

**SUSTAINABLE
DEVELOPMENT
GOALS**

1 NO
POVERTY



2 ZERO
HUNGER



3 GOOD HEALTH
AND WELL-BEING



4 QUALITY
EDUCATION



5 GENDER
EQUALITY



6 CLEAN WATER
AND SANITATION



7 AFFORDABLE AND
CLEAN ENERGY



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



10 REDUCED
INEQUALITIES



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13 CLIMATE
ACTION



14 LIFE
BELOW WATER



15 LIFE
ON LAND



16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS



**Lombardy
Report
2019
Summary**



Lombardy Report 2019 Summary

Preface by Gian Carlo Blangiardo

Presentation by di Leonida Miglio

Introduction by Armando De Crinito

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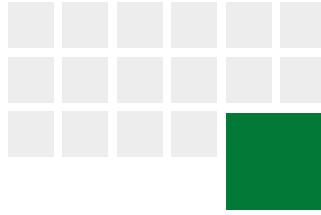
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Preface

More than thirty years ago, the Brundtland report meant a new shared concept of sustainable development. Since then, it was possible to acknowledge the existence of a strong and unknown connection between the necessity of fighting against poverty and inequalities among Countries, and the necessity of protection of the environmental balances and care for the planet's resources. Brundtland report was about taking responsibility and giving hope too, since it expressed the right of each generation to fulfil their needs, but it also bound them not to endanger the chance of the future ones to meet their exigencies.

The concept of sustainable development was not a find of the moment; on the contrary, it was an idea coming from far off. We find important traces of it ¹in the works of the United Nations Stockholm Conference at the beginning of the seventies (United Nations 1972); a period in which the controversy about the so-called *population bomb* (Ehrlich, 1968), about the *tragedy of the commons*, (Hardin, 1968) or about the *limits to growth* (Meadows, 1972) spread spirit and radicalized positions. All these polemics were constructed on the forecast models which read their demographic and economic data with a strong apocalyptic orientation of neo-Malthusian kind.

Sustainable development for someone was a utopia, while for others was an oxymoron. How could coexist *economic and technological growth* while being *environment friendly*? And yet against all odds, the concept established itself and the challenge that came with it was accepted from the international community that in the following decades took a path in the right direction, with many obstacles but also some milestones.

One of these milestones was the United Nations Conference on Environment and Development, also known as The Earth Summit, which gave rise to important international

¹ «To defend and improve the human environment for present and future generations has become an imperative goal for mankind-a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of worldwide economic and social development» Article 6 Declaration of the United Nations Conference on the Human Environment (United Nations 1972).

agreements, and Agenda 21. In Agenda 21 the role of data and statistic information for the definitions of the Sustainable Development Goals, their monitoring and the evaluation of their achievement, is central and treated in depth and in a systematic way as never before. Data and statistics are indeed included among means of implementation of the Agenda, as bases of information for the decisions with two top priorities: fill the gap concerning data among the Countries and improve the availability of information.

Equally clearly, the Agenda 21 identified specific activity lines for statistics: elaboration of sustainable development markers and promotion of their use globally, improvement of data, collection and data processing, improvement of assessment methods and analysis, creation of a shared statistic reference framework and strengthening of information capabilities that bring out the traditional Knowledges, definition of method and standard, cooperation and capacity building, etc.

These experiences now far away in time, represent the crucial periods of an itinerary of progressive mobilisations of the international statistic community in support of policies and actions concerning, flat-out, Earth's future and therefore our future. Data and indicators are requested by the official statistic in order to decide the optimal routes to take up and to evaluate the progress towards the identified goals.

Rapporto Lombardia is a good answer to this request. It's important to stress that when we realised that decision about sustainability strategies needed a basis of reliable updated, comparable and accessible data, we also realised that the global size of information must go hand in hand with the local one. That is the reason why the modernisation and the strengthening of the statistic systems must be pursued together, to a global, national and local level as it is well witnessed by this Report related to the Lombard context.

Since the first proposals to monitor the sustainable development routes we went very far, and with the course begun with the Millennium Goals and went on with the 17SDGs and their 169 Targets, the role of statistical infrastructure and of data production has been more and more important. The 2030 Agenda states in a very clear way:

[48] Indicators are being developed to assist this work. Quality, accessible, timely and reliable disaggregated data will be needed to help with the measurement of progress and to ensure that no one is left behind. Such data is key to decision-making. Data and information from existing reporting mechanisms should be used where possible. We agree to intensify our efforts to strengthen statistical capacities in developing Countries, particularly African Countries, least developed Countries, landlocked developing Countries, small island developing States and middle-income Countries. We are committed to developing broader measures of progress to complement gross domestic product (GDP).

ISTAT has for some time been actively involved in this great enterprise, both internationally speaking, with the United Nation Statistical Division, and technical cooperation in the capacity building activity of other national statistical system and within the framework of the Statistical National System [Sistan]. As all the National Statistical Institutes, ISTAT

plays traditionally and institutionally a crucial role as referent for the production of quality statistical data, nationally and sub nationally speaking. ISTAT is represented as the main protagonist for the realisation of specific indicator system for the SDGs and the realisation of a platform for sharing and spreading statistical information devoted to or useful for the monitoring. Starting from December 2016 many indicators for Italy were available every six months on an information platform devoted to SDGs on the ISTAT website. At present on the platform 273 measures that respond to and often integrate the informative request emerging from the majority of the indicators proposed by UN.

In this perspective, *Rapporto Lombardia* integrates and continues towards a more and more accurate and specific territorial detail, the task to measure the state of sustainable development objectives through the enhancement of statistical information available at regional level.

Its more immediate and clear contribution is unquestionably represented by the data that allow to offer an updated detailed and clever framework of the region created to organize the political activities with efficacy. The commitment in reading the phenomena through the construction of indicators more qualitatively adequate to adjust the 17 Goals to the sub regional scale deserves a special appreciation. This activity, certainly guided by the real availability of data, witnesses an admirable search for a territorial scale suitable to understand even locally the phenomena of our time.

This *Report* is an excellent example of integration of statistical information for the sustainable development and it is a good practice that we hope many other territories in Italy will adopt.

Gian Carlo Blangiardo
ISTAT President

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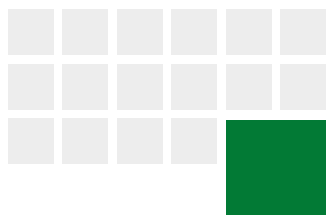
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Presentation

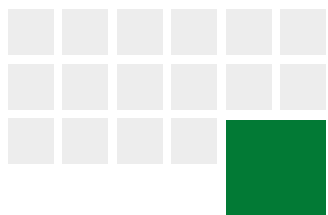
When in 2017 we published the first edition of *Rapporto Lombardia* which followed the Sustainable Development Goals of the 2030 Agenda, we were sure to open the way to a new method of analysing the Lombard reality. A new method which allowed a more structural outline of the regional position compared to OECD Countries. And so it was. The other Italian regions and many national states progressively lined up on this route. In the 2018 edition we have also updated and improved the pages of comments, Goal by Goal, to complete a partial view that the lack of available comparable indicators left open. Therefore, we began to consider some indicators that returned a greater richness and a sub-regional detail of the analysis, above all with the indication of an evolution of the territories over the years. Though these indicators didn't allow a direct comparison with the OECD Countries. This method was developed to a greater extent in the 2019 edition which wants to supply a useful tool for the regional planning of Lombardy, also including a targeted intervention on those territories with particular weaknesses.

Certainly, running carefully through the Report, both the introduction that wants to give – with aggregate and paradigmatic indicators – the Italian and Lombard position compared to the OECD Countries and the comparative mapping of Lombard territories, and the chapters of analysis and comment for each SDGs, one has the clear impression to better understand the Lombard reality with some surprises, too. A reading highly recommended for anyone, public or private, that would like to speak and operate in our reality. Beyond the analysis of data and of comments, each chapter summarizes the policies – that is to say concrete measures – that *Regione Lombardia* implemented and this part is the one that suggested us a new way to use the Goals that we hope to develop concretely in 2020 Edition. In fact, you just have to read a chapter of this Report and question how the Goal, particularly its Target, can be used as an instrument of integration of the public policies on different levels, from

the local one to the supranational, defining the actions and responsibilities of each level. In this way, planning different and experimental measures it is possible to overcome a dispute about the competence of the subjects and to put the policies at the centre of the discussion, but concretely aimed at the purpose of the Sustainable Development Goals.

Also, the 2019 edition is the result of an accurate and hard work. My especial thanks to Professor Enrico Giovannini, member of our Technical-Scientific Committee, who helped us in the preparation and development of the Report, to the Scientific Director of PoliS-Lombardia, Dr Armando De Crinito, who coordinated the work; and last but not least to our young recipients of scholarship, who, with enthusiasm and impressive ability to work, gave substance and form to what we present today. Thanks to everybody.

Leonida Miglio
PoliS-Lombardia Presidents



Introduction

The Secretary-General of the United Nations, during SDG Summit held on 24 and 25 September 2019, warned about risks that earth and mankind will run in the next few years. António Guterres called for a joint effort of all countries to achieve the Sustainable Development Goals; in particular, he suggested three ways to follow

– a global action, a local action and a people action – to deeply change the economic model of development responsible for many problems (disparity, social exclusion etc.) that end up touching our region. As pointed out by our Prime Minister, Giuseppe Conte, Italy has already achieved the target of emission reduction fixed for 2020 and he wants to include the protection of environment, of biodiversity and sustainable development among the fundamental principles of the Italian Constitution. An important change that could urge the policy-makers to make bold decisions mainly in favour of future generations. Moreover, *Rapporto Lombardia*, now in its third edition, gives evidence of the numerous positive aspects (waste and raw material recycling and energy efficiency) that confirm Lombardy as one of the most active players to fight climate change and for sustainability.

Three years ago, we created *Rapporto Lombardia* with the ambition to write a report useful to the regional policy maker, being aware that the interpretation given by 2030 Agenda was essential to reconsider the regional policies, *Regione Lombardia* is a wise interlocutor that since the beginning of this legislature has aimed at the sustainability considering it as one of the priorities of its mandate and signing a protocol with the social partners on the sustainable development. We hope that in the future *Rapporto Lombardia* will be an instrument to help the strategic programming of *Regione Lombardia*, to the important choices for citizens and for the business of the territory in order to achieve many of the Targets agreed worldwide for the year 2030.

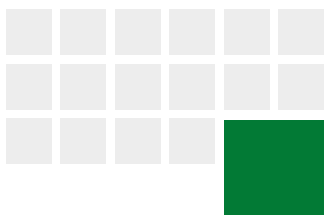
Rapporto Lombardia is structured in 17 chapters: an opening chapter that is a positioning one, and sixteen thematic chapters about the Goals of the 2030 Agenda with the excep-

tion of Goal 14 *Life underwater*. The initial positioning analysis gives the reader an intuitive picture of the situation in Lombardy compared to other European Countries on some indicators of sustainable development. The comparison with other European Countries, on the average best-performing than Italy, immediately points out how the route towards sustainability goals requires to our region an integrated action in different environments, to try hopefully to catch up with those Countries that in Europe are doing better than the others as for the Goals of 2030 Agenda. The creation of a synthetic index for each Goal allows us to appreciate immediately the good results, and, on the contrary, where Lombardy needs to make improvements and keep up with the best Europeans results.

It is noticeable how complex and integrated are the dimensions of sustainability by glancing through the thematic chapters that explain, with many data, the many shades that appear from a cross-reading of phenomena only seemingly far apart. For instance, let us take into account the detailed description of relative poverty dimension offered in Goal 1 of *Rapporto Lombardia*. It is important to notice that it is not decreased but, on the contrary, it increases during the years, even in correspondence with positive data on employment, almost as if to say that the employment status does not guarantee a route out of social marginalisation. The demographic theme concerns different fields: health, work, education and it could provide food for thought for the tout court sustainability in Lombardy. What impresses in 2030 Agenda is mainly the integrated and transversal light, as reminded by the United Nations secretary «Agenda and the Sustainable Development Goals and Targets, including the means of implementation are universal, indivisible and interlinked». *Rapporto Lombardia* aims to provide an interpretation of Lombardy through the analysis of data sources, not just of the official statistic, and it requires a little bit of time to develop themes on sustainability.

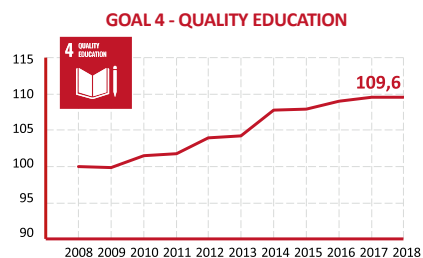
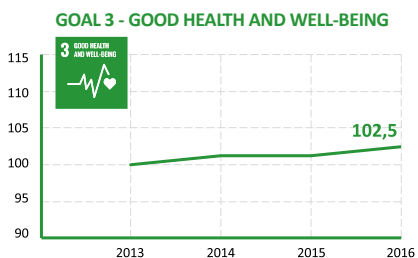
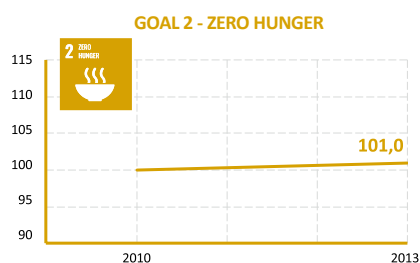
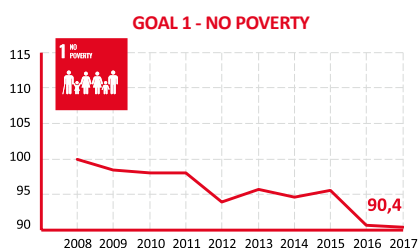
There are many improvements in this edition too. At first, we decided to create an editorial product that looks like a book, trying to increase the space to analyse data and choosing subjects that are more important for the territory. Not an all-inclusive report but a book more and more made to measure for Lombardy. At the same time consistently with mission of PoliS-Lombardia, we tried to enhance the role of public policies, knowing that, for space issues too, it is not always possible to explain the policies adopted, even less the effects produced by them: a goal for the next *Rapporto Lombardia* editions.

Armando De Crinito
Scientific Director PoliS-Lombardia

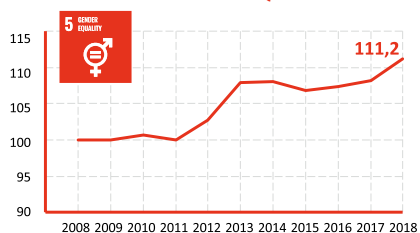


Lombardy performance

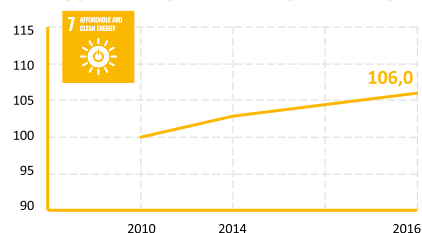
PoliS-Lombardia has developed the indicators to measure the evolution of Lombardy in relation to the objectives of the 2030 Agenda. Within a decade, the region has improved in six goals, and in some cases the progress is very significant. However, it gets considerably worse in three goals, while for five objectives the situation is nevertheless unchanged. Due to unavailability of data, not all the goals cover the 10-year analysis period.



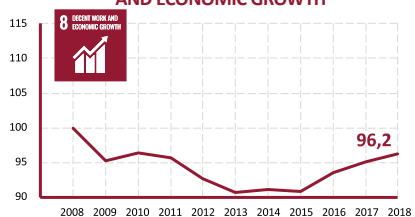
GOAL 5 - GENDER EQUALITY



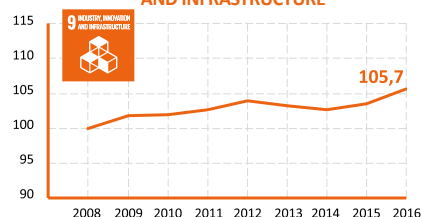
GOAL 7 - AFFORDABLE AND CLEAN ENERGY



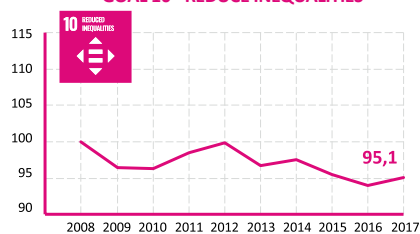
GOAL 8 - DECENT WORK AND ECONOMIC GROWTH



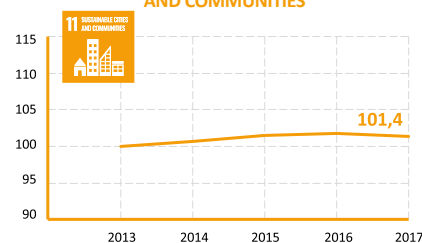
GOAL 9 - INDUSTRY, INNOVATION AND INFRASTRUCTURE



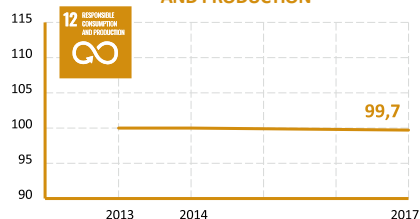
GOAL 10 - REDUCE INEQUALITIES



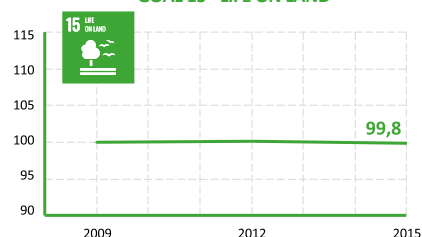
GOAL 11 - SUSTAINABLE CITIES AND COMMUNITIES



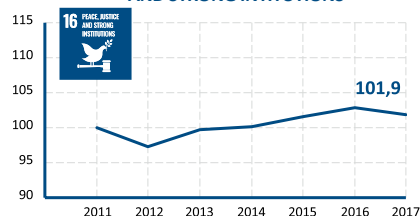
GOAL 12 - RESPONSIBLE CONSUMPTION AND PRODUCTION



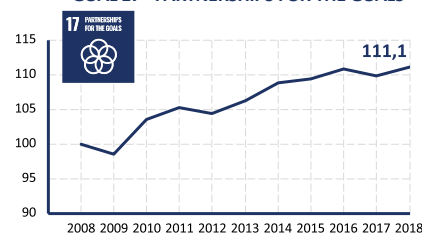
GOAL 15 - LIFE ON LAND

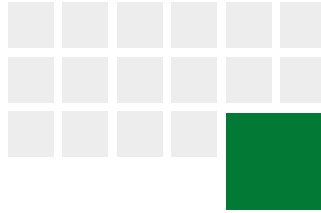


GOAL 16 - PEACE, JUSTICE AND STRONG INSTITUTIONS



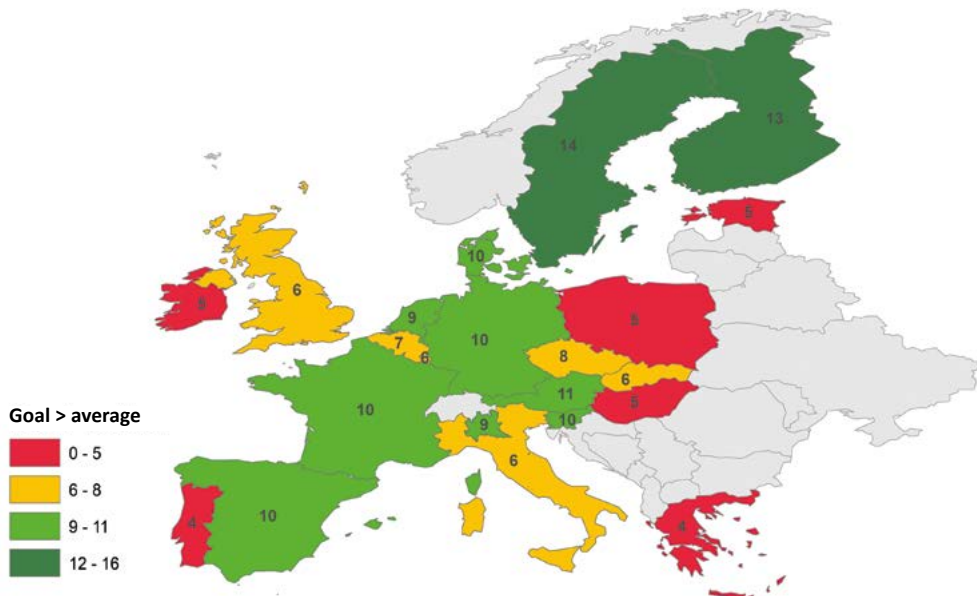
GOAL 17 - PARTNERSHIPS FOR THE GOALS





Positioning of Lombardy

According to the Sustainable Development Goals proposed by 2030 Agenda Lombardy has a good ranking on the European scene. The region has recorded, along with The Netherlands, for nine goals higher values than the corresponding median values of the 21 EU Countries members of the OECD. Denmark, France, Germany, Slovenia and Spain have 10 Goals while Austria 11. Sweden and Finland get the best place setting with values above average in 14 and 13 respectively. On the contrary Italy gets 6 together with United Kingdom, Luxembourg and Slovakia.





The UN defined overcoming poverty as the first Goal of the sustainable development (SDGs) to be achieved by 2030. Its centrality is traceable in the programmed lines of *Regione Lombardia* where the latest data show that in 2017 more than 200 thousand Lombard families are in a state of absolute poverty. These families have expenses for consumption lower than the one necessary to maintain an acceptable standard of living based on the cost of the home area. From 2014 to 2017 the incidence of absolute poverty in Lombard families grew from 3.0% to 4.9%.

By varying some family characteristics, the exposure to poverty may change: people who live alone are slightly more exposed to poverty compared to those who live in pairs; it is observed that in larger families the probability to be in absolute poverty increases. What makes the difference is in particular the presence of minors: among the families with at least an underage child the percentage of poverty is doubled compared to the totality of families. Citizenship strongly influences the exposure to family poverty: in Lombardy the families consisting of Italians only have an incidence of poverty of 2.9%, in the families consisting of mixed citizenship it grows to 20% and in those consisting of foreign citizenship only reaches 22.9%.

Considering the concept of social exclusion, it appears that in 2017 in Lombardy, 13.6% of residents are at risk of relative poverty, 6.4% are in conditions of severe material deprivation and 7.0% live in low labour-intensive families. Overall in Lombardy almost a person out of five (19.7% of residents) lives in conditions of relative poverty, a lower figure than the national average (28.9%), but it is constantly growing.

A close analysis of the demographic characteristics allowed to raise interesting considerations. Women are much more exposed to the risk of social marginalisation than men both in Lombardy and in Italy: 20.9% against 18,4% respectively. Even more noticeable are the generational differences: old people seem to be less exposed to the risk of relative poverty and

of social marginalisation, while it is alarming that, in our region, minors and adults between 50 and 64 years of age are more at risk of poverty (with an incidence of the phenomenon of 22 and 22.3% respectively).

With reference to the policies, 15 months' experience of REI *Reddito di Inclusione* (Income for Social Inclusion) ended in 2019 with the approval of an alternative measure called *Reddito di Cittadinanza* – RdC (Basic Income). Among the many goals of the new policy – guarantee of the right to work, to information, to education, to training and culture; fight against poverty, inequality and social marginalisation – only the fight to poverty is totally operating since the date of entry into force of this measure.

The particular structure of the equivalence scale used for the *Reddito di Cittadinanza* (basic income) disadvantages larger families that are mainly exposed to the risk of poverty; on the contrary, the approach taken by the *Fattore Famiglia Lombardo* (FFL) aims at aiding this kind of household. Moreover, *Regione Lombardia* approved the regional Plan of prevention and fight to poverty for the three-year period 2018-2020, maintaining the already consolidated measures with particular attention to the measures of the package *Reddito di Autonomia* (Independence Income). The programme envisages many measures designed to tackle the social inequalities, including the Vouchers for the independence of elderly and disabled people and Nurseries for Children and Family Bonus.

A last consideration concerns the most recent surveys on the theme of child poverty, “a widespread scourge affecting children's present and future all over the Country”. In this respect, a positive answer comes from the primacy of Lombardy among Italian regions regarding the intervention planning against the juvenile educational poverty. This is possible thanks to the financing from the Fund against the juvenile educational poverty confirmed by the 2018 Budget Law.



The 2030 Agenda recognises the tight interconnection between food security and sustainable agriculture, that is a production that is able to satisfy a constantly increasing food demand without however compromising the productive capacity of the ecosystem.

Obesity problem is increasing in the so called “economically advanced” Countries. The Body Mass Index (BMI) of adults over the age of 18 years highlights that more than 40% of the Lombardy population is overweight. Obesity concerns also people between the age of 6 and 17 years. 20% of the Lombard kids is overweight even if this time trend is decreasing [-4%].

The economic sustainability of the Lombard agriculture system – the weight of which keeps being quite important (11.29% in 2017) – is affected by the relation between the value and production costs in Lombardy that over the years has been quite variable. This is mainly due to critical issue related to the productivity of intermediate consumption in the agricultural sector. The analysis of the farms income in Lombardy shows a slight improvement since 2014.

In terms of environmental sustainability, the organic agricultural data show that at the end of 2017 in Lombardy the area under cultivation with the organic method - hectares in conversion included - amounted to 45,176 ha which is 4.7% of the Regional UAA (Utilized Agricultural Areas). The number of operators in the organic sector registered a considerable increase between 2008 and 2017 (+44.9%) higher than the National datum (+31.2%).

As regards the use of inputs, in 2017 in Lombardy 885,314 tons of fertilizer were distributed (18.8% of the National datum) with a decrease of 3% compared to 2016 in countertrend to the national +2.8%. In 2017 the use of plant protection products began to decrease compared to 2016 that is to say -13.8% in the last ten years.

A problem of ammonia emissions stands, mostly due to the load of manure (57.9% of the total emissions) and to the use of synthetic nitrogenous fertilisers.

The livestock farming is an important section of the regional agricultural economy that has a high coefficient of livestock density (Unità Bovino Adulto, UBA/ha) (Livestock Unit, LU/ha), equivalent to 2.79 units of livestock per hectare of usable agricultural area, against a national average of 0.68.

“The agro-environment-climate Payments” help to ensure the environmental sustainability of the agricultural activity and the preservation of biodiversity. The operations financed are various, sustaining the integrated agriculture and the conservation one, the rotation with fodder legumes, the grassing over, the maintenance of hedges, rows and buffer strips.

To contrast food poverty, *Regione Lombardia* helped to support a system of collection and distribution of food products, supporting all third sector organizations and entities (public or private) interested in “the collection and distribution of food products, promoting local actions, thus working on establishing a supportive attitude, fight to wastes, preservation and protection of the environment”. The recognition of the right to food is a consolidated action in *Regione Lombardia* and can be considered as a heritage of EXPO 2015.



Lombardy is the Italian region with the highest life expectancy at birth, that is 83.3 years in 2017, steadily increasing over the years (82.4 years in 2011). Mortality is decreasing; in 2012 it was of 236 dead people every 100,000 inhabitants between 30-69 years old while in 2016 decreased to 210, speaking of infant mortality (< 1-year-old) an increase of values over the time (from 2.5 dead every 1,000 born alive in 2017 to 2.7 in 2017) is pointed out. In 2016 tumours were among the main causes of death, with a standardized rate of 26.92 dead people every 10,000 inhabitants.

Even if the Lombard life expectancy at birth is the highest in Europe, people still live many years with severe or moderated limitations in daily activities. In 2017 the life expectancy without restrictions at the age of 65 is 10.9 years (on the rise compared to 2010: 10.4 years). More in general the life expectancy in good health at birth is 59.9 years (on the rise compared to 2010: 58.5 years).

However, the aging population shows some health problems, chronic disease constitutes a global sanitary emergency due to an increase in frequency or complexity. In Lombardy in 2017, 39.7% of the population suffers from at least a chronic disease while 19.2% suffers from multiple chronic diseases (data in line with the national ones). The number of chronically ill patients goes from 3,085,813 in 2012 to 3,380,228 in 2017 (+10%). Moreover, in the face of an increase in the elderly population we see a decrease in fertility; we go from 1.57 children per woman in 2010 to 1.39 in 2017. Birth rate follows the same trend as fertility, going from 10.2 children born every 1,000 inhabitants in 2010 to 7.5 children born in 2018.

As for the lifestyles, the prevalence of overweight and obese individuals over 18 years is lower than the national average (40.2% against 44.8% national average), and it is slightly decreasing compared to 2017. Even the data collected on sedentary lifestyle are decreased: 27.1% of Lombard people claim not to practise any sport compared to 35.5% of the national data. The percentage of the Lombard smokers is just below the national average (19.3% in

Lombardy, 19.4% in Italy). As regards the consumption of alcohol, the values of Lombardy are higher than the Italian average (18.6% of 14 years old people or older, with at least one risky behaviour such as alcohol consumption, while the national average is 16.7%).

Concerning health insurance, the influenza vaccine's coverage rate among people over the age of sixty-five, has decreased between 2012 and 2017 (from 48.2 vaccinated people every 1,000 inhabitants to 47.7). At paediatric level, the indicators relating to mandatory vaccinations, measles, polio and rubella, show from 2013 a decrease followed by an increase that happens in different years according to the considered indicator.

As for the healthcare system, the public health expenditure amounts to approximately 19 billion euros (2017), the per capita one is equal to 1,904 euro (value higher than the Italian average equivalent to 1,866 euros and 2.1% more than 2016). In 2016, the health expenditure of Lombard households amounted to 26.9% compared to the total health expenditure, in the whole of Italy is 24.2%. In Lombardy chronic diseases account for 70% of total health expenditure. As regards specifically the workforce professionals, in 2018, at regional level, we register 3.7 physicians every 1,000 inhabitants; for Italy as a whole the physicians density per capita is higher and it is equivalent to 4 physicians every 1,000 inhabitants. Always in 2018, there are 5.8 nurses and obstetricians and 0.8 dentists every 1,000 inhabitants, the same values in Italy are 5.8 and 0.8. No significant variations have occurred over the years.

In terms of public policies, the PRS – *Programma Regionale di Sviluppo* (Regional Programme of Development) of *Regione Lombardia* confirms the evolution of the public health system switching from “treatment” to “taking care”. Among the main paragraphs of PRS, which directly concern Goal 3 of the 2030 Agenda, we can find: prevention, taking on responsibility of citizens with chronic pathologies, containment of the waiting lists, maternal-child area, prevention of the damaging consumption and abuse of alcohol and psycho-active substances.

Future prospects will be exposed to four main issues:

- managing of the chronicity and managing of a customized, multi-sectoral and territorial healing processes and taking care of the patient through integrated socio-medical governance and partnership based in the territory which include the engagement of patients;
- lengthening of life expectancy and system sustainability;
- well-being of adolescents and youngster, expanding it to new born children too. These measures could have an effect on the social guidelines of health, with an integrated and inter-sectoral point of view on some investments available on potential future savings in terms of chronicity and means to support it.
- actions linked to environmental policies and guidelines of health.



During the school year 2018/2019, students in Lombardy are on the whole a little less than 1,2 million. Among these students one out of three is in primary school (about 430,000). In the Lombard education system, foreign students are 202,210, about 17% of students as a whole and they are mainly in the primary and junior high school. Disabled students are on the whole 40,740.

Comparing the level of schooling in 2018 with the one in 2008 the Lombard working population shows a general improvement in all sections and in particular as regards the total number of graduates (increased of 38%). More specifically, students enrolled in a university course in Lombardy are more than 270,000, about 16% of the total in Italy.

Moreover, the dropout rate shows a marked increase over time, though still with a higher percentage compared to the European average. In 2018 the dropout rate is set at around 12%, a value much lower than the national average value.

Lombard students' results of Invalsi tests are better than the national average in all subjects and in all school classes. The gap is wider among students of higher educational institutions. As for the primary school you can see a greater territorial uniformity of results.

The regional system *leFP – Istruzione e Formazione Professionale* (Professional Education and Training) guarantees to the young people the possibility of following a training course aimed at obtaining professional skills useful in the labour market. The *leFP* system is of regional competence and it is regulated by the State or by agreements between State and regions. In 2017-2018, last reference year, the system shows a steady increase of enrolled students (62,191); in particular it is confirmed that the more attended classes in the three-year courses are the ones concerning “well-being and personal care” (10,245 enrolled) and “food-service” (9,607 enrolled). Students who find a job within 6 months from obtaining a vocational qualification or diploma is growing all over Lombardy.

A possible alternative to the university career is represented by the “qualifying course” offered by *Regione Lombardia* such as IFTS – *Istruzione e formazione tecnica superiore* (Higher technical education and training) annual courses and ITS – *Istituti tecnici superiori* (Higher technical colleges) biennial courses. There was a remarkable growth of IFTS system which had almost 1,200 students during the school year 2017/2018. The students were mainly in the Milan area. Regarding the ITS courses there are 89 classes and 1,909 students.

The occupational outcomes of the ITS courses are good as in recent years; the job placement – after one year from the course conclusion referred to courses finished in 2013 in 2014 and in 2015 – is around 80% for the three years.



Currently women have on average lower wages, and their presence in the labour market is more limited in time than men, a high rate of part-time job, even against one's will. All these situations will lead them to receive lower pensions, below the poverty line. Therefore, we think that the work-life balance is essential not only for the woman's life plans but also for any employment policies.

Lombard women seem to sacrifice their free time (17.5% of the day, compared to 20.6% of men) in favour of family work (18.5%) which is still mainly managed by women against only 7.6% of time that Lombard men invest in family. Vice versa men invest more time than women in a paid work (15.3% compared with 8.1%).

The inequality in the division of time in domestic environment affect the participation in social activities: men are more inclined than women to take part in cultural, sporting and recreational activities outside the family circle both at a national (27.8% for men, and 20.4% for women) and regional level (30.8% and 23%). The same goes for civil and political participation which is perceived as an only men activity; even the percentage of active people in this environment keep decreasing over the years both at a national and regional level, no matter the gender identity.

As for the employment status, the gender gap keeps being very marked (15.5%), although in the presence of a women's employment rate higher than 60.6%. Considering the national datum, it's clear that it is influenced by the role that women have in their families. On one side, the female employment rate increased of 3% between 2013 and 2018; on the other side, this rise is more limited for women between 25 and 49 years old from 58.1% to 59.5% (age group with the highest concentration of mothers with under-age children). The employment rate of women with children between 0 and 2 years old has decreased, -5.1 points one-parent family and -1.3 for mothers in a couple.

In this chapter, the analysis on gender pay gap focuses on factors which may have the greatest impact on the pay gap. For example, in Lombardy the salary of female workers (23,589 €) in 2018 is in line with the national average value (23,120 €) but it is lower than 12.1%, compared to the Gross Annual Salary of Lombard men having the same job (25,582 €), a higher percentage of gender gap compared to the national 10.6%.

The statistical data contribute to confirm how, within the pensions framework, the gender gap is in favour of men. They had more opportunities to invest in their working career and to maintain it over time

Regione Lombardia invested more than 10 million euros to finance projects (proposed by public and private entities in the territory) to support work-life balance and corporate welfare.

Bonus Famiglia (Family Bonus) and Nidi Gratis (Free Nursery school) are two of the most important measures to support work-life balance regionally. Come to its third year, Free Nursery school has had a growing participation from Lombard municipalities and families that has led to a greater investment of regional resources.

In Italy the percentage of women killed, mainly in their own homes by their partner or ex-partner, continues to be elevated. In 2017 in Italy, according to the ISTAT-Cnr data, 54,706 women turned to one of the 338 Anti-violence Centres or services; among these women 32,632 (59.6%), have started a recovery journey.

During 2018, with 9 new networks (3 in the province of Bergamo, 3 in the province of Brescia and 3 in the province of Milan) the anti-violence territorial services have reached national coverage. In *Regione Lombardia* the territorial networks are 27 and inside them 50 anti-violence centres and 74 safe houses operate.



The analysis of the water's quantitative data, taken from water bodies, is a fundamental point to know the current state of exploitation of water resources. If we consider only the volumes of water collected for civil use, Lombardy represents the main consumer of water for drinkable use, with a taken volume equal to $1,486.91 \times 10^6 \text{ m}^3$ of water. However, if you divide this value by the inhabitants of the different regions, Lombardy with 407 litres per capita per day (lcd) goes below the national average equivalent to 428 lcd.

As regards the use of water to be drunk -drinkable water-, it emerges that water distributed per capita is equal to 222 lcd, value that is much higher than the national average of 220 lcd. This value is due to a natural abundance of the resource and the related consumer habits.

The integrated water service (water system, sewer, purification plant) is organized through ATO - *Ambiti territoriali ottimali* (Homogeneous Territorial Units), and its territorial competences coincide with the provincial limits. Provinces approve the form of management in compliance with unity (under Article 147 comma 2 lett b of l.d. [legislative decree] n.152 of 2006) and entrust the management to a single governing institution of environment (Under article 49 of r.l. n.26 of 12 December 2003). On the regional territory there are 58 operators and 298 Municipalities that manage, on the cheap, at least a part of the service.

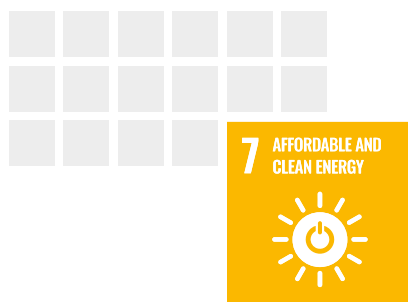
Concerning the purification plant, in 2016 the value of the purified organic load is equal to 12,295,317 equivalent inhabitants while the total load produced is equal to 12,4121,695 equivalent inhabitants thus reaching 99% of purified load.

Regione Lombardia incurred three infringement proceedings for a breach of directive on urban waste water treatment. Currently the number of non-compliant agglomerations is decreasing thanks to the investments made in the last few years.

The urban water treatment leads to a sludge generation that in Italy amounts to more than three tons. *Regione Lombardia* is one of the regions with the highest production at a national level.

Considering the quality status of the water bodies (surface and ground, natural and artificial), the State of the Environment Report from ARPA-Lombardy shows an improvement of the ecological quality status with an increase of the good quality of the rivers that reaches 33% (28% good, 5% high), while the quality of lakes decreases at 30% (period 2014-2016). With regard to the chemical status, in the data concerning 2017, there is an improvement of the quality of this status: 77% of Lombard rivers have a good chemical status while the quality of lakes decreases; only 64% have good quality.

River Contracts represent a favourable contribution to the sustainable management of water resource. They are voluntary instruments of governance of water systems and concern the whole territory. Lombardy activated different routes of River Contracts directly promoted by the Region (Olona, Lambro, Seveso) and also by local entities as Parks, Municipalities, Mountain Community.



In Lombardy, energy resources can be of two types: internal resources and imported resources. Internal resources are the resources produced inside the region and, at a small extent, are made up of fossil fuel obtained from the underground (natural gas) and mostly from renewable energy sources (RES) such as waste, biomass, biogas, bioliquid, geothermal energy, solar heating, hydroelectric and solar photovoltaic. On the contrary the energy carriers, which enter Lombardy from other regions or other States, constitute imported resources (natural gas, petroleum products, coal and other fossil fuels, biomass and bioliquid).

In 2016 internal resources amounted to about 3.9 million tons of oil equivalent (toe) of which the RES constitutes 90% of the total, while the energy import resources amount to 24 million of toe including the imported electricity. The quantity of imported resources is higher than the one of the internal resources; in percentage the internal resources covers 14% of the total energy resources.

Concerning the regional budget on electrical energy, Terna data (2017), show that the production of electrical energy, intended for the consumption, was 44,672.6 GWh, in the face of a total of required energy equal to 68,794.9 GWh (for consumptions equal to 66,502.9 GWh). The deficit was covered by an import/export with foreign countries equal to +19,972.4 GWh and an import-export with other regions equal to +4,149.8 GWh.

Renewable resources are a fundamental alternative to fossil fuels (wind energy, solar energy, hydraulic energy, geothermal energy and from biomass).

Currently in Lombardy there are 653 hydroelectric plants and 116,664 photovoltaic plants; there are very few wind plants – about 9 units – from which we do not have any data on the energy production.

With 15% of the national production of renewable energy, Lombardy is the Italian region with the highest production of energy from renewable sources in “absolute terms”. In 2017 the hydroelectric power reached a production of 8,621.7 gWh. The gross productions from photovoltaic and bio-energy reached in 2017 respectively 4,406 gWh for bioenergy and 2,316.8 gWh for the photovoltaic. In this context, Sondrio and Bergamo are the 2 provinces having the highest gross production from renewable sources.

The total production from renewable (electric + thermal) had an increase, between 2000 and 2016, of about 50%. In the electricity sector the most significant growth comes from photovoltaic and biogas plants. In the thermal sector from the district heating plants and from energy produced by heat pumps, while in the transport sector from bio-fuels.

The result is extremely important to achieve the so-called burden sharing, which is the amount provided for by law, based on the division of commitments made between the State and the Regions at European level (2020 climate & energy package). As a matter of fact, in 2016 the percentage of renewable energy sources compared to the gross final consumption is equal to 13,7%, which is a higher value than the previsions of 2016 (8.5%) and also compared to the goals set for 2020 equal to 11.3%.

In 2017 the sector with the highest electricity consumption has been the industrial one, which single-handed affected the 49% of the total consumption equal to 32,728.4 GWh. To follow, there is the tertiary sector with consumption equal to 21,626.3 GWh (about 33% of the total), the domestic one that in 2017 consumed about 11,258.9 GWh equal to 17%, and agriculture which consumed only 1% of the total electric energy.

Finally, Lombardy, with about 80 toe (tons of oil equivalent) per million of euros, is one of the regions with the highest levels of energy efficiency. The improvement of energy efficiency is an important goal for the energy and environmental sustainability, a means of cost saving and fight to energy poverty, offering at the same time substantial advantages for the production activities.



Sustaining a continuous economic growth – inclusive and sustainable – and at the same time ensuring full employment with a dignified work, are ambitious goals within a context – the Lombard one– which is worth about 20% of the national GDP, and where the employment rate is constantly higher than the national average.

Between 2014 and 2018 the regional GDP growth in Lombardy stood at higher levels compared to the national GDP. In 2018 GDP increased by 1.4% thanks to the ongoing growth of the business investments, of exports and of household consumption. Nevertheless, it is necessary to notice that the performance of the Italian productivity is significantly worse than most of the European Countries (OECD 2018 – Bank of Italy 2019): it is a long-term gap that can largely be attributed to the low quality of works created by our market.

The Lombard labour market is experiencing a period of growth that allowed attaining better results than those before the crisis of 2008, positioning beyond the Italian average and essentially consistent with the European one. In fact, the employment rate between 15 and 64 years was, in Lombardy in 2018, 67.7% compared to the Italian 62.3%. Moreover, during the five-year term 2014-2018 there was a continuous increase of the number of employees, exceeding during the last few years the pre-crisis levels: the number of employees increased by about 127,000 units, corresponding to a percentage increase of 3% concentrated mainly in the last three years.

An additional indicator to be taken into account is the unemployment rate. Both the male and female rate decreased but there is still a substantial difference between the two: the women unemployment rate is 7.1% compared with 5.2% of men.

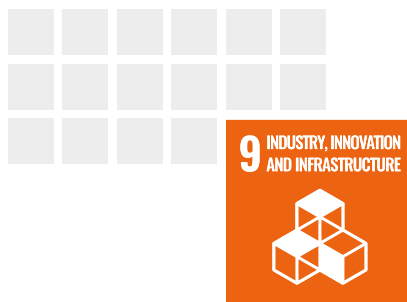
The Lombard labour market has been changing significantly over the years. From 2011 to 2018 there was in Lombardy an increase of the intellectual professions of 2.2%. Instead

there was a reduction of craftsmanship and specialized work, with a reduction in Lombardy of more than 3%. On the contrary there was an increase in the unskilled professions, placing approximately at 10% of the employed people. In the last ten years, Lombardy recorded an increase of 3.6% of the employed people; this increase is mainly due to the increase of 40,6% of the fixed-term contracts (phenomenon that nevertheless concerns the whole national context). As for the fixed-term contracts, Lombardy records an increase of 4.8%, while at a national level there is a contraction of 0.5% of recruitments with the same type of contracts.

Regione Lombardia has arranged various regulatory instruments and actions aimed at the Goal of full employment. The main instrument of the active policies is “Dote Unica Lavoro” (DUL). The goal of DUL is to offer full paths for job placement in order to overcome the logic of “parcelled” micro-interventions on different target or needs, offering an answer to all citizens according to their job situation and to their specific needs.

The beneficiaries of DUL are mostly men (almost 55% of the total), despite the female unemployment rate is higher. This situation can be explained by the higher rates of active men in labour market - especially in the industrial sectors that were the most affected by the crisis and the resulting turn-over – are more numerous than women (employment rate 75.7% compared to 69.8% of women).

In the last few years DUL actively involved 127 thousand people in paths of job placement, 9 out of 10 of these people effectively found a job. There we are talking about 109,943 people who obtained important job opportunities, while 17,073 people are still looking for a job.



Goal 9 focuses on three interconnected aspects: infrastructure, industrialisation and innovation.

As regards infrastructures, Lombardy offers the most articulate regional local public transport network (LPT) – more than 23,500 places/km – and it is in third place in Italy even considering the datum in relation to the population. Moreover, Lombardy shows a growing trend in the offer of LPT per inhabitant in the years under consideration, even if it had an increase in population.

A second main aspect as for infrastructure in developed Countries concerns the telecommunication network. The broadband deployment is a particularly relevant indicator in this sense. Lombardy is the second among Italian regions for web coverage, after Trentino-Alto Adige, with 78% of family units that accessed the internet from home through fixed network and/or wireless in 2018. The trend is growing, also thanks to infrastructure development. Nevertheless, performances seem to be still far from those recorded by other European Countries as for example The Netherlands, Luxembourg and Finland where they get to more than 90% of the web coverage.

As far as industrialization is concerned, in Lombardy the percentage of produced added value in manufacture compared to the total is higher than the national average. Nevertheless, instead of increasing as recommended inside Goal 9 of the Agenda, the added value produced by the Lombard industry decreased by almost 3 percentage points due to the crisis, from 25.4% to 22.8%. Even the percentage of employed people in the Lombard industry decreased (from 27.3% in 2008 to 25.7% in 2018), contrary to the recommendations of the Agenda. In both cases the (positive) distance with regard to the national average has reduced. The percentage of employees of a more technology- and knowledge-intensive manufacture increased in Lombardy from 8.6% in 2008 to a peak of 9.5% in 2016. Nevertheless,

even if the value is much higher than the national average and the third highest in Italy, in 2018 the value decreased to 9%.

Companies that undertook an innovative path both at product and at process level are now growing again (+20%) after a decrease in the three years 2012-2014. The same recovery can be seen in the innovations of products, while the innovations of process only are slightly decreasing.

In the triennium 2014-2016, 26% of the national total amount of the innovative companies, both of products and of process, are in Lombardy. In this field Lombardy is the first region in the Country, followed by Veneto and Emilia-Romagna.

In terms of innovation, an important indicator is the ratio between the R&D expenditure and GDP. Italy stops in 2017 (the latest datum) at 1.35%; Lombardy is just below the Italian average with 1.33% (divided into 0.93% of private investment and 0.4% of public investment).

In the data analysis concerning the research and development personnel we can find a performance that puts Lombardy at sixth place at a national level, if it is evaluated according to the percentage of employed people on the regional territory. Many regions, mainly in Northern Italy recorded considerable increases in this field between 2015 and 2016. But if we analyse the data from the European point of view, we notice that Lombardy (1.27%) and above all Italy (1.15%) are much below the average of other Countries.



In the last decade we can observe an increase in the inequalities at a national and regional level. Starting from 2017 Lombardy recorded a level of inequality in income distribution slightly higher than the national average. This trend is confirmed for 40% of the poorest families.

Considering the datum at territorial level, great differences emerge; areas with higher average per capita income reveals greater differences in income distribution. These are mainly the metropolitan area, capitals of province, the most urbanized Po-area. The mountain areas and the low Po-area, where incomes are on average the lowest ones, are however the areas where there is greater standardization in the income distribution.

The levels of inequality vary greatly depending on age: young people's incomes (18-34 years old) are on average half of that of 35-49 years old people. Moreover, there are considerable differences with respect to nationality (on average Italians earn in a year about 2,700 euros net more than foreigners). But, all differences are gender-related: men income is on average higher than 7,000 euros compared to women income. There are also remarkable differences on human capital and on employment status: graduates receive a labour income equal to twice the income of people with a high school or secondary school diploma; the entrepreneurs receive on the average the highest income followed by employees and self-employed people.

The 2030 Agenda also considers migrations and related discrimination. The UN suggests facing these issues in an "organised, safe, standard and responsible" way. The foreign citizens resident in Lombardy are 1,181,772, that is 11.8% of the population.

In the last few years the asylum applications have considerably increased; until 2014 the requests for the permit of stay for asylum or humanitarian reasons were less than 10% of the total, in 2017 they increased by 28.6% and decreased to 20.9% in 2018.

As for inequalities related to immigration, income is one of the main aspect to be consider. If we consider the income of Italian families and foreign families, Lombardy is one of the regions with the lowest inequality level; the income of foreign families is equal to 71% of that of the Italian families.

At last, regarding remittances, according to the Orim¹ data for 2018, 25% of the interviewed families send monthly remittances higher than 100 euros. We are talking about one family out of four, therefore it is a very remarkable phenomenon that is in need of appropriate intervention. According to the data of Bank of Italy in 2018, 1,460 million euros were sent abroad, 24% more than 2017 (1180 millions).

Within the framework of policies, *Regione Lombardia* took specific measures in order to decrease inequalities, these measures must be included in a national macro-economic framework and they often have a redistribution nature. Among these measures, those concerning the housing emergency and the support for the disabled and elderly, through forms of support for the payment of the rent; support for the integration of rent for separated or divorced parents, mainly with minor children. For 2019 the two measures that are part of the *Reddito di Autonomia* (Independence Income) of *Regione Lombardia* called *Voucher per l'Autonomia* (Independence Voucher) have been confirmed, these measures provide access to personalised measures, for 12 months maximum, agreed upon with the territorial services for a total value of 4,800 euros.

¹ Osservatorio regionale per l'integrazione e la multiethnicità (Regional observatory for integration and multiethnicity)



It is estimated that by 2050 68% of the world population will live in urban areas (now 55%). The centrality of cities will increase especially considering the multiple dimensions and challenges that human settlements have to face from mobility to social equity, from the reduction of land use to regeneration – enhancing the connection between urban and rural areas –, from the air quality to the environmental hazards. We could assert that currently *rule the complexity* – that is the territory through the connections and transformations which characterise and affect it – is the only available means to achieve the targets set by Goal 11. These objectives concern the broad topic of the improvement of the quality of life. We analysed three main focuses: air quality, land consumption and urban and territorial regeneration, sustainable mobility.

Air pollution is one of the most remarkable problems in urban contexts all over the world. In Lombardy the pollutants that exceed the limits laid down by the legislation are: PM10, PM2.5 and ozone, in a widespread way all over the region, nitrogen dioxide (NO₂), only in the highly urbanised areas, benzo(a)pyrene, in the areas where they resort to using biomass for home heating.

Along with heating, transport is one of the most significant emissive sources. More than half of transfers take place by using the private cars even if the situation is slightly improving thanks to an increase of transfers by bicycle (almost doubled) or on foot. Instead, the percentage of people using public transport decreases, even though Lombardy can offer more than 10,400 places/km in the capital of the provinces, a value that is more than twice higher than the average Italian one.

As regards territorial transformations, land consumption is constant in the last few years (+0.20%) and in 2018 Lombardy is the region with the largest consumed land, both in absolute (310,009ha) and relative terms, exceeding 13% of the regional territory. However,

Lombardy is one of the few Italian regions where the land consumption is due to an increase of population; this doesn't change the fact that this has many effects on the population's well-being and safety (higher risk of landslides and floods). In Lombardy, the territory with the most critical situations corresponds to 16% of the regional surface and to 84.4% of Municipalities. From 2004 to 2018 floods and, above all, landslides caused in Lombardy 18 victims – 10 dead and 8 wounded.

An important gap divides southern regions from Lombardy as for the unauthorised development which is the lowest among the Italian regions (it is also recording a decreasing trend). Even the indicator "People living in overcrowded housing conditions, dwellings without toilet facilities and with structural problems" decreased in 2016 and noticeably in 2017. It is important to remember that the sustainability of settlements and of developments models depends on the relations between urban and rural areas, contextualised in the last few years by those policies that move in the city/region food system direction. Between 2009 and 2019 Lombardy went from 42 farmer markets to 145, with 34 of them located in Milan. In addition, in 15 years the number of agritourism is more than doubled; this shows an appreciation for the values that Lombard rurality is able to express.



Natural resources are limited and therefore they must be protected and rationalised as much as possible to avoid unnecessary waste. In this field there are many concrete initiatives and the areas of intervention can concern both the supply system of natural resources (protection and reduction of consumptions), and a waste management and recovery system as raw material. As regards the mining sector (non-metallic minerals from quarrying), the forestry sector (timber production) and the agricultural sector, we can find some trends that describe some behaviours of Lombardy.

Quarrying in Lombardy is a main activity. On the regional territory there is the highest number of active quarries (502 equal to 12.2% nationwide) and abandoned quarries (22.1% nationwide), a factor that implies a considerable land consumption and generation of waste (19 million cu.m./annual of material equal to 39% of national average). The most extracted materials in Lombardy are sand and gravel, for a total of 14,445 tons (equal to 64% of the total extracted in Lombardy and 26% of the total quantity extracted in Italy) that support, for almost its totality, the building sector.

Lombardy is the first Italian region in terms of certified forests, 664 in 2018. From the Lombard forests, estimated to be 620,000 hectares, equal to almost 26% of the regional territory, it is possible to obtain 561,997 cu. m. of timber (almost 20% of the national annual production estimated to be 3,100,000 cu. m. of timber) to produce artefact, structural wood for building, biomass and paper/cardboard. Over the years the use of the timber resource is constantly growing.

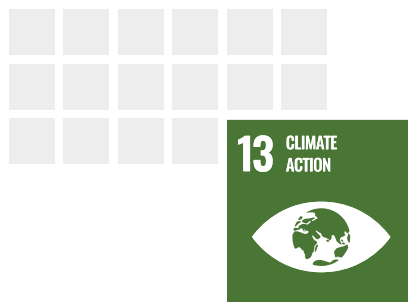
The agricultural sector in Lombardy, in the first place in Italy in 2017 for production with 7.7 billion euros out of a national total of 58 billion euros is characterised by the use of very efficient cultivation technologies and by the presence of farms that are organised to maximize the results of cultivations. In 2017 organic farming grows both in terms of hectares

(+21.4% compared with 2016) and in terms of consumptions, mainly in the school canteens (in 2017, 245 canteens out of 1,311 were organic).

In Lombardy in 2017 the total generation of urban wastes decreased by 1.69% compared with 2016, and it was equal to 4.68 million tons (ARPA data), 3.26 million tons – 69.7% of the total, +2.1% compared with 2017 – were directed to waste collection. It is a very positive datum for the regional context and it indicates a trend above the Italian average of 50% and the European expectations of 55% within 2025. Even the percentage of urban wastes landfilled is below what is expected by the European regulations (10% by 2035) and it is equal to 4% of the total (Ispra data 2017). Moreover in 2017 the per capita generation of urban waste decreased from 477 kg per inhabitant/year in 2016 to 466 in 2017, value inferior to the national average of 689 kg per inhabitant/year and to the European one of 483 kg.

In 2016 Lombardy generated 16,800,703 tons of special waste, one fifth of the national datum. 14,024,797 tons of them are non-hazardous waste, decreasing by 1.6% compared to 2015, while hazardous wastes amount to 2,775,905 tons increasing by +0.3% compared to 2015. 40.7% of special wastes generated in Lombardy came from constructions and demolitions, a higher percentage both compared to Italy and to the European Union Countries (about 35% of the yearly total). Considering the volumes of wastes coming from this sector, the EU imposed to the Member Countries to adopt measures within 2020; their aim is to recycle at least 70% in terms of weight of C&D non-hazardous wastes, a percentage that Lombardy has already attained.

In Italy food wastes, in the food losses stage, amount to 21% of the total and in economic terms means more than 3 billion euros of waste, compared to 11.8 billion euros related to the final consumption stage (domestic and food service). It is estimated that every individual throw in the rubbish 35 kg of food each year, to this quantity we must add the waste concerning the other production stage. In Lombardy many measures have been undertaken to remedy to food waste ("Milan Protocol" signed in 2015 and in 2017 "Virtuous network against the food waste").



In the last few years Lombardy experienced a considerable increase in temperatures. Considering the thirty-year period 1980-2012, the average heat anomaly –the variance of values recorded each year compared to the average of the considered 33 years – recorded in Northern Italy compared with the period 1968-1996, was estimated at approximately 0.2-0.3°C. This datum shows homogeneity in the long term with an increase of 1°C per century referring to the trend observed between 1865 and 2006. An important phenomenon linked to the growth of temperatures is made up of the frequency of “heatwaves” that are considered as unusually hot periods of at least 6 consecutive days. In Lombardy the increase of number of unusually hot days is esteemed in 449 days/50 years for maximum temperatures and in 479 days/50 years for minimum temperatures. Accordingly, heat waves show a trend that is increasing since the seventies, with more intense episodes concentrated in 2003.

Precipitations is another important variable in the definition of the climate scenario. The trend shows a slight decrease in precipitations in the range of 5% every hundred years, accentuated in springtime when the decrease is almost doubled (9%).

The main climate models agree on forecasting, for the next decades, an intensification of the phenomena that will provoke important effects in the hydrological, morphological, and landscape characteristics of Lombardy. As regards temperatures, projections of main regional climate models (“*regional circulation models*”) agree in forecasting for Northern Italy an increase in annual average temperatures for the period 2021-2050 of 1.5°C (compared to the reference period 1961-1990) more intense during summertime (+2°C) compared to wintertime (+1°C).

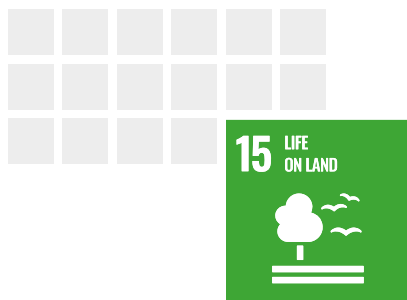
In addition to the risks for health, there are the threats connected to the consequences of extreme rainfalls on the territory. In fact, the intensification of extreme rainfalls damages, and will damage increasingly in the future, the hydrogeological stability of the region. In

Lombardy the total area subject to landslides is, by far, the largest area on the national territory (3,876 km²) and, at the same time, the level of landslide in the mountain areas (equal to 34%) is significantly higher than the national average (10%). The mainly concerned territorial system is the mountain area, partly because of the growing depopulation of alpine territories that deprives the region of a protection able to counteract its instability. Moreover 630 thousand persons are exposed to a flood risk included between medium and high level.

As regards the manufacturing sectors; the agricultural sector is one of the most exposed to the impact of climate changes. We cannot overlook that climate changes can have an effect on physiology, ecology, and biogeography of plants, animals and microorganisms, thus causing a stressful situation to cultivations and related activities.

In Lombardy the total greenhouse gas emissions –expressed in terms of equivalent CO₂– have as main source road transport (22%), followed by non-industrial combustion (18%), and by production and processing of fossil fuel and by industrial combustion (both at 14%).

At last, if we shift the focus on carbon sinks – essential resources for the reduction of carbon content of the atmosphere and of the greenhouse effect – the carbon stored in the Lombard forests, both in terms of dead and alive biomass and in the soil, tends to grow in a linear way since 2008, going from 85 million tons in 2008 to more than 95 in 2016. The forests take on increasingly the role of carbon sink, mainly due to a very bad performance of soils with a high anthropization. The carbon absorption is in fact a fundamental function also of the agricultural soils where there are most critical situations. The average carbon content in the Lombard forest areas was quantified in 30,88% g/kg through a sample survey promoted by the SOILQUALIMON project (ERSAF, *Regione Lombardia* 2010), while the agricultural soils show more than halved values, estimated at 13.99 g/kg. Just considering these last values the region will have to concentrate storage actions in the near future.



Wetlands are extremely diversified environments that include not only lakes, rivers, or sea coasts but also, swamplands, damp fields and peat-bogs, oasis, estuaries and river deltas, seabed and artificial sites (fish farms, paddy fields and saltworks). *Regione Lombardia* has 6 dump areas of international importance – recognised under the Ramsar Convention – which cover about 0.2% of the regional territory. As regards the environmental status, three of these areas (Valli del Mincio, Isola Boscone and Paludi di Ostiglia) are subject to heavy anthropic pressures coming from agriculture and urbanisation.

In Lombardy the total amount of protected lands is equal to 133,960 ha equivalent to about 4.2 % of the national protected areas. In this framework the Natura 2000 sites represent widespread territorial areas. Lombardy (with about 15.7%) is under the national average equal to 19.3%.

In Lombardy the total forest area is currently estimated at 619,893 hectares, corresponding to 26% of the regional territory. As for the 1,318 hectares/year of forest expansion estimated by ERSAP (Ente Regionale per i Servizi all'Agricoltura e alle Foreste), only 254 are the result of the deliberate realisation of new forests, while 1,198 originate from phenomena of secondary succession. Concerning the silvicultural use, the forests destined to the production of woody mass are the most represented class (29.2%), followed by forests, whose main function is not clearly determined (29.1%), and forests of protection against phenomena of potential instability. The forests suited for preservation of natural and landscape values amount to 19% of the total area. From a preservative perspective, only 25.2% of the forest area is subject to environmental restrictions, while 21.5% fall within the network Natura 2000.

The “High Natural Value Farming Areas – HNVFA” are able to supply a wide range of ecosystem services and to support biodiversity, and, for these reasons, it is very important to

ensure the preservation of this kind of productive ecosystems. In Lombardy 60.8% of UAA can be identified as farming areas HNV High Natural Value, nevertheless the environmental value of these areas is quite low and it is linked to the widespread presence of hedges and rows in the lowland farming areas. Only 5.7% belongs to the category medium HNV and it is gathered in the paddy fields of Lomellina, while 3.5% of Lombard UAA achieves a high and very high HNV, these last values are mainly observed in the Natura 2000 areas.

As regards the soil protection, it should be noted that the waterproof area of the region was equal to 13% compared to a national average of 7.65%. In addition to the waterproofing, fragmentation and degradation processes coexist on the territory. The percentage of fragmentation of the territory in Lombardy is equal to 52.4% compared to a national average of 38.3% and it is second only Emilia-Romagna and Veneto, and this points out a certain criticality.

The degradation of the soil quality is alarming. Across the board it is evident that there is a separation between the lowland area where the quantity of C0 in the soil is medium to low, and the alpine and pre-alpine area where the quantity of C0 in the soil is generally good or high. Lodi, Pavia and Milan are in fact, respectively with about 96%, 78% and 76% of low and very low C0, the provinces with the lowest content of organic carbon inside the soil.

In 2006 the classified Sites of National Interest (SIN) were 57; in 2017 the total amount of SIN was reduced to 41, among these, 5 are located in Lombardy. In addition to the SIN there are several, but less dangerous, sites of regional interest. According to the data recorded by ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale) in the Annual Report of Environmental data (2018), Lombardy has 3,257 sites with an on-going administrative procedure of reclamation.

Conservation and management of the species, within the protection of biodiversity, is an important matter to consider. It is shown a very remarkable population decline of red-backed shrike, lesser grey shrike, Italian sparrow and swift, in addition to many species of bat.

The issue of invasive species has assumed increasing importance, mainly considering the presence and the spread of the species inside the Lombard hydrographic network. The census registered the presence of 43 species of invertebrates, 17 diatoms, 7 macrophytes and 24 kinds of fish in the hydrographic basins of Lombard rivers.



During 2017, the number of violent criminal events has significantly increased in Lombardy: 56 homicides compared to the 37 in 2016. In the meantime, the feeling of safety among the population dropped because of the increase in the predatory crimes concentrated in some types of offence as scams and cyber frauds that potentially involve the most vulnerable groups of the population (mainly elderly people).

One of the issues arisen from recent surveys on safety, is the growing number of foreigners among the perpetrators of crimes. In Italy, according to the data of Viminale (Italian Home Office), about 30% of the crimes is committed by foreigners whose resident population represents the 11.5% of the whole population. In Lombardy too, there is an increase in crimes committed by foreigners, that is 40% of the total of crimes of the population in 2017. In particular the crime rate of foreigners exceeds 5 times the Italian one.

Child abuse is defined as: all kinds of physical and/or emotional abuse, sexual abuse, neglect or negligence and also sexual exploitation or other kinds of exploitation that cause a real, or potential, damage to the health, to the survival, to the development and to the dignity of the child, within a relationship of responsibility, confidence or authority; data show that child abuse is not a marginal phenomenon in our society. In Italy, according to 2017 UNICEF data emerged that the majority of violence episodes on children takes place within the family (1,723 in 2017, with an increase of 6% compared to 2016); abuses and violence (mainly domestic) affect above all girls and young women (60% of the total of victims). Considering the national data there is an increase in the sexual abuses and sexual acts directed at minors. Among the North-West Regions, Lombardy has the greatest number of sexual abuses targeted to minors or sexual intercourse with minors.

Organised crime is a serious, real and current threat for Lombardy. The mafia organisations in the region are increasing their business interests in the field of waste and health-

care. The interdictory measures against some companies, issued by the Antimafia Investigative Agency (DIA) to prevent mafia infiltration in the public tenders, prove how organised crime represent a serious threat for the production sector and Lombard civil society. With 50 interdictory measures Lombardy was in 2018 the third region for amount of measures after Calabria (147) and Sicily (85).

Financial transactions, managed by banking system, by intermediaries and specialised companies, represent another area in which the infiltration of organised crime is increasing. Mafia organizations utilize financial movements, disguised as fake commercial business, for the purpose of money laundering coming from illegal activities. With reference to the second semester, DIA Report shows that Lombardy is the most affected region: the suspicious transactions were 19,752 in 2017 compared to 17,860 transactions registered in Campania.

Corruption, intended as administrative political malpractice, has been representing for some years, an important concern for public bodies. But quantifying corruption is not so easy. Judicial data on criminal proceedings before the judicial authorities for crimes against public administration, after the beginning of criminal proceedings by the prosecutor, point out that in Lombardy, in 2016, 194 Criminal proceedings for corruption crimes were pending; about 10% of the corruption crimes occurred in Italy.

The monitoring of the implementation time of public works is fundamental to evaluate the effectiveness of the expenditure for public-sector investments even in connection with the expected effect on the economies of the territory. In Lombardy, according to the Report about the timing of implementation of the public works, 2,482 public works are in progress at a cost of 9.6 billion euros, at an average cost of about 3.8 million euros per public work. On average, in Lombardy it takes 4 years and a half to carry out a public work, a duration consistent with that of the works carried out in other regions. If we consider the indicator of net duration that compares the territories on the basis of a mix of works that are the same for all, Lombardy is the region with the shortest net duration, followed by Emilia-Romagna and Piedmont.

Lombardy is the fifth Italian Region in terms of confiscated goods used for social purposes. These statistics are destined to grow in the next few years due to the extension of the patrimonial prevention measures to other crimes. To date 1.141 goods are allocated, while 1847 goods are under management of ANBSC (Agenzia Nazionale per l'Amministrazione e la Destinazione dei beni sequestrati e confiscati alla criminalità organizzata).



To reach 0.7% of the Gross Nation Income destined to the Official Development Assistance (ODA) by 2030 is one of the main target of Goal 17. The 2018 OECD DAC Report on development aids, shows a decrease that concerns both the aid to the worldwide development [-2.7%] and the aid to the African Countries [-4%]. Italy registers one of the highest decrease with less 21.3% in 2018 and the volume of ODA equal to 0.24% of the GNI. Therefore, a net decrease compared to 0.30% in 2017. In fact, despite the intermediate quantitative goal of 0.30% ODA/GNI forecast by 2020 was achieved in 2017, three years early, the current data show how Italy is fully entering a negative trend of stagnation.

Even if regions play a leading role in the decentralised cooperation, they contribute to a modest extent to ODA. Specifically, *Regione Lombardia* went from a flow of 1.7 million euros to 230 thousand euros; such a significant decrease is likely caused by the failure of the co-financing policy of the international cooperation projects by *Regione Lombardia*.

In 2018 in Lombardy, the imports from developing Countries grew further; these imports intercept indirectly the Target 17.11 “Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries’ share of global exports by 2020”. Lombard imports from developing Countries (receivers of net contribution by the programme OECD -DAC) reached 28.3 billion euros. The increase, driven by exchange with China, interested mainly those Countries with an average-high income according to the OECD definition.

Concerning decentralised cooperation, some of the most important fields are those devoted to health cooperation, with a view to strengthen health systems as a whole. Twinning, projects for the use of real estate assets abandoned by Lombard health care services in favour of developing Countries and also humanitarian health care interventions in favour of non-EU immigrants are some of the interventions supported by *Regione Lombardia*, the

regional healthcare system and the whole hospital divisions. In this area Regione *Lombardia*, between 2001 and 2014, guaranteed highly specialised treatments to 1220 non-EU citizens, 70 % of these in paediatric age coming from developing Countries of Central and Eastern Europe, of Africa, of Middle East, of Asia and of Latin America. As regards 2018, 51 international hospitalisations took place, they were mainly connected to the paediatric heart surgery thanks to which it was possible to gain the maximum advantage for patients in terms of cost to benefit ratio. Universities play a fundamental role along with the internationalisation strategies they pursue, in particular in training and research that interpret it in different ways even in connection with the pursued strategies of internationalisation, among which training and research. Looking at the practical experiences of collaboration started by the Universities on the Lombard territory, we must report an example of collaboration between AICS (Italian Agency for Development Cooperation), CRUI (Conference of Italian University Rectors) and MAECI (Ministry of Foreign Affairs and International Cooperation), that is the initiative "Partnership for the knowledge". The project, started recently, involves more than 30 Italian Universities grouped in 4 thematic platforms and has as lead the Polytechnic University of Milan and the University of Pavia.

As for the international partnership, among the many European regional associations participated by Regione *Lombardia*, there is Regions4 association that is an actor able to give a voice to the regional governments in the negotiations with the European Union and the UN in the fields of climate change, biodiversity and sustainable development.



In the next few years the political classes will have to carry out some interventions coherent with integrated sustainability foreseen by UN Agenda 2030, with a strong involvement of stakeholder and citizens to speed up the rhythm of change required in the UN models of development.

The vertical integration of the policies (from Municipalities, Metropolis, Region and National State, to the European Macro regions) can be concretely achieved considering the Sustainable Development Goals (SDG), as shown by the experience of Lombardy Region that before other Regions, has launched this new standard of SDG in the regional planning, also thanks to the incentive given by the realisation of the first edition of the Lombardy Report 2017.

Lombardy Report turns up with a new edition, an editorial product that wants to describe the sustainability of Lombardy from a policy-oriented perspective observing the local authorities, that are the main protagonists of the investments on the territory, and the national Government prompted to make brave choices.

