden-Württemberg (21.3%) (Assolombarda, 2019).

1.2 Social features

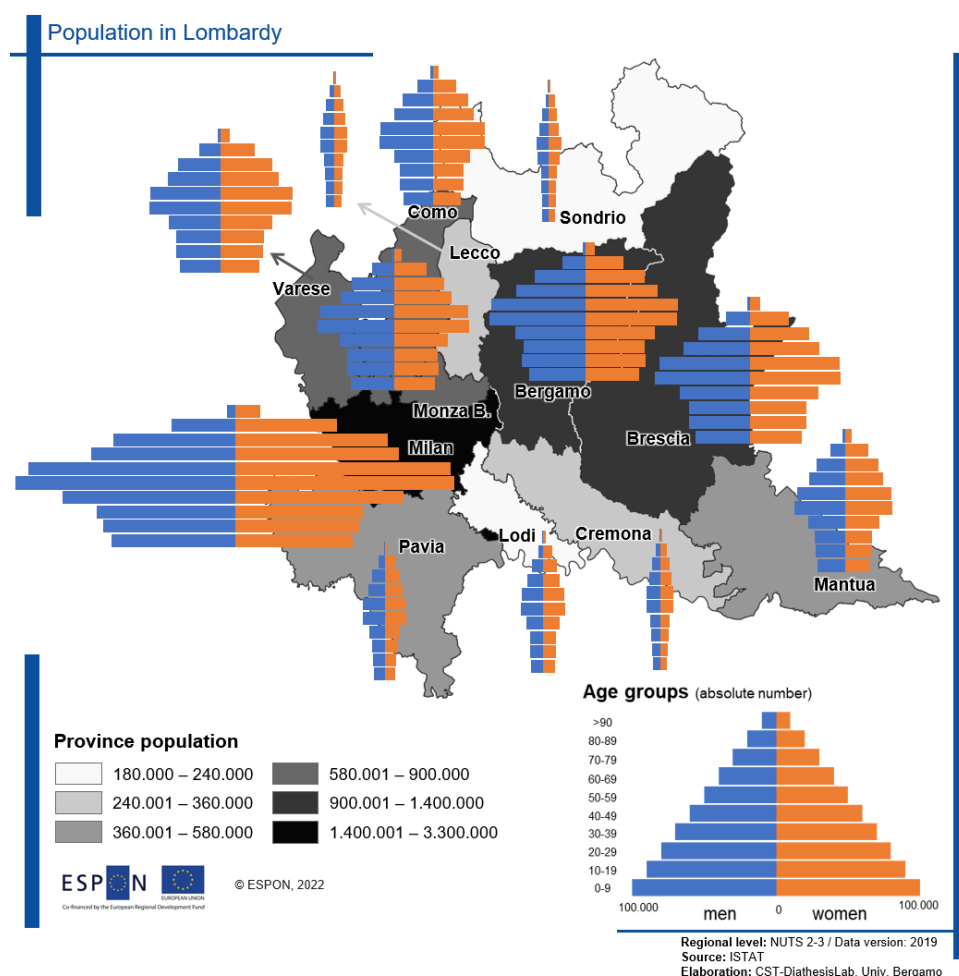
At the beginning of 2020, levels of education in Lombardy generally increased – in line with what was recorded on a national scale – mainly thanks to innovations in the training system and in other social fabric features characterising the Region (ISTAT, 2021). Educational qualifications among inhabitants of Lombardy may be broken down as follows: 36.7% of the population has a secondary school diploma or professional qualification, 15.6% has a primary school licence and 28.9% a middle school licence. People with service sector and higher education qualifications (i.e., university and academic degrees, PhDs, and higher research training) account for 15.1%. Illiterate people account for 0.4% of the population aged 9 and over, while those

with no educational qualification are 3.3%. In Lombardy, there are 213,986 NEETs (i.e. people not engaged in education, work or training), with an incidence rate of 14.8% of all young residents aged between 15 and 29; a figure, however, lower than the national average: in Italy, in fact, 2,003,104, NEETs account for 22.2% of young residents aged between 15 and 29. Finally, the percentage of people not in education, employment or training in Lombardy is slightly higher than the European figure, as the NEET rate in the EU is 13.6% in 2020 and 14.2% in 2021 (Eurofound, 2021).

An analysis of data produced by ISTAT and referring to the year 2019 shows that Lombardy's active population is around 4.9 million people, which marks a growth of 6.6% of the workforce compared to the 2011 census. This increase in employment is mainly attributable to the increase in the number of employed persons (up 4.3% compared to 2011) and of job seekers (+37.6%), as well as to a greater placement in employment by women (+7.5%). Despite this, the Lombardy labour market still shows a strong gender imbalance. In general, in Lombardy, the employed correspond to 51% of individuals over 15 years of age (a higher value than the national average, which is 45.6%), while the unemployment rate is lower and equal to 8.8% of the active population (lower than the national average – which corresponds to 13.1% – and higher than the European Union unemployment rate, which is 6.4%) (ISTAT, 2019).

In Lombardy, in 2019 the incidence of relative poverty was 6.6%, one of the lowest values in Italy and almost half the national figure (11.8%). The percentage of the population at risk of poverty and social exclusion in Lombardy stand at 15.7%, more than 10 points lower than the national percentage (27.3%) (ISTAT, 2020). Moreover, the percentage recorded on the Lombardy scale is lower than the figure for the European Union, which records 21.9% of the population at risk of poverty or social exclusion (equal to 96.5 million individuals) (Eurostat, 2020).

Map 3 Distribution and subdivision of the population into age groups by Lombardy Province



From the analyses conducted (ISTAT, 2020), significant differentiation emerges in the distribution of the population in Lombardy (data for 31 December 2019): the metropolitan city of Milan is the most densely populated territory with approximately 3.25 million residents, followed by the provinces of Brescia (1.266 million) and Bergamo (1.115 million); on the contrary, Lodi and Sondrio have the lowest number of inhabitants (respectively 230 thousand and 181 thousand)². On the other hand, in terms of its composition, the population presents the profile of an anomalous pyramid: the largest age group is that comprising residents between 40 and 59 years of age. While the lower bands show a marked contraction (an indication of a low birth rate), the upper bands follow a progressive trend of a natural order showing that life expectancy in this region (corresponding, indicatively, to 78.9 years for men and 83.9 for women) (ISTAT, 2020). Life expectancy at birth in Lombardy is in line with the figure for the EU, where in 2019 was 84.0 years for women and 78.5 for men (Eurostat, 2020). It should be noted, however, that due to the still ongoing epidemic, the figure for life expectancy has fallen significantly compared to the year 2019, when in Lombardy – in the pre-epidemic period – life expectancy at birth was 81.5 years for men and 85.9 for women (ISTAT, 2020). The gender breakdown is in line with a national and European trend, i.e., a preponderance of women over men.

1.3 Governance features

Law No. 56 of 7 April 2014, *Disposizioni sulle città metropolitane, sulle province, sulle unioni e fusioni di comuni* (Provisions on metropolitan cities, provinces, unions and mergers of municipalities), thus initiated a local reorganisation that mainly entailed two changes: (i) the downgrading of the Provinces to 'second-level entities' (with an indirect electoral system) and the consequent reduction of their role, which has – conversely – seen an increased role of province capital municipality; (ii) the establishment of 14 metropolitan cities, which replace the Provinces of the 14 main Italian capitals³.

It should be pointed out that this reform was only implemented in part, the system designed by Law 56/2014 relied on a constitutional reform – which was never approved – aimed at abolishing Provinces and redefining competence ranking between the national, regional, and local levels. Moreover, the merger of municipalities has relaunched administrative reorganisation initiatives aimed at bringing the many small entities to a sustainable (demographic) size threshold; this transformation process has brought about a reduction in the number of municipal administrations (from 1,544 to 1,506).

With specific reference to Lombardy, the only Metropolitan City established is Milan; however, a high degree of administrative fragmentation is evident, as well as a difficulty in governance that stems from the weakness of the intermediate levels between the Region and the Municipalities, which play a central role in administrative terms. The 12 Provinces (as mentioned above) have limited authority and room for action; the only general level of formalised aggregation between municipalities is the Mountain Communities, which also have a very partial governance role. The inter-municipal local scale, which is the subject of numerous projects and half-hearted measures for a recognition to define a relevant and effective governance of local policies, is still an open challenge.

The Region has legislative competence and a governing role in international relations and relations with the European Union, foreign trade, and the protection and safety of labour. Among other things, education, and scientific and technological research in support of innovation, health protection and sports regulations, the management of major transport and communication networks, energy distribution, the enhancement of cultural and environmental assets and the promotion and organisation of cultural activities are also within the Region's responsibility.

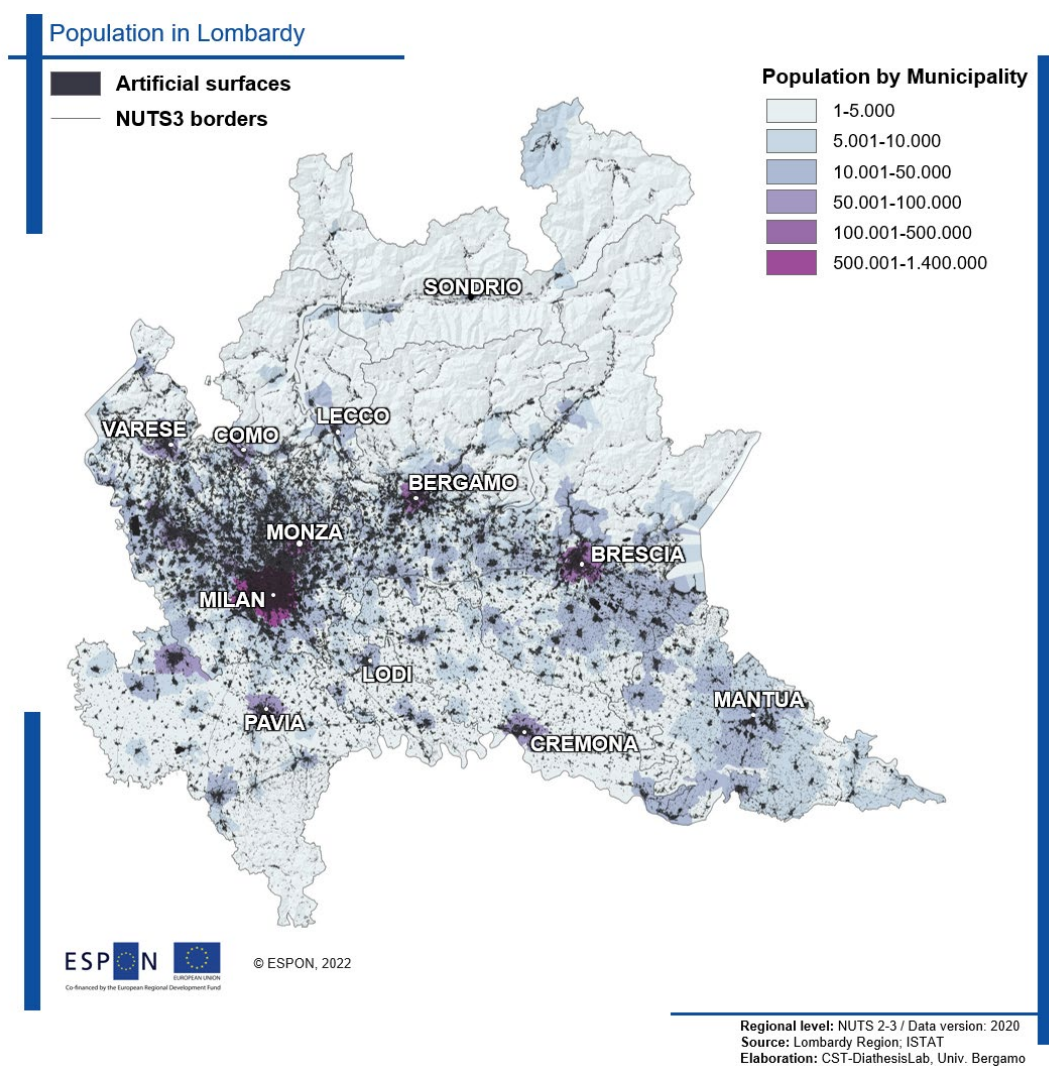
On the other hand, as regards the chain of relations and actor collaboration, Lombardy has set up technology clusters, structured aggregations of enterprises, universities, research centres and other public or private entities, focused on a specific thematic field, endowed with legal personality and a governance model. They actively participate in the realisation of innovative processes which boost the region's competitiveness at

² In 2020, Lombardy comprised 1,506 municipalities; of these, 1,034 (corresponding to about 69% of the total) have less than 5,000 inhabitants. Overall, smaller municipal entities are mainly located in mountainous areas or in the territories of the lower Lombardy plain. The most populous areas are mainly located near the major urban centres.

³ The *Città Metropolitane* (Metropolitan Cities) are 'vast area' local bodies with the following general institutional purposes: care of the strategic development of the metropolitan territory; promotion and integrated management of services, infra facilities, and communication networks of interest to the metropolitan city; finally, care of institutional relations pertaining to their level, including those with European metropolitan cities and areas.

local, national, and international level, by facilitating collaboration between the scientific and industrial actors associated to the cluster and by also facilitating the inclusiveness of small-scale ventures (SMEs and start-ups). Innovative clusters provide support to the Regione Lombardia in the process of defining and updating policies in the field of Research and Innovation, through an analysis of competences and the promotion of local excellences in the creation of new value chains.

Map 4 Resident population in Lombardy in relation to the built-up area

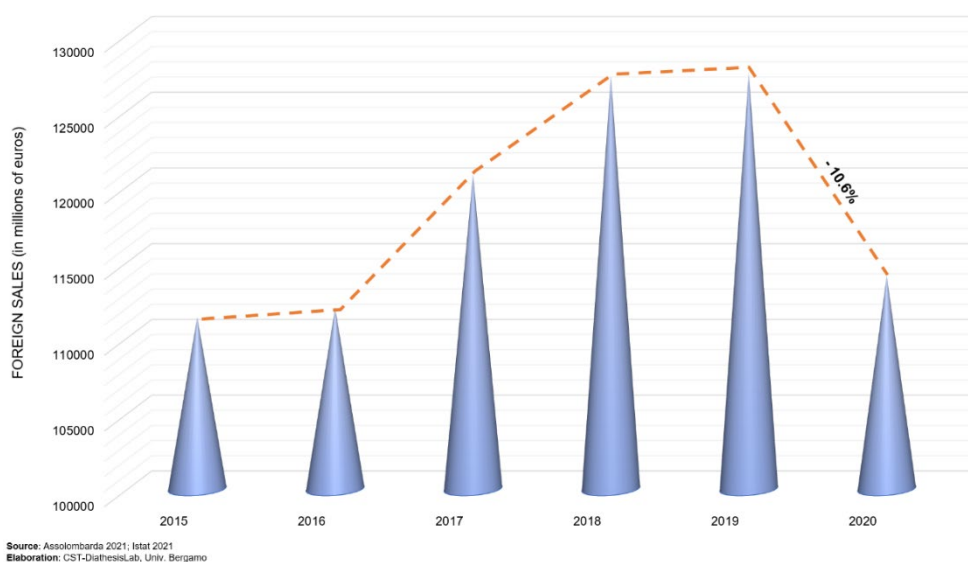


2. Impacts of COVID-19 on the region

4.1 Economic impacts

In the wake of the COVID-19 crisis and the implementation of pandemic emergency measures, Lombardy has suffered severe economic losses. The overall balance of foreign sales for the year 2020 is dire: the Region has lost approximately 13.5 billion in foreign sales, corresponding to a decrease of 10.6% compared to 2019. This is a ponderous loss, higher than the national average (-9.7%), since this area was more severely hit by the pandemic since early 2020 (Assolombarda, 2021). Lombardy figured as the Italian epicentre of contagion, with disastrous results since its onset in Italy. This has led to a sharp drop in production and sales, especially because of the restrictive measures issued by the government (and then extended to the whole country) for dealing with the spread of the virus in Lombardy.

Figure 1 Lombardy foreign sales (2015-2020)

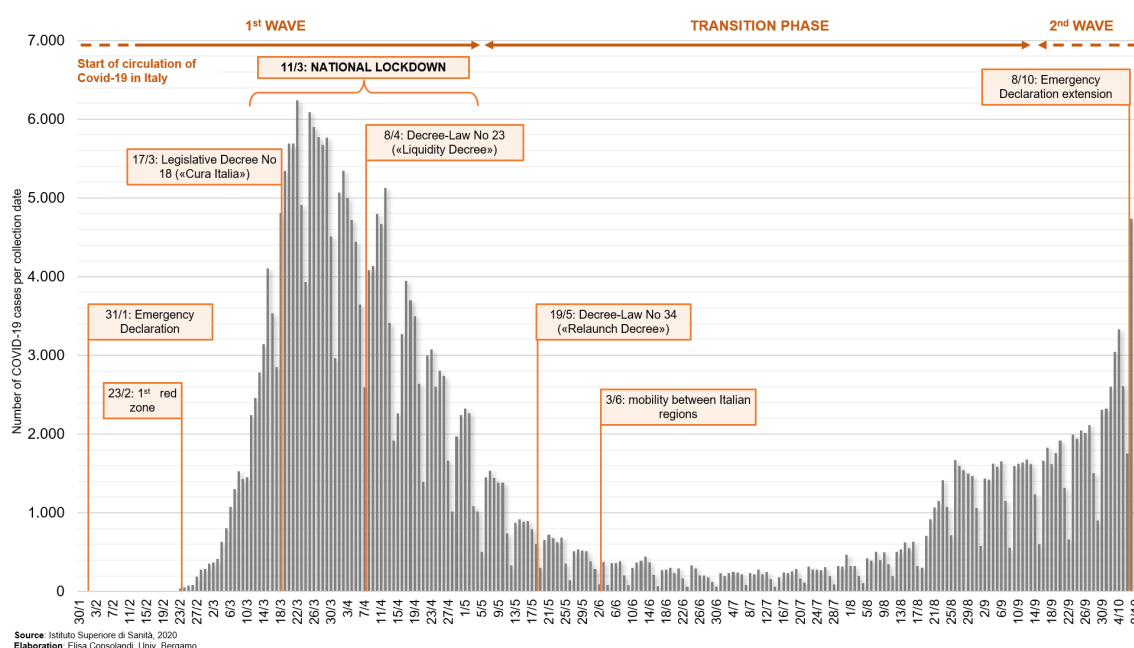


Also, the analysis of the various economy sectors in Lombardy in 2020 shows expansion only in the essential sectors of pharmaceuticals and food (+7.6% and +1.3%) (Assolombarda, 2021). Exports in Lombardy similarly decreased in 2020, leading to a downsizing both in non-EU markets (-10.1% compared to 2019) and in European trade (-11.0%). Despite this, it should be noted that Lombardy's performance is mainly in line with other European centres: this figure indicates that COVID-19 has had a dire impact on all the major manufacturing hubs across the continent.

In general terms, the region's economic fabric was penalised by the health emergency and the constraints it entailed. Commerce and personal services, as well as small craft-based businesses, witnessed a sharp decline in demand, mainly due to protracted lockdowns and blocking of activities to limit viral spread. To avoid a permanent shutdown of businesses and establishments or the downsizing of services to citizens, support and revitalisation measures were needed. For example, with Legislative Decree No 18 of 17 March 2020, *Misure di potenziamento del Servizio sanitario nazionale e di sostegno economico per famiglie, lavoratori e imprese connesse all'emergenza epidemiologica da COVID-19* (Measures to strengthen the National Health Service and provide economic support for families, workers and businesses related to the COVID-19 epidemiological emergency (known as 'Cura Italia'), the first liquidity support measures were provided through via the 'Cassa integrazione' (Ordinary Wage Guarantee Fund) redundancy fund under the COVID-19 cause and a moratorium on loan and mortgage instalments. On the other hand, Decree-Law No 23 of 8 April 2020, *Misure urgenti in materia di accesso al credito e di adempimenti fiscali per le imprese, di poteri speciali nei settori strategici, nonché interventi in materia di salute e lavoro, di proroga di termini amministrativi e processuali* (Urgent measures on access to credit and tax compliance for businesses, special powers

in strategic sectors, as well as measures on health and work, and the extension of administrative and procedural deadlines) (or the 'Liquidity Decree'), was launched with the aim of activating a plan worth over €750 billion in total to ensure more credit and the necessary liquidity for businesses affected by the epidemic. Finally, Decree-Law No 34 of 19 May 2020, *Misure urgenti in materia di salute, sostegno al lavoro e all'economia, nonché di politiche sociali connesse all'emergenza epidemiologica da COVID-19* (Urgent measures on health, support for work and the economy, and social policies related to the epidemiological emergency caused by COVID-19) (the so-called 'Relaunch Decree'), provided for an allocation of more than EUR 16 billion and further extended the redundancy fund. It also strengthened liquidity measures, extended tax exemption provisions, and provided non-repayable grants, forms of capital strengthening and recapitalisation. These measures presumably led to positive signs in 2021, when revitalization of the manufacturing sector in the Northwest rose sharply in February, thanks to an increase in orders, a decrease in stocks of finished products in warehouses and lower production expectations in the short term (Assolombarda, 2021).

Figure 2 COVID-19 cases and measures taken by the Italian Government



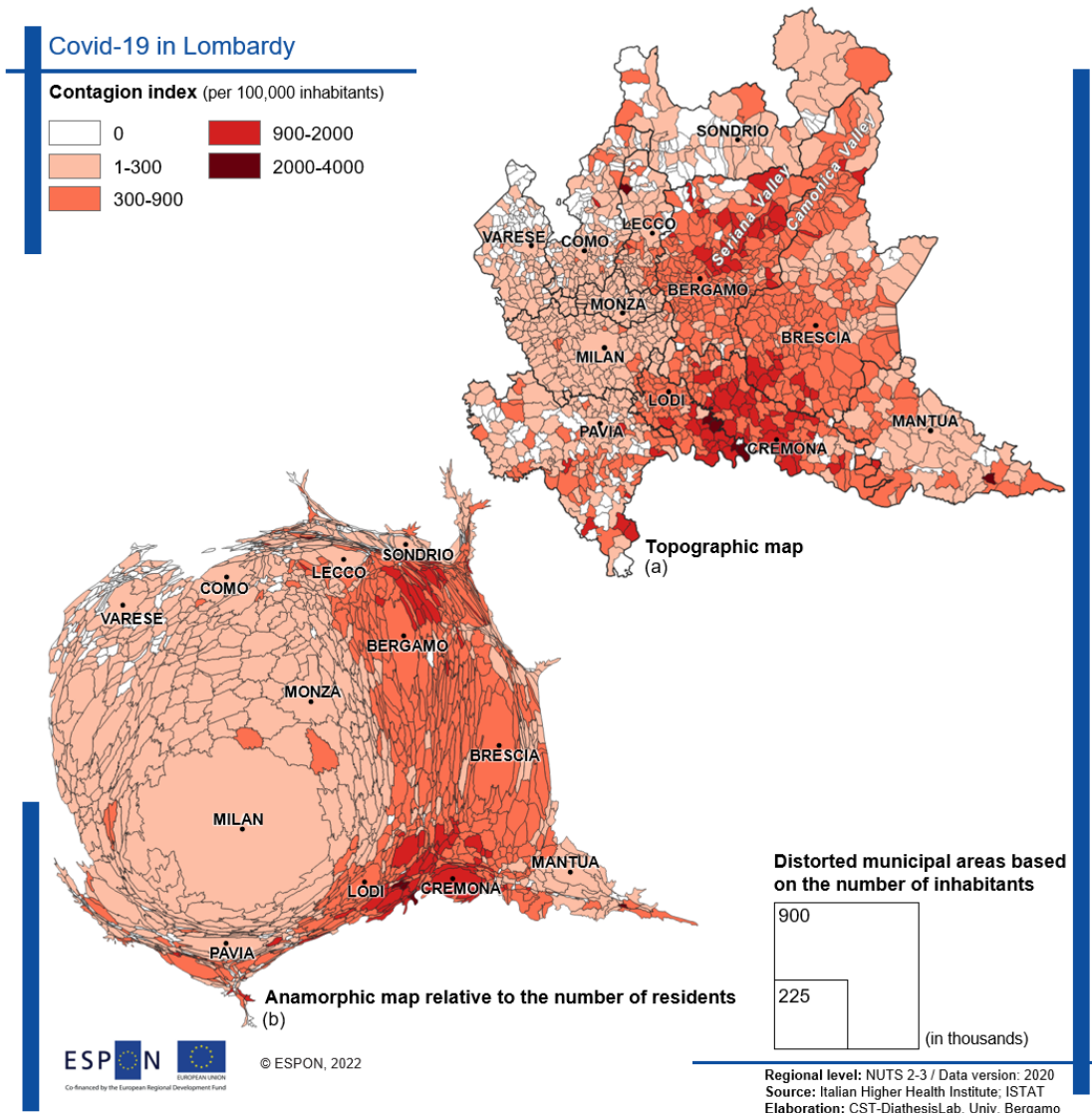
4.2 Social impacts

The crisis triggered by COVID-19 has had very serious outcomes on the social level as well. Fragilities are to be found either in environmental factors that favour contagion (such as pollution) or in features tied to lifestyle patterns. For current living models tend to intensify contacts and gatherings – such as density combined with commuting – and exacerbate vulnerabilities in health and welfare systems, which are unprepared to deal with the speed of outbreaks and the seriousness of outcomes at a large scale. These fragilities marked the areas for rethinking proactive local policies to be activated both during contagion and in its endemic phase.

In fact, mapping was used to investigate the spatio-temporal viral spread municipality by municipality over the Lombardy territory. Within a few weeks (roughly, from the beginning of March to the end of April 2020), the epidemic situation in Lombardy worsened considerably, affecting above all the municipalities that extend – from north to south – in the eastern part (Casti, 2020; Casti et al., 2021).

Map. 5 based on the first COVID-19 data⁴ (February-June 2020) envisages a twofold representative method: the index of the infected, after being sorted into ranges, was distributed over a topographical base map showing the administrative extension of municipalities and the spread of disease (a). This base map was expanded or contracted accordingly, to reflect the high or low number of residents and highlight their social impact (b). Topographic metrics ensure geolocation of the phenomenon, but topographic representation falls short of addressing its social dimension. Anamorphic cartography, on the other hand, enhances the previous model by making it possible to produce a thorough, reflexive image of the social repercussions of COVID-19, which is shown in the variation of contagion risk (Casti, 2015; Consolandi, 2021).

Map 5 Distribution of the infection in Lombardy on 23 March 2020

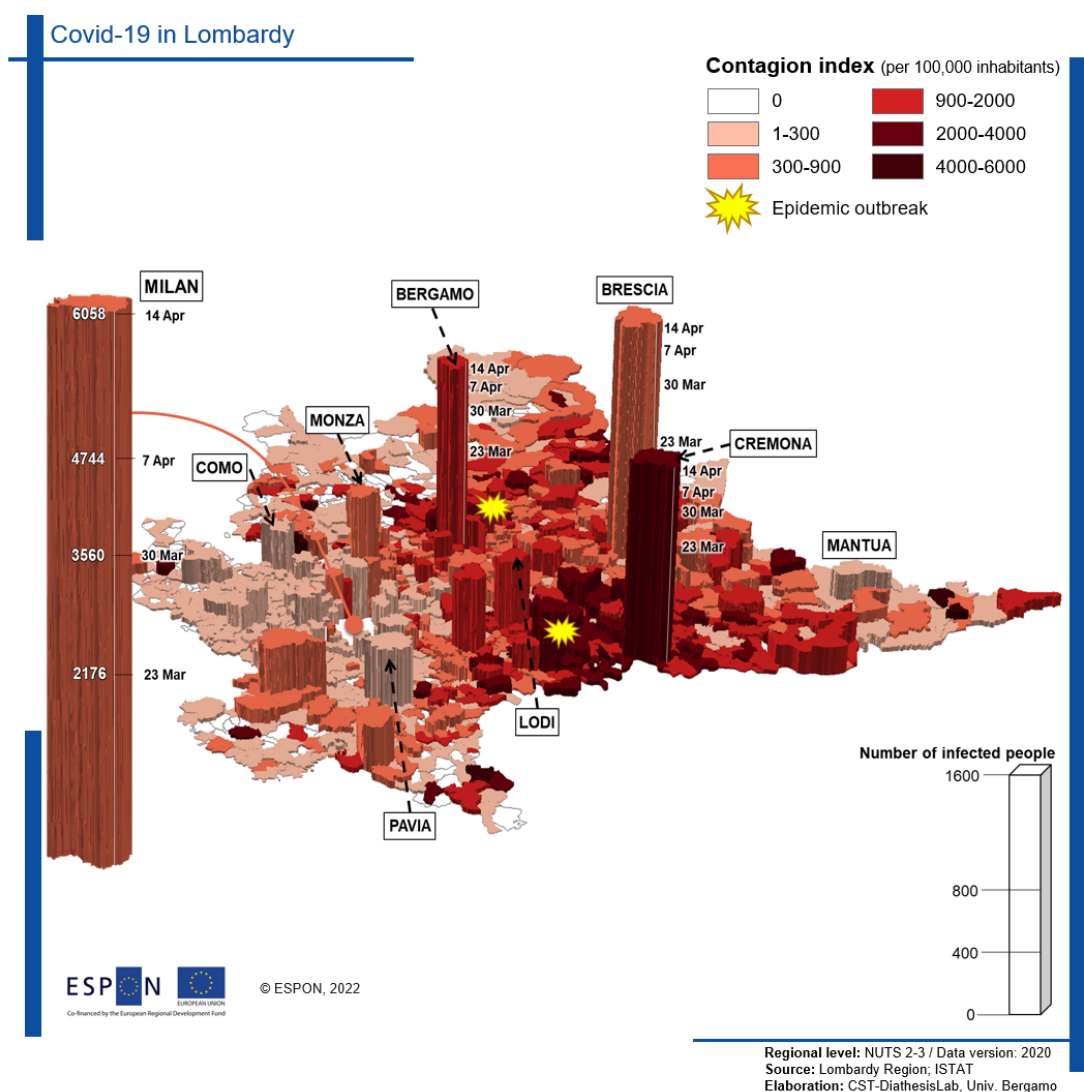


Consequently, the representation highlights that the highest risk of contagion concerns the central-eastern area that goes from the province of Lodi to Bergamo, where the first Italian outbreaks occurred. When correlated to the fragilities mentioned above, this ridge shows a high pollution rate, a dense residential *continuum*, and a rhizomatic commuting towards Milan and other Lombardy and Po Valley cities. Moreover,

⁴ This wave is to be considered the most significant from an analytical point of view because it made it possible to analyse the dynamics of virus propagation at a time when the population was confined to its homes by the lockdown. This revealed how the epidemic intensified and became more dangerous according to the socio-territorial aspects of the locations.

Lombardy is characterised by an inadequate provision of health care and epidemic emergency facilities. This trend can be seen throughout the region, and results from previous policies aimed at centralising hospitals and directing funding mainly for private facilities and top-level medicine. Even RSAs (Residenze Sanitarie Assistenziali – Nursing homes and residential care facilities) – i.e., social and health care facilities aimed at the elderly and mainly managed with a rotation of medical and nursing staff – represented a fragility, since they are places of easy and rapid contagion (Garda, 2021). On the contrary, the vast Milanese metropolitan area, with Monza and the territories of Como and Varese, is affected by a more contained infection index, although in the south it is similar to that of the eastern area. Infection distribution shows that the highest viral spread index does not affect large urban centres, but the peri-urban area made up of medium-sized or small municipalities. Such outcomes run against the widely held view in the international literature (Desai, 2020; Gascard et al. 2020; Ourfeuill, 2020a; 2020b), namely that population density is the cause of epidemic onset.

Map 6 Diachronic evolution and municipal distribution of COVID-19 from 24 February to 14 April 2020

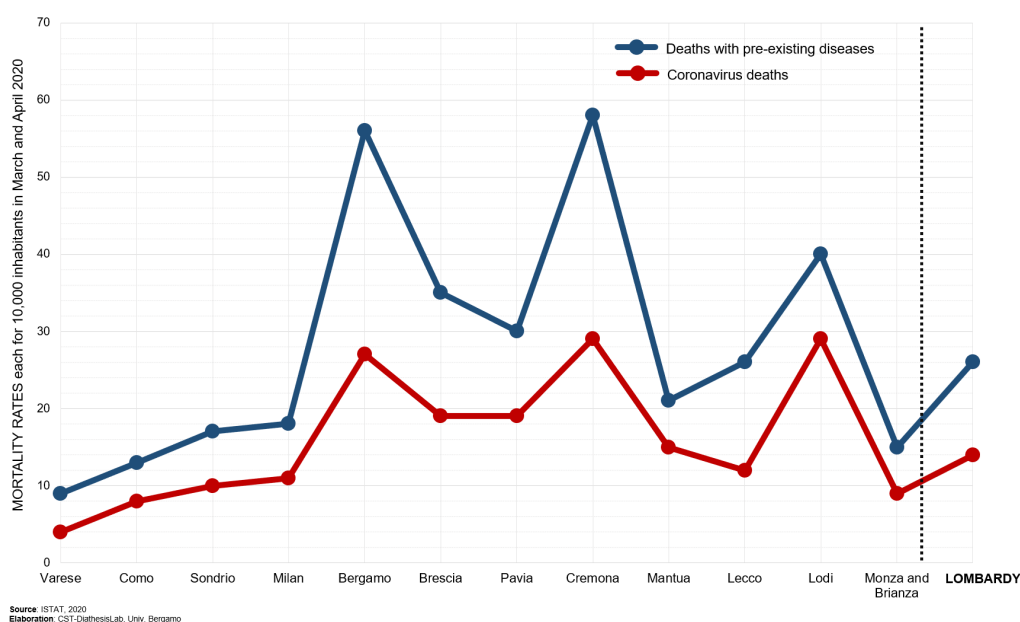


Diachronic mapping of contagion dispersal (Map 6) confirms that outbreak intensity was higher in small cities and peri-urban areas (although absolute numbers are higher in large cities). Even though in absolute terms the highest number of infections (as a result of a temporal progression) was recorded in the cities of Milan, Bergamo and Brescia, the infection index in these cities remained low and never reached peak measurements. The same does not apply to the cities of Cremona, Lodi, and some smaller southern municipalities.

Cartographic information confirms what was stated previously, i.e., a lack of correlation between population density and intensity of contagion. It was in fact in the territories located within the peri-urban swathe around metropolitan Milan that the first outbreaks in Lombardy were detected. While such results should of course be considered merely as circumstantial clues, they do seem to suggest that low population density does not prevent the onset or the spread of severe outbreaks (Consolandi, 2021).

If, on the other hand, one considers the severity of disease and the negative outcomes recorded in Lombardy, mortality rate for the region is the highest in Italy. An analysis of mortality in Lombardy shows that the impact of the COVID-19 epidemic in this territory is differentiated. First, there are the provinces of Bergamo, Cremona, and Lodi, where mortality rate is very high – especially during March and April 2020 –, so much so that it is above the national average. Even in the province territories of Brescia, Pavia, Mantua, Lecco, and Sondrio the mortality impact was higher than in other regions of Italy; on the other hand, in the more western provinces (including the metropolitan area of Milan) the index relating to deaths is lower and is comparable to the Italian average. As proof of this, the ISTAT (2020) report on mortality shows that 42,718 people died in Lombardy in March and April 2020 (of whom 25,560 in March alone), compared with an average mortality of 16,680 in the previous five years (2015-2019). The excess mortality for the months under review is evident and is even more pronounced in the province of Bergamo, where 7,896 losses were recorded (of which 6,075 in March), against an average mortality of 1,701 in previous years. Vice versa, the metropolitan city of Milan recorded 10,978 deceases (of which 5,584 in March and 5,394 in April) against an average of 5,170 for these two months in the previous five years.

Figure 3 COVID-19 mortality rates during March and April 2020 estimated by province in Lombardy



In the light of this articulated and complex set of factors it was possible to conclude that the territories of contagion are anisotropic, and thus closely tied to socio-territorial features. In short, because of its reticular and polycentric setup, the Lombard territory fully expresses the urbanity of the contemporary world. It makes it possible to consider the dynamism of inhabitants and the complexity of urbanisation as sides of the same coin: a local system based on mobility, which in a period of pandemic amplifies contagion by favouring contacts and gatherings in public spaces.

Similarly, pollution does not depend exclusively on atmospheric emissions, but also on factors that prevent their dispersion (such as climatic and/or morphological factors), which are present in the case of Lombardy. The Po valley – bordered for a large part by the Alps and the Apennines – constitutes a vast basin which (according to the classification suggested by Köppen) is at the origin of the establishment of a temperate continental climate. Such climate is characterised by poor ventilation and restrictions in air circulation, which favours air stagnation and airborne pollutants.

Lastly, with regard to the ability to respond to the epidemic and contain its most harmful outcomes, referring to the health and care facilities as quantitatively deficient is misleading. It fails to address health policy choices made by regions, which made a difference at the time of the epidemic. The Italian national healthcare system gives regions exclusive competence in regulating and organising services and activities designed to protect health. In Lombardy, there are 8 Health Protection Agencies (Agenzie di Tutela della Salute – ATS) and 27 Local Social and Healthcare Agencies (Aziende Socio Sanitarie Territoriali – ASST)⁵. Unfortunately, this setup showed serious shortcomings during the epidemic, as imbalances emerged in the centralisation of services in hospitals, their privatisation and, finally, the withdrawal of funding from general practitioners.

Right from the start of the emergency state, many Lombardy municipalities carried out actions (such as delivery of medicines, meals, and shopping to homes) capable of responding to the growing demands and needs of individuals. This was also made possible by mobilising civil protection and volunteer management system, which proved to be the real backbone of relief institutions. In addition, aid instruments were activated to ensure that vulnerable population had access to food and to encourage that surpluses were redistributed within the inclusive food system. During the emergency state, many families have suffered the consequences of unemployment and are now in economic difficulty. COVID-19, therefore, has led to an economic-social crisis which generated new or further inequalities, dependencies, or loneliness. The greatest difficulties were recorded among the vulnerable population, namely students and the elderly. With regard to the former, a sharp increase in the number of cases of learning disorders from the first lockdown is evident: distance learning and limited interaction with peers causing disorientation and psychological issues. Family difficulties also increased in the form of relational malaise: the most distressed children and young people were coming from difficult family predicaments, which COVID-19 did not create but certainly exacerbated. As far as the elderly are concerned, during the period of the first wave, lonely and older people suffered from difficult situations of isolation: not being able to leave the house anymore generated difficulties in relationships and, it engendered a sense of loneliness. Especially in residential care homes, there were major problems for patients, both because of the high mortality rate in these hospitals and because of the closure of facilities and, consequently, the lack of contact with families. This caused psychological problems in the elderly, accelerating the ageing process, and affected their health, both physical and mental.

The Covid epidemic has also had a major impact on the labour market. In 2020, in Lombardy, the employment rate was of 66.9%, a negative drop compared to the 2019 figure of 68.4% (ISTAT, 2021). In 2020 there were more than 77,000 fewer people employed in Lombardy than in the previous year (this figure is worse than during the previous crisis in 2009). In percentages (71.7%) the reduction is substantial, yet it was still more contained than in the other main Italian manufacturing regions, such as Emilia-Romagna, Piedmont, and Veneto. With reference to the impact of the pandemic on employment, it should be noted that most of job losses in Lombardy are concentrated among employees with fixed-term contracts (with a drop of 66,000 employees) and men. In addition to this, unemployment is particularly visible among young people (with a decrease of 46,000 jobs among those under 35) and has a greater impact on less educated individuals. As far as the macro-sectors are concerned, the greatest loss was registered in commerce, hotels, restaurants, and services, while in the industry sector and in the residual sector which includes logistics, construction, and agriculture, the drop was less felt (25,000 jobs lost).

As far as the economic aspect is concerned, the main difficulties concern businesses subjected to prolonged lockdowns (which was especially detrimental to local businesses). However, after the crisis phase, the major manufacturing, handicraft, and commercial activities recorded a strong increase in turnover in 2021, due to a possible rebound effect and to the measures brought in by the central government to deal with the health emergency, especially for the construction sector. It should be emphasised that many economic resources were injected into the market at a central level. This action generated confidence and, consequently, an increase in investments, especially related to the 4.0 industrial policy of transition (which includes, specifically, research and development, technological innovation, design, and circular economy). This led to a strong increase in demand (in particular, in the manufacturing and construction sectors), which – however – cannot be fully satisfied by the production sector due to shortages of raw materials and components (mainly electronics, such as microchips and semiconductors). Following the upturn in activity (February-September

⁵ ATSs implement regional health planning and manage accreditation procedures for public and private entities; ASSTs, on the other hand, deal with health care activities at a local level through hospitals, outpatient clinics, general practitioners, and residences for the elderly. In addition to these facilities, there are Scientific Institutes for Research and Treatment (IRCCS), which are funded directly by the Region and conduct diagnostic and therapeutic activities and scientific excellence research

2021), the number of employed people in Italy is 1.7% higher than in October 2020 (+390 thousand), while the number of job seekers has decreased (-5.6%, or -139 thousand), as has the amount of inactive people aged 15-64 (-3.1%, or -425 thousand). Ultimately, employment rate is currently increasing.

In this perspective and despite the health emergency situation, in 2021, the incidence of households in absolute poverty in North-Italy did not register significant increases⁶ settling at 6.7%, lower than the Italian average (7.5%). The figure is slightly lower than the incidence recorded in 2020 for the same area (7.6%); this provides indications that it has not worsened and that the measures implemented by the institutions are working⁷. In Italy's Northwest, 24.9% of the total number of households in absolute poverty is recorded (again in 2021) and this percentage is in sharp decline when compared to the previous year (28.7%) (ISTAT, 2021). Also, with reference to the incidence of relative poverty⁸, the first data at the regional level show that in Lombardy, in 2021, this stands at 5.9%, a figure lower than in 2020 and in contrast to the national panorama. In fact, the national figure is growing in the South, where the incidence of relative family poverty reaches the highest levels (20.8%). This disparity in distribution can be attributed, perhaps, to the fact that northern regions – with particular reference to Lombardy – in the pre-pandemic period presented a favorable situation regarding but digital modernization of the manufacturing sector (i.e., the driving sector of the economy and labor market in Lombardy) and today shows an acceleration in technological endowment (PoliS, 2022).

It should be considered that the methodology for estimating poverty, adopted by the bodies responsible for recording it (such as ISTAT), is based on the monetary valuation of a basket of goods and services considered essential to avoid serious forms of social exclusion. These data, however, contrast with others that monitor the demand for aid at the local level. In fact, at the Charitable and Solidarity Associations there has been a sharp increase in requests for help and there is talk of the emergence of a new social class of “new poor”⁹.

Finally, if we consider Lombardy's epidemic within the wider national context, as outlined in the time- space map (Map 7) it is obvious that the start of outbreaks was localised in the north – specifically, in Lombardy – and traced its persistence in that part of Italy for the entire epidemic period. This inevitably sets northern regions substantially apart from the rest of the country. Only in the second wave, the autumn wave of 2020, the virus appeared in southern regions and evened out in the peninsula, although Lombardy – and, in particular, the Milanese metropolitan area – maintained its lead in terms of the number of infections. This spread affected mountain and coastal areas due to tourist movements, which also spread the virus further inland and to isolated areas. With the advent of the third wave, on the other hand, a worsening of contagion was noted in the southern regions, in Apulia and Campania, which – together with the provinces of Aosta, Cuneo, Prato and Forlì-Cesena – were strongly affected by viral spread. Finally, in the last wave of the infection (if we consider the month of October 2021) an improvement in the general condition of the country can be noted, although the infection indices appear to be significant in the provinces of Bolzano and Trieste, due to events which failed to enforce precautionary measures of social distancing and led to outbreaks.

⁶ This is at least according to official data published by ISTAT on June 15, 2022. For more details, please refer to this document: https://www.istat.it/it/files/2022/06/Report_Povert%C3%A0_2021_14-06.pdf.

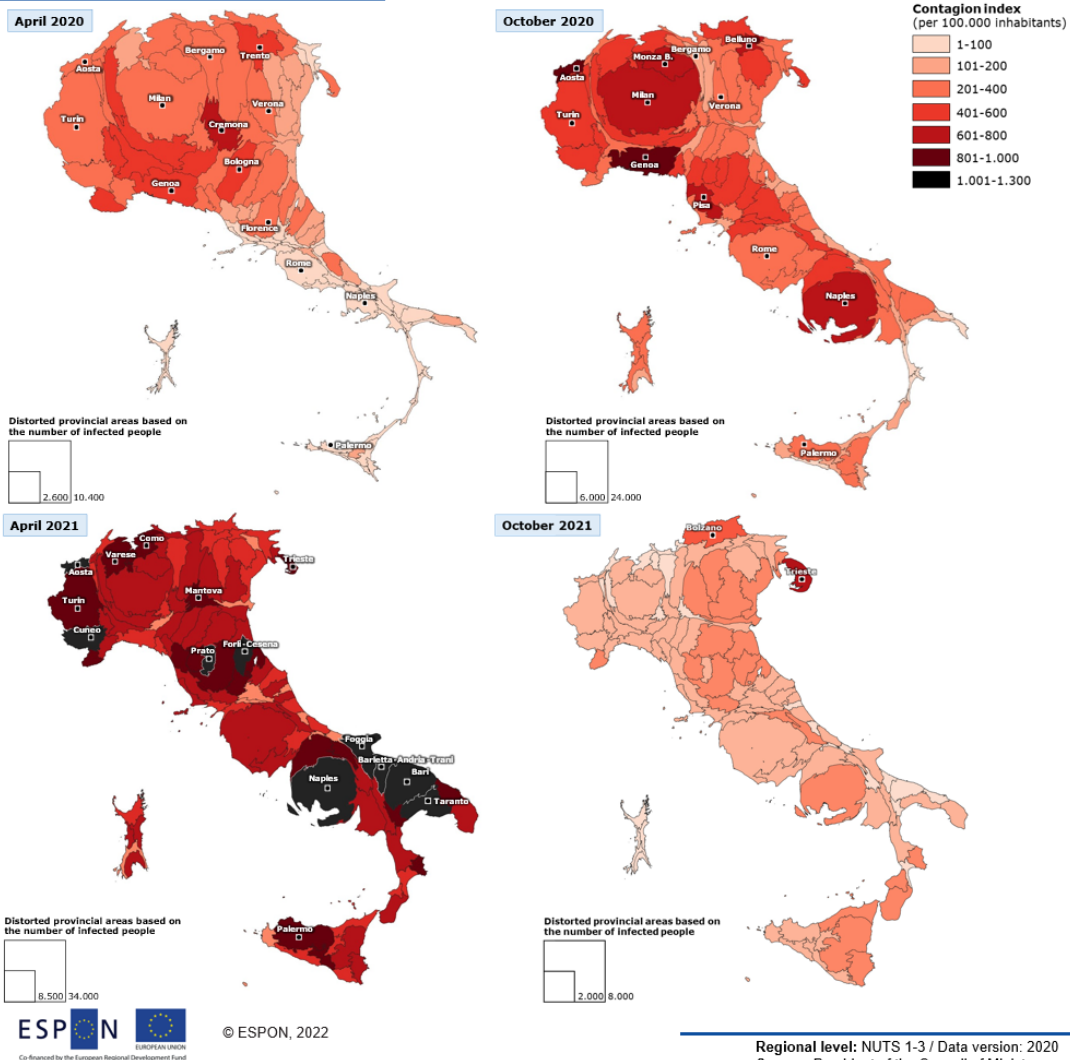
⁷ In this regard, please refer to the “Economic impact” section.

⁸ If absolute poverty classifies poor/non-poor households based on their ability to acquire certain goods and services, the relative poverty figure provides an assessment of the inequality in the distribution of consumption expenditure and identifies poor households among those that are at a disadvantage compared to others. In fact, “poor” is defined as a two-member household with consumption expenditure less than or equal to the average per capita consumption expenditure (ISTAT, 2021).

⁹ One example is that of the Diocesan Observatory of Resources and Poverty of Caritas Ambrosiana, which develops research activities in the Milan area to understand – among other things – the conditions of poverty (which is recorded annually) in the Milanese Diocese. See: <https://caritasambrosiana.it/osservatorio/rapporto-sulle-poverta>.

Map 7 Anamorphic representation of infection detection in Italian provinces: 4 waves of viral spread

Covid-19 in Italy



3. Policy response to COVID-19

In order to assess the policy response to COVID-19, it is necessary to distinguish the different waves of the pandemic in Lombardy, with a focus on the first. During the first few months of 2020, Bergamo, which was the epicentre in Lombardy and Europe with regard to the intensity and severity of contagion, was also the territory where a state of major emergency was declared. The health emergency has put the public and private functions and activities in crisis and has affected all the social sectors: from the medical, to the social and economic, to the housing sector. The population's reaction to this first wave was a markedly positive one, resulting in an immediate response based on community and civil society cohesion – even before institutions intervened. This gave proof of social collaboration and significant solidarity. This also enabled public and religious institutions to step in and organise, giving proximity assistance, actions to help inhabitants in need, i.e., mutual aid between individuals sharing the same place of living. Municipalities played a major role in this situation as authoritative institutions, able to exercise an organisational and directing capacity, in harmony with inhabitants.

Political context

The public and private interviewees strongly emphasised that the epidemic in Lombardy did not mark a radical turning point forcefully disrupting pre-existing plans. Rather, emergency triggered acceleration in policy choices and the swift implementation of previously discussed policies. For example, in Bergamo, the issue of proximity – and therefore promoting decentralisation of administrative bodies to the neighbourhoods – had already been planned by the Municipal Authorities. However, action was quickly implemented thanks to a revision of welfare and the implementation of new operational tools. A similar quickening of reforms has taken place in the private industrial sector. Over the last two years, many investments were made in digital innovation and improving from a technical and IT point of view (such as, for example, remote control and monitoring of large equipment or real-time detection of inhabitants on public transport) and environmental mitigation for businesses and for the public transportation system.

In general terms, the advent of COVID-19 did not alter existing policies. Rather, it promoted strong collaboration to implement and enforce policies swiftly. Various public bodies, professional and voluntary associations, private stakeholders, and civil society played a supportive role in overcoming difficulties that emerged – especially issues of a social nature.

As far as health policy is concerned, the interviews show that there still exists an urgent need to address issues at local level, a veritable weak link, ill-equipped to cope with the emergency and still in serious difficulty. It is unanimously agreed that the creation of new local, intermediate bodies between hospitals and general practitioners should be accelerated, such as the *Case della Comunità* envisaged by health reform policy in Lombardy. However, at present this measure appears ineffective, until it is matched by a robust recruitment of doctors and health personnel, which however the labor market is unable to meet in the short term due to the lack of specialized personnel. This situation has arisen in Italy due to three causes. The first relates to the low programmed number of physicians who were eligible for residency schools. The second relates specifically to the anomaly of hiring territorial physicians, who – although they practice in the public sector – are governed by a private employment contract. This contract entered into with regional health agencies does not consider the complexity in operating in the territory; moreover, it does not provide any compensatory income incentive. This situation, of poorly motivated and poorly paid physicians to perform a public service in the territory, became dramatic in the COVID-19 emergency phases when territorial health care became almost absent. Finally, the third cause concerns the specialist health care provided in hospitals, which, due to the large influx of COVID-19 infected, had to suspend routine care for patients with other diseases, further aggravating the situation of territorial physicians.

3.1 Proactive Policy Overview

Just transition policies

The following table shows the main proactive policies implemented as part of a just transition strategy. It should be emphasised that – as far as Lombardy is concerned – some of these policies were implemented hastily during the first epidemic wave, given the speed, intensity, and severity of contagion. Regulatory measures were issued by the municipal and regional institutions responsible for managing emergencies and were enforced via civic associations or volunteers. The latter, who worked autonomously to cope with institutional shortcomings in essential services, managed initiatives that attest to the public spirit of citizens and their striking solidarity-based attitude. These policies were taken up both by the health sector (with the creation of *Case della comunità* and the establishment of a new role for nurses) and by the welfare sector involved in food supply and basic necessities to the population (Municipal Operations Centres). In addition, some policies were aimed at coping with economic problems (by providing support contributions; activating tax relief; encouraging the digitisation of internal services) triggered by the health emergency and affecting small businesses. Other policies of a social nature are intertwined with those of green and digital transition, as shown below.

Table 2 Just transition policies

| Focus area(s) | Policy description | Target group(s)/ Beneficiaries | Responsible level of governance / Financing | Stakeholders involved in policy implementation | Timing of policy | Duration |
|-------------------------------------|---|--------------------------------|---|--|------------------|-------------------|
| Investment in infrastructure | Regional Law no. 22 of 14 December 2021 provides for the preparation of a regional pandemic plan and the establishment of the Centre for the Prevention and Control of Infectious Diseases. In addition, particular importance is attached to the creation of Primary Care Hospitals and <i>Case della Comunità</i> , facilities aimed at providing outpatient health and social-health services directly on the territory, as support outside the hospital. Finally, the creation of Territorial Operating Centres has been planned, with the function of coordinating home health services using the support of digital medicine or telemedicine. The strengthening of the institutional territorial network must be realised and completed by 2024. At the moment, it is still in serious crisis and is worsening due to the lack of doctors and nurses in the territorial service. Most of the community hospitals and community houses (envisaged in the PNRR) must be implemented by 2022, as well as the | General population | Regional level | | Pandemic | Medium/ Long term |

| | | | | | | |
|--|---|--------------------|-----------------|---|----------|------------------|
| | Centres for the Prevention and Control of Infectious Diseases. Primary care departments and functional prevention departments in ASSTs must be established by February 2022. | | | | | |
| Investment in infrastructure | Decree-Law no. 34 of 19 May 2020 ('Relaunch Decree') introduced the figure of the family or community nurse into the legal system to strengthen nursing services and to enhance the care of people with COVID-19 in the territory, also by supporting the special Continuity Care Units and the services offered by primary care. Decree-Law no. 34 of 19 May 2020 specifies that the figure of the family nurse was active until 31 December 2020. However, this expiry is offset by the fact that the companies and entities of the National Health Service can proceed with the recruitment of nurses through open-ended recruitment as of 1 January 2021. | Vulnerable groups | National level | | Pandemic | Medium/Long term |
| Communication and knowledge sharing Food, medical and housing support | The Municipal Operations Centres (Centri Operativi Comunali – COC), managed by Civil Protection personnel, were a point of reference in the early stages of the epidemic. These operations centres tried to overcome the difficulties and respond immediately to the needs of the inhabitants by providing up-to-date information and delivering goods to people in difficulty. Among the various activities carried out by the COC, it is worth mentioning the sanitisation of public areas to protect the inhabitants. | General population | Regional level | Municipal authorities | Pandemic | Short term |
| Business support | In order to support family-owned and under-capitalised SMEs, a partnership was set up between the Municipality of Bergamo, Banca Intesa Sanpaolo and Cesvi (a Bergamo-based NGO) called the <i>Programma Rinascimento</i> , which provided forms of loans on favourable terms for the re-launch of business activities and their digitalisation. | Businesses | Municipal level | Municipality of Bergamo Banca Intesa Sanpaolo Cesvi (Bergamo-based NGO) | Pandemic | Short term |
| Business support | The Municipality of Bergamo, together with the VisitBergamo tourist promotion company and the Ascom traders' association, has also introduced a series of measures to respond to economic problems. | Businesses | Municipal level | Municipality of Bergamo VisitBergamo Ascom | Pandemic | Medium/Long term |

| | | | | | | |
|---|---|---------------------------------|-----------------|---|----------|------------------|
| | The <i>Prenota Bergamo</i> app has been developed to facilitate home transport and restaurant reservations to avoid queues and crowds. | | | | | |
| Business support Food, medical and housing support | Design and development of a web platform during the COVID-19 emergency in the area most affected by the virus, <i>Clusù</i> to provide economic support to the merchants of the Municipality of Clusone (province of Bergamo) through the purchase of vouchers that can be used by customers at the end of the lockdown. In addition, the site was also used for the disbursement and use of food solidarity spending vouchers to support the citizens most exposed to the economic effects of the COVID-19 epidemiological emergency (Pursuant to Article 53, paragraph 1 of Decree Law No. 73 of 25/05/2021). | Businesses Vulnerable groups | Municipal level | Municipality of Clusone Associazione CluSù Distretto del Commercio Alta Valle Seriana – Clusone | Pandemic | Medium/Long term |
| Business support | The initiative aims to outsource the spaces of catering activities by expanding them into public space, through its free occupation by catering activities. | Businesses | National level | | Pandemic | Short term |

Green transition policies

Green transition policies focused on the creation of alternative setups in areas with high contagion risk, such as public transport crowding and collective living in indoor public spaces. As for the former, in addition to an awareness-raising campaign, individual sustainable-mobility actions were conducted as an alternative to collective public transport. At the same time, existing and ongoing projects for bicycle paths (built to encourage this type of mobility) were completed, as shown in the table below. These green transition policies had a significant impact on reducing air pollution produced by the private use of cars and other means of transport. With reference to the second aspect, i.e., the reduction of collective time spent indoors, Lombardy's municipalities – accepting the provisions issued at a national level – have granted businesses payment exemption for using areas of public ground. This has led to a significant emergence of open spaces (*dehors*) for use by public venues (such as cafés, restaurants, shops); these meeting areas attest to new ways of experiencing city spaces, since they have encouraged people to stay outside (in pedestrian areas), thereby promoting social transition, as already reported.

Table 3 Green transition policies

| Focus area(s) | Policy description | Target group(s)/ Beneficiaries | Responsible level of governance / Financing | Stakeholders involved in policy implementation | Timing of policy | Duration |
|----------------------------|---|--------------------------------|---|--|------------------|------------------|
| Travel and mobility | Encouraging the use of soft mobility means (bicycles and scooters) by expanding cycling. Provision of | General population | Municipal level | Municipality of Bergamo | Pandemic | Medium/Long term |

| | | | | | | |
|--|--|--|--|---------------------|--|--|
| | investment to increase bicycle parking facilities and an appropriate awareness campaign. | | | ATB Mobilità S.p.A. | | |
|--|--|--|--|---------------------|--|--|

Smart transition policies

The proactive policies adopted as part of the smart transition have mainly concerned four sectors, i.e.: smart working; distance learning; e-governance and smart mobility. As far as working sector is concerned, during the health emergency, the widespread reliance on the World Wide Web highlighted the urgent need for smart working regulation. Smart working is conceived as a way of carrying out work free from time or space constraints and aimed at encouraging productivity. The need for distance working regulation has arrived on the tables of trade union agreements between categories of workers and private companies (among others, publishing, banking, or service provision sectors). With reference to distance learning, mention should be made of technologies and measures adopted within the school system and in Italian universities in order to counter the advancement of contagion (such as, for example, sanitary devices for personal protection, sanitizers for the disinfection of spaces and digital equipment to allow teachers and students to continue their activities remotely). As a matter of fact, the introduction of new software and digital portals ensuring steady connections and interactions between participants has made it possible to conduct all scheduled school and university activities (such as, lessons, exams, and meetings). With regard to e-governance, Covid has led to a rethinking of the way of living (i.e., the impossibility of using public offices or the need to monitor gatherings), which has led to a simplification of bureaucracy and an acceleration of the timeframe for the implementation of technological systems for improving the digital information infrastructure of the Public Administration and remote access to municipal services, including wi-fi hotspots installation in public spaces. Finally, for smart mobility, it is necessary to emphasise the development of applications capable of providing real-time information on public transport capacity and timetables. Other smart transition policies, which have been undergoing testing and definition for a while (such as digitisation of public administration), have been fast-tracked for adoption with the advent of COVID-19.

Table 4 Smart transition policies

| Focus area(s) | Policy description | Target group(s)/ Beneficiaries | Responsible level of governance / Financing | Stakeholders involved in policy implementation | Timing of policy | Duration |
|-------------------------------|---|---|---|--|------------------|-------------------|
| Multi-locality working | Smart working encourages cost savings and a positive impact on productivity. Technological innovation facilitates this. The first smart working initiatives were activated during the first pandemic wave and continued in subsequent waves. On 7 December 2021, the Ministry of Labour and Social Policy reached an agreement with the social partners on the first <i>Protocollo Nazionale sul lavoro in modalità agile</i> (National Protocol on Smart Working) in the private sector. | Employees and self-employed people Public stakeholders | National level | | Pandemic | Medium/ Long term |

| | | | | | | |
|---|--|--|-----------------|-----------------------------------|--------------|------------------|
| Digital access and competencies Education and training | The school system and universities have adopted tools and technologies to counter the advance of contagion such as, for example, sanitary devices for personal protection, sanitizers for the disinfection of work areas and digital equipment to allow teachers and students to continue their activities at a distance. The introduction of new software and digital portals ensuring steady connections and interactions between participants has made it possible to conduct all scheduled school and university activities (such as, lessons, exams, and meetings) related to education and training. | Researchers, universities, and research institutes Students Teachers | National level | | Pandemic | Medium/Long term |
| Digitalisation of public services E-governance | Transfer, in some municipalities, of the IT system to the e-cloud, adhering to national and European regulatory provisions. Improving the digital information of the Public Administration and remote access to municipal services. Acceleration of the digital decentralisation process, municipal structures, and services in neighbourhoods. | General population Municipal staff | Municipal level | Municipality of Bergamo | Pandemic | Medium/Long term |
| Digital access and competencies | Access to wi-fi network in the main public spaces. | General population | Municipal level | Municipality of Bergamo | Pre-pandemic | Medium/Long term |
| Big data Smart transport | The TPL (Local Public Transport) was equipped with an app to provide real-time information on timetables and transport capacity. | General population | Municipal level | ATB Mobilità S.p.A. TEB S.p.A. | Pandemic | Medium/Long term |

The table shows that the proactive policies introduced were mainly activated during the first pandemic wave, which in Italy can be traced back from February to May 2020. These are policy actions driven by the emergency health and socio-economic circumstances brought about by the epidemic outbreak, taken to address the immediate need to cope with the spread of the contagion and, later, to foster economic recovery, social support, and spatial planning.

While some measures will not be reintroduced or extended after the epidemic has ended, a few have been maintained in subsequent waves, as many provisions are aimed at revitalising business activities with a view to safeguarding health.

As regards the health policies adopted, the rethinking of the assistance and care system proposed by the Lombardy Region stems from an urgent need to strengthen local healthcare, which proved virtually non-existent during the epidemic, the strengthening of doctors' training and the prevention and control of infectious diseases. For this reason, regional law no. 22 of 14 December 2021 approved amendments to the regional law on healthcare, which takes on board the directives dictated by the PNRR. Such amendments must be completed by 2024.

Among the opportunities granted to municipalities via proactive policies, a crucial measure regards expedited funding for dealing with health emergency issues. Lombardy's municipalities generally tended to manage resources effectively, via a constant exchange of project ideas and practices. Actions in this direction continue thanks to regional and national calls for proposals, the latter mainly promoted thanks to the National Recovery and Resilience Plan. Unfortunately, critical shortage in human resources for a timely drafting of projects exists. Administrative offices are strained following the activation of public funding initiatives and no support facilities are currently in place.

As regards proactive health policies, in the case of Lombardy Region, the self-abnegation of doctors and health personnel has been heroic, maintaining the resilience of the healthcare system in almost every case. Institutional dialogue between the Region and health managers has made it possible to improve communication and consultation over measures for coping with the system's structural shortcomings. The overhaul of bureaucratic constraints, a serious administrative burden, has made practices leaner and procedures more flexible. Unfortunately, the interviewees also stated that this improvement is already waning, due to self-referential sets of procedures which increase paperwork. It should be stressed that hospital healthcare continues to be in a state of serious crisis. That is due to chronic imbalance in the public-private healthcare ratio, which favours specialised healthcare. Another apparently insurmountable obstacle concerns local healthcare, which has arguably even worsened during the epidemic and continues to do so. A chronic shortage of doctors means that no replacements can easily be found upon retirements, and the newly expanded role of health nurses cannot adequately compensate for such shortage¹⁰. It should be noted that the sector crisis is mainly tied to the public institutionalisation of roles for local general practitioners.

Currently, policy makers are developing healthcare plans that also consider crisis and emergency management, in the wake of the ongoing epidemic experience. The Lombardy Region is devoting special funding provided by the Government to restructure its healthcare system and build new local healthcare facilities that should work effectively within an updated pandemic plan.

¹⁰ Decree-Law no. 34 of 19 May 2020 ("Decreto Rilancio") introduced the figure of the family or community nurse into the legal system in order to strengthen nursing services and to enhance the care of individuals affected by COVID-19 on the territory. The law envisages them as a form of self-employment from 15 May 2020 to 31 December 2020; thereafter, National Health Service bodies may proceed with the recruitment of nurses through open-ended recruitment. The figure of the family nurse is present in the National Recovery and Resilience Plan (PNRR), approved by the Council of Ministers on 12 January 2021, along with the financing of Health or Community Homes, the strengthening of proximity activities in districts, tele-assistance, and telemedicine.

4. Policy impacts

4.1 Policy impacts

The white paper drafted by the Lombardy Region (April 2020) as a reaction to the first phase of the health crisis is entitled *Designing the new normal (Progettiamo la nuova normalità)*. The document aims to compensate for the shortcomings and fragilities highlighted by the pandemic period by defining stronger collaboration and more transparent governance between national and regional entities with particular reference to the adoption of protocols for the operation of corporate supply chains. It also identifies the 4+1 “Ds”, i.e., Diagnostics, (Protection of) Devices, Distancing and Digitalisation, within a unitary perspective in affirming the rights to safety, work, mobility, study, and live a social life. The second main theme of the document concerns safety measures to be applied to local public transport. Interestingly, the proposal brings into sharper focus two issues that have been long discussed at various levels: working hours policy and smart working. Both topics are closely linked to the organisation of work activities: (i) the rescheduling of working hours and services to distribute the flow of demand for mobility and access to services over a more balanced period of time; (ii) smart working, which can reduce mobility demand and direct contacts between people for certain categories of workers.

Regarding the environmental impact, the Lombardy Region and the Italian Government have launched calls for tenders aimed at green transition. Along these lines, many municipalities have overhauled their vehicle fleets making them more sustainable by purchasing electric cars. Also, in many areas of the Lombardy Region has activated electric car sharing services for citizens and tourists, and the municipality of Bergamo is working on a call for tenders aimed at introducing electric motorbikes. Many investments have been made in Lombardy in soft mobility as an alternative to car use: cycle lanes have been marked (also thanks to a change in the highway code) and shared mobility tools such as bike sharing, and scooter sharing have been encouraged.

Companies and businesses in the area have received funding to encourage ecological transition, and many have already made investments in renewable energy.

As far as municipal administrations are concerned, examples of best practice may be found in the design and, in some cases (such as that of the municipality of Clusone, in the province of Bergamo), in the opening of coworking spaces, new high-tech workspaces, some of which are equipped with cubicles that can be rented in the short and long term. This innovation has made it possible to elect some facilities as cultural hubs, aimed to innovate working conditions within the digital transition.

During the pandemic emergency, the Municipality of Bergamo distributed food vouchers to families with lower incomes, funded by the State and the municipality. In addition to this, 24/7 helplines were set up to provide assistance to people in need and the *Bergamo per Bergamo* network of volunteers was established to distribute medicines or masks. The *Mutual Aid Fund (Fondo di Mutuo Soccorso)* set up at the end of 2020, collected 1.250.000 EUR worth of donations from citizens and local businesses.

With regard to mobility, the proactive policies adopted are those linked to a general renovation of the outdated urban fabric and the organisation of local collective transport system, the enhancement of public spaces and technological innovation. Stakeholders in the transport sector invested in innovative systems for facilitating on-board fare payment and tracking vehicle occupancy in real time via multiple technologies, such as average operating speed and passenger count with other on-board systems. These tools can significantly improve service, making it more flexible, and creating ideal conditions for coping with critical issues and crowding on public transport.

With reference to the healthcare system, it emerged that rigorous and reliable information is vital. Initially, media information on the pandemic in Italy was dangerously inconsistent, which fostered mistrust among citizens regarding the measures to be taken in a situation of emergency.

4.2 Governance impacts

On 31 January 2020, the Italian Council of Ministers declared a state of emergency throughout the country; through this provision, the central government took on the possibility of implementing extraordinary interventions with ordinances that derogate from the provisions of the law and undertake the task of coordinating the epidemic. Emergency management includes measures and actions implemented to ensure relief and

assistance to the population via urgent interventions and the use of simplified procedures. By declaring a state of emergency, the Government avails itself of extraordinary means and powers to cope with the current calamity and delegates commissioners and national operational facilities for interventions.

In the context of main national events, the Operational Committee of Civil Protection represents the primary coordination table: the Committee – chaired by the Head of the Department – is entrusted with the task of assessing the news, data and requests coming from the areas affected by the emergency, defining intervention strategies, and coordinating the deployment of the Administrations and Bodies. Unfortunately, Italy found itself unprepared for the raging epidemic due to the lack of an updated emergency protocol suited to the situation. The *National Plan for Preparedness and Response to an Influenza Pandemic (Piano nazionale di preparazione e risposta ad una pandemia influenzale)* of the Ministry of Health and the CCM-National Centre for Disease Prevention and Control dates back to 2008 and was drawn up according to the 2005 World Health Organisation (WHO) guidelines to respond promptly to the threat of pandemic influenza through the activation of actions aimed at improving coordination and measures for the prevention and control of viral spread. Also, even if outdated, the Pandemic Plan in Italy seems to have been ignored. Epidemiological expertise was not promptly activated, which led to the free circulation of the SARS-CoV-2 virus – first in Northern Italy and then in the rest of the Peninsula – in the first epidemic wave, with devastating consequences.

In Italy, where the National Healthcare System (NHS) responds to policies that vary according to regions, an inefficient separation of competences emerged between the various levels of government involved in the management of emergency and – consequently – the application of shared norms. Inconsistent management of the epidemic was certainly influenced by the layout of the national healthcare system, which provides for the administration and autonomous provision by the individual Regions of a set of functions, activities, and services. The Italian National Health Service organises its competences between State and Regions. According to the Italian Constitution, the right to health must be guaranteed by the Republic – which exercises its function via an elaborate system of public and private facilities – tasked with the protection of citizens' social rights and meant to prevent regional autonomy from becoming a source of local disparity (Equizi, 2020; Longo, 2020; Mandato, 2020).

Considering successive pandemic events, the Ministry of Health has recently edited the *National Strategic-Operational Plan for Influenza Pandemic Preparedness and Response (Piano strategico-operativo nazionale di preparazione e risposta a una pandemia influenzale)* (PanFlu 2021-2023), which was drafted based on WHO recommendations. The white paper aims to provide guidance on preparing for epidemic scenarios caused by influenza viruses. The Pandemic Plan thus defines the roles and responsibilities of the National Health Service in responding to a health emergency, providing tools for adequate local planning. Provisions aim to reduce the viral spread as much as possible to protect the health of health workers and personnel involved in the emergency; to reduce the impact of the epidemic on social and health facilities; and to ensure the maintenance of essential services and economic activities.

In this new organisational set-up, Regions (subsystems of the NHS) continue to exercise authority in the planning and organisation of activities linked to health protection (Scaccia, D'Orazi, 2020) – as well as establishing the criteria for funding Local Health Authorities (ASL) and the hospital sector – but are called upon to equip themselves with tools for prompt local intervention. The previous regional governance undoubtedly fell short in this regard. It was deficient and fragmented, and certainly ill-equipped to combat COVID-19.

In order to remedy these shortcomings and address these inefficiencies, a reform of the *Consolidated text of regional laws on health (Testo Unico delle Leggi Regionali in materia di sanità)* is currently being formulated, which should ensure the strengthening of territory-based medicine¹¹ and, consequently, implement proximity services and support for home care, in line with the investment and strengthening programmes of territorial networks envisaged on a national and European scale. Along these lines, special importance is given to the creation of *Hospitals and Community Homes (Ospedali e Case della Comunità)* – as envisaged by the guidelines of the health reorganisation governed by the *National Recovery and Resilience Plan (PNRR-Piano Nazionale di Ripresa e Resilienza)* in the context of the Next Generation EU –, i.e. facilities

¹¹ With the expression “territory-based medicine” are considered all those first-level health services and emergency intervention which aim to prevent the aggravation of the person's conditions and, at the same time, act as an alternative to hospitalization. Therefore, in order to be efficient, the medicine of the territorial services avoids the overload of the hospital structures, providing a first assistance service to patients discharged from health structures or with chronic diseases.

aimed (among other things) to provide outpatient, home-based and inpatient health and social care services at medium and low intensity and a reference point for the chronically ill, the management of which may be entrusted to general practitioners (Lombardy Region, 2021). In addition to this, the creation of local Operating Centres has been planned, with the function of coordinating home services with other health services via the support of digital medicine. A crucial role is also attributed to the strengthening of doctors' training, through the provision of post-graduate specialisation grants and the revision of the agreement that governs the relationship between the State and the Regions with general medicine professionals.

Finally, considering the experience gained with the advent of COVID-19, the current health reform – approved by the Lombardy Region on 30 November 2021 with Law no. 96 of the Regional Council, *Amendments to Title I and Title VII of Regional Law 30 December 2009, no. 33 (Modifiche al Titolo I e al Titolo VII della legge regionale 30 dicembre 2009, n. 33 – Testo unico delle leggi regionali in materia di sanità)* – provides guidelines for the preparation of a regional pandemic plan (to be implemented every five years and updated according to epidemiological data, in line with the same national plan) and the establishment of the Centre for the Prevention and Control of Infectious Diseases, a public body with organisational autonomy that will deal (among other things) with the management of epidemic emergencies, scientific research and the development of new vaccines. (Lombardy Region, 2021).

The Lombardy Region played a key role in managing the COVID-19 emergency: among other things, it set up the Crisis Unit (consisting of 154 members) and brought together appropriate expertise to provide operational support to central purchasing bodies, the Technical-Scientific Committee of Universities, and the Task Force. On 12 March 2020 – with the Decree of the Secretary General number 3287/2020, Annex A – the Region formalised the establishment of a crisis unit, which was already operational in the first days of the emergency, and of the Lombardy COVID-19 task force, i.e., a smaller organisation within the Welfare General Directorate. The Regional Welfare Directorate General, which is responsible for both the task force and the technical-scientific committee, played a key role in the management of the Coronavirus emergency, as did the Territory and Civil Protection Directorate, which was very involved in coordinating actions in the context of the health crisis. These two centres of administrative responsibility report to the political leadership, such as the President of the Region – who, moreover, plays the role of implementing body appointed by the Civil Protection – and the Councillors for Civil Protection and Welfare.

The Lombardy crisis unit, in addition to the members of the Administration, involved in the membership employees of companies in which the Region has an interest, such as Aria S.p.A. (which, among its tasks, performs the role of a single purchasing centre), and subjects related to the health sector. In this context, some health companies and scientific research institutes took part in the crisis unit, such as – for example – the Health Protection Agency of the metropolitan city of Milan, the Sacco hospital, and the Ca' Granda scientific research institute. The Lombardy Technical and Scientific Committee (STC) was set up on 7 April 2020 by the Directorate-General for Welfare; it is a relatively small body made up exclusively of 26 individuals with high medical and scientific expertise. At a local level, on the initiative of the Bergamo Health Protection Agency, the Council of Mayors' Representatives and the Bergamo Community Foundation, the local Units for Social Emergency (UTES) were set up with the aim of responding adequately to people's needs, especially the most fragile and most exposed to the risks connected with the emergency caused by COVID-19. The UTES aim to strengthen the resilience of the local social assistance system.

In municipalities across Lombardy there was a strong and vital component: volunteers, who delivered masks, oxygen, medicines, food among other things. This is a virtuous experience based on a widespread sense of solidarity. Unfortunately, the great response to the emergency was not maintained after the most critical phase.

As far as urban policy is concerned, under the misguided belief that the lowering of the curve of contagion at the end of April-May 2020 marked a final exit from the pandemic, the Municipality of Bergamo continued to set up cooperation networks between the institutions that govern the regional territory. By leveraging the local political-economic dimension, the Table for Development and Competitiveness was reactivated – in agreement with the Bergamo Chamber of Commerce – as a privileged place for cooperation, to build the conditions for gaining access to funding previously obtained for the PNRR. However, several instances of failed cooperation have been reported and are probably due to structural inadequacies in the institutional setup.

Emergency disrupted the usual collaboration between institutions operating locally. The only vital link was between municipal administrations and major political bodies: the Region and the national government. A number of institutional exchanges were in fact reinforced in time of pandemic. Other institutional ties,

however, continued to be unsatisfactory, such as those between municipalities and local health authorities. In particular, in Bergamo, lack of communication and coordination with the management at the Pope John XXIII hospital became evident. The malfunctioning link between healthcare and territory also depended on a shortage of general practitioners and lack of coordination at local health level. The lack of an adequate or minimally sufficient local healthcare service led to unbearable pressures on hospitals. What emerged from the epidemic was that healthcare service in Lombardy responded by appealing to the healthcare system component that it seemed best equipped to cope: hospitals. Hospital workers faced titanic efforts and acted with miraculous swiftness, as doctors found themselves in dire conditions. Despite their efforts, major shortcomings in the organisation of a mixed public-private healthcare system. Even though both are publicly funded facilities, their services and management are very different, especially in times of emergency. Even worse was the state of health care provided at local level by general practitioners in Lombardy. The contractual status of doctors as “self-employed” severely restricts the government’s reach in ordering compulsory service during emergencies. This led to doctors failing to cooperate or cooperating in very limited forms.

However, as regards healthcare, interaction between governance components was strong: the strategic management of Local Social and Healthcare Agencies (Aziende Socio Sanitarie Territoriali – ASST) in Lombardy coordinated countless organisational meetings, constantly informing on procedural steps to be taken and operating criteria. In general, with the pandemic, the interaction within individual healthcare facilities improved considerably, even if it is currently going through a phase of exhaustion. The policies related to the pandemic greatly influenced cooperation between the different stakeholders, leading to greater sharing in procedures and actions to be undertaken.

As a matter of fact, opportunities for cooperation were frequent and relevant during the pandemic period, also among private industrial companies. During the emergency period, particularly in the first epidemic wave, businesses in the area showed a strong degree of cooperation and interaction with Confindustria, which was able to issue ad-hoc information on actions to be taken. Constant and direct contact with local and national political bodies was effectively maintained. Beyond collecting national protocols on health protection and translating them into daily work practices, such companies shared discussion on actions to be undertaken within the entrepreneurial system and the production sector.

As far as local mobility is concerned, the level of interaction between actors directly or indirectly related to or involved in public transport responsibility has increased, as has the possibility of collaboration. Concerted action was carried out at various institutional levels to adopt safety measures on public transport, with national and regional provisions for limiting vehicle capacity. With regard to private mobility, local institutions promoted changes in the definition of accessibility and parking spaces, mainly linked to the changing conditions of the pandemic. Adaptation strategies promptly deployed especially in Milan and Bergamo led to a wide range of project applications. Getting private transport companies to operate effectively within a short time frame remains problematic and needs addressing.

4.3 Financial impacts

The socio-economic outcomes of the epidemic have been diverse and fragmentary. Interviews indicate that containment measures undoubtedly mitigated the severity of the health emergency, although they failed to put an end to it. What data indicate is that the pressure exerted by certain economic and social groups on the issue of restraint led to benefits and, in some cases, to conditions of greater opportunity.

The financial instruments allocated to municipalities by the central Government were extraordinary funds. In particular, the State allocated and disbursed 40 million euros aimed at financing support interventions of an economic and social nature in favour of the municipalities in the so-called ‘red zones’, which were severely affected by the COVID-19 health emergency. In addition, Decree-Law No. 34 of 2020 (‘Relaunch Decree’) established a Fund for the exercise of the key functions of local authorities, in order to ensure that municipalities, provinces and metropolitan cities have the resources needed to carry out crucial functions after the possible shortage of local revenues triggered by the COVID-19 epidemiological emergency.

In an initial phase, financial measures provided at a ministerial level aimed at supporting commercial activities, via funds handed out to compensate for lost revenues. Subsequently, the funds received were oriented to support various public activities and micro-enterprises for the installation of adaptation infra facilities, such as internet connection and advanced software.

National compensation policies for mobility covered part of the extra costs and lost revenue. The small gain in terms of fares was significant because of the nearly complete shutdown of the local transport sector: the

measures provided by the government – considered insufficient by national public transport associations – prevented negative budgets.

From a financial point of view – as far as the healthcare sector is concerned – even before the funds allocated by the European Union, the Lombardy Region provided extraordinary financial support measures for recruiting doctors and health personnel. To date, however, doctors, either hospital doctors or local GPs, remain few. A general overhaul of training programmes is called for.

A significant feature is the PNRR-National Recovery and Resilience Plan (implementing Next Generation EU), which was drafted by the Italian government with the aim of supporting fair, green and digital transition projects with substantial resources available to local authorities, tasked with policy implementation. The National Recovery and Resilience Plan (PNRR) is organised into six areas of intervention and focused on three priorities, namely: digitalisation and innovation, ecological transition, and social inclusion. The PNRR marks an opportunity to Italy with a view to green and digital transition, through public and private investments aimed at giving the country an economic model of greater environmental and social sustainability.

Among the primary measures included in the National Recovery and Resilience Plan sent by the Italian Government to the European Union there are some strategic projects for the Municipality of Bergamo: the recovery and revitalisation of an intermodal hub (in the Porta Sud freight terminal area and the bus line that will connect Bergamo to Dalmine and Verdello). The financing of the Bus Rapid Transit (BRT) system is meant as part of a wider project for an overhaul of transport, to set up a connection with electric buses and a fast lane between the centre of Bergamo, Kilometro Rosso and the Dalmine university campus. As parts of a policy of urban and local regeneration, such projects aim to strengthen and integrate a system of private and public welfare services, to revitalise obsolete building heritage for social housing, a network of public spaces which promote local relations, ensuring relationality and resilience.

As far as the healthcare system is concerned the issue is quite clear: over the years there has been a progressive curtailment of hospital funding, which the Lombardy health reform is currently attempting to remedy by setting out general healthcare priorities: chronicity, local medicine, general and non-specialist hospitals.

5. Future policy directions

5.1 General recommendations

Public Administration:

Interviews with local administrators revealed that many of the policies implemented to deal with the pandemic are at a supra-municipal level; this local level also makes it possible to support the activities of the smallest municipalities with minimal staffing levels that do not allow them to cope with the volume and complexity associated with local governance. Many issues and questions (such as, for example, transport, roads, health, hydrogeological risk) should be addressed by provincial or regional bodies, which should consider the distinctive features of local areas by activating aggregating facilities at inter-municipal level; for mountain areas, this action is based on the strengthening of the functions of the Mountain Communities already established. The effectiveness of provinces is still heavily curtailed, due to Law No. 56 of 2014, which depowered their institutional relevance. In this context, dialogue between the Region and the Municipalities takes on importance, which should be pursued more regularly via the intermediate facilities mentioned above.

A number of policies implemented by municipal administrations during the health emergency will not be maintained in the future, even though they lasted quite a long time. These include, for example, the enhancement of cycle paths, the free use of public land or the waiving of tourist tax. However, other measures deriving from governance experience and greater institutional cooperation will form the basis for a wide range of project compared to the pre-pandemic period (mention is made, in particular, of the presence of a very active volunteer work, also for the reorganisation of public spaces).

Healthcare system:

As far as healthcare is concerned, a recent Lombardy Regional Law no. 23 provides for local operational centres to coordinate homecare services and stakeholders involved in healthcare. In addition, this law mentions the presence of intermediate facilities between the patient's home and the hospital, which are crucial to implement a governance and precisely the *Case di Comunità*, local facilities offering primary care whose success will depend on the organisational network set up with general practitioners, specialists, nurses. Telemedicine, as a care practice aimed primarily at chronic patients, will play a key role.

The proactive policies implemented in the healthcare sector are not likely to remain in place in the future, as standard procedures based on previous models are already reasserting themselves. Hospital respondents claim that this is due to a widespread, entrenched bureaucratic mindset and a rigid legal framework, which entails that compliance trumps the goal of collective welfare. The most striking case is represented by current legislation on personal privacy, which does not allow hospital doctors to quickly access the patient's medical record and – as a consequence – prevents them from monitoring his or her health status quickly.

Businesses:

With reference to private businesses and companies, a return to territory and a renewed cooperation with local authorities, especially universities, were emphasised during interviews. The initiatives that were put forward in the first post-emergency periods jointly involved productive enterprises (especially in the Seriana Valley, in the province of Bergamo) and the University of Bergamo. This cooperation made it possible to regain a sense of belonging to local areas and started new agreements aimed at promoting curricular and training internships.

Mobility sector:

In the mobility sector, proactive policies are expected to be implemented in the future, with a view to environmental transition. The 'Back to Better Mobility' campaign – taken up at European level – proposes a new approach to healthy lifestyles for boosting local economies. For the time being, on a local scale, policies are mainly focused on technological innovation (e.g., on the issue of vehicle disinfection and on-board equipment) linked to Next Generation EU and on a strategic design based on sustainable mobility, in a combination of public transport, sharing mobility and walking and cycling.

5.2 Regional recommendations

From the conducted analysis and stakeholder interviews emerge a set of recommendations to avoid the vulnerability manifested by Lombardy in the face of the pandemic and achieve a more sustainable urban model. Among the most urgent interventions are those related to the health and elderly care systems. The former needs to be reformed to make up for the lack of territorial care of physicians and health facilities, while the latter needs to be rethought with a view to care for the elderly that is more capillary and distributed throughout the territory.

What is needed is a legislative and operational reconversion of the social and emergency health care sector that considers the territorial difference, namely the conurbation of the Po Valley and the rural mountainous areas, which are poorly equipped with health care infrastructure. This situation has arisen due to the regional health policies of recent decades, which have been aimed at centralizing health care by building large urban hospitals capable of achieving excellence in certain specialty areas at the expense, however, of the distribution and number of territorial hospitals, which-in the event of a pandemic-are the ones capable of delivering emergency services in a more widespread manner. In addition, it is recommended that the entire Regional Health System undergo unbureaucratization and a review of the process within the procedures for purchasing goods and providing public hospital services; finally, it is recommended that there should be greater governance between health care and local authorities for rapid and shared decision-making. In fact, these shortcomings necessitated, during the epidemic, the autonomous intervention and individual initiative of many local administrators who acted by making up for the lack of regional regulations and the absence of an adequate governance system. Also, assuming importance is the climate of cooperation that emerged during the pandemic from citizens and volunteers, who cooperated with public, religious and welfare institutions in the area and nurtured cohesion and awareness of acting in solidarity while also combating the poverty and destitution situations that subsequently emerged.

Finally, from a financial point of view, it is desirable to strengthen collective mobility and public-private partnership for the construction or management of innovative infrastructure in the territory. In fact, it is necessary to endow mountain territories not only with services in the health sphere, but also to extend this endowment to the sphere of education and mobility in order to promote more widespread living. In fact, the pandemic has shown that innovative technologies favor a sustainable living model-allowing people to work in the city and live in the mountains-that while fighting urbanism allows people to live more in touch with nature.

Policy recommendations

- **Protection of health value:** through the development at the national level (specifically by the Ministry of Health) of an updated Pandemic Plan that can be implemented immediately.
- **Change in hospital and territorial health care organization at the legislative and organizational levels:** On the first, there is a need for reflection on the legislative relationship between the Ministry of Health and the Regions on epidemic issues. At present, the Ministry of Health translates international health policy and provides the direction to the Regions for its territorial organization; the Regions, in turn, accept these indications and implement them operationally through the Territorial Health Agencies (ATS) and the Territorial Systems (ASST) by establishing which and how many beds (which are calculated on the resident population) must be made available in the provincial territory according to the alert levels. However, it should be emphasized that the regions, enjoying autonomy, may disregard these indications or implement them in a mitigated way since sometimes the ministerial indications on the measures to be implemented are generic, sometimes contradictory to the measures adopted. This, in emergency situations, may collide with the national collective good; moreover, the epidemic experience has shown the need to revise hospital bureaucratic procedures and regulations both in the area of purchasing procedures for goods and services and in those related to the regulation of people's privacy. On the second point, that is, on the organizational level, it should be kept in mind that it is impossible to make the hospital emergency room play a role of first aid that is lacking in the territory. In fact, and unfortunately, while hospitals have profoundly changed in their ability to respond in the past two years, territorial medicine is in an increasingly critical condition; with this in mind, we suggest: i) the inclusion of general practitioners in the healthcare system; ii) the increase in their number and the replacement of retiring physicians; iii) their specialized university training; and iv) the organization of an integrated and systemic healthcare system of the territory with the hospital through the structures already provided for in the Lombardy Healthcare Reform.

- **Provide correct information through the development of clear messages:** in order to avoid exposure to contradictory information, it is necessary for institutions to develop precise warnings and for experts called upon to comment publicly on them to do so limited to their area of expertise; in fact, there were many contradictory reports provided during the emergency period that fueled insecurity and irrational protest.

5.3 Governance recommendation

Institutional, public administration, health, mobility, and non-governmental business stakeholders testified that during the pandemic period, especially the first wave, a spontaneous collaborative social climate was established that nurtured cohesion and awareness of the importance of governance. Specifically:

- **Public Administration:** recommendation is to continue in the collaborative and sharing atmosphere practiced during the pandemic especially between the region and the government. Mayors say that such institutional cohesion has allowed for a better understanding of the policies to be implemented to the point of complete harmony with local institutions and their fellow citizens.
- **Healthcare:** the just-concluded positive experience of renewed, more collaborative, and dialogic external governance (between the region and hospitals) and internal governance (between managers and employees) that simplifies and produces cohesion between facilities and makes the roles of managers and staff as a whole more functional is emphasized. The recommendation is to make the degree of governance achieved permanent by implementing a review of the structural organization, acting for more flexible scheduling, and investing in quality training for future medical staff in the territory. In addition, it is necessary to consolidate governance, which in the pandemic period has demonstrated its shortcomings. This is to be achieved through: i) a revision of the relationship between civil political institutions and health care facilities; ii) greater involvement of mayors in the choices of organizing health services. The goal is for the hospital sector not to consider itself divorced from that provided at the territorial level.
- **Mobility:** during the pandemic there was a lack of governance and legislative apparatus between public transport and green mobility; this resulted in discrepancies and lack of coordination of interventions in relation to the real needs of inhabitants. It is recommended to overcome the one-size-fits-all approach proposed by the region by experimenting with more flexible forms of organization of mobility systems.
- **Private enterprises:** associations, institutions and sectoral bodies are recommended to equip themselves with facilitator figures in business relations to achieve new forms of information and experience transfer.

5.4 Territorial recommendations

The pandemic has shown that our urban-centric living is neither the only possible nor the best, and it has highlighted that the functional dependence of mountain territories on the plains is a crisis factor. In fact, they recorded the highest contagiousness and mortality figures because they were dependent on hospital health care located far away in lowland urban areas.

- **Facilitate the implementation of an integrated territorial system and policies related to smart working:** in which inhabitants, aided by the digital systems that have been evaluated in the meantime, could experience the place of residence and the place of work being distant from each other but reachable by occasional commuting and digital connections. This would improve the pollution situation, energy saving and the quality of life of the inhabitants who could have more time available for family living, sports activities and contact with nature, taken away from commuting time.
- **Legislative reformulation of a “metro-mountain” system with connecting structures (such as mountain communities) based on the specificities of each territory:** regulatory reforms—which are, moreover, in the process of being implemented—are needed that accommodate the peculiarities and values of inland and mountainous areas; with this in mind, a specific law on “mountain municipalities” that are lacking in some welfare services but rich in environmental values and that can show themselves to be alternative territories to the urbanized ones of the plains.
- **Profound rethinking of teaching and a review of the organization of the education and training system:** greater coordination in the conduct of activities and hourly diversification are recommended

in order to encourage forms of mobility and accessibility to education. The activation of initiative-taking system policies, integrating the mobility aspects of teachers, students and other staff with expanded public transportation offerings and networked reorganization in soft mobility, is recommended.

5.5 Financial recommendations

- **Use of funds for the upgrading and implementation of new public mobility routes and upgrading of IT networks:** public-private integration is suggested to equip mountain territories with the necessary infrastructure to enhance its potential and complementarity with urbanized territories. One is recommended to co-partnership with investors and private entities in the construction, maintenance, or management of physical and digital infrastructure to raise the value of the networked territories in a win-win logic.
- **Reconversion of hospitals to meet emergency situations:** it is recommended to intensify the number of semi-intensive care beds and review hospital services provided by public and private hospitals to achieve harmonized health care that can cope with future emergency periods.

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