

# UNIVERSITY OF KENT

## SCHOOL OF ECONOMICS



### EXTENDED ECONOMICS ESSAY

## THE DEINDUSTRIALISATION AS A BOOST FOR THE ECONOMIC REVIVAL OF A CITY:

### *A COMPARATIVE ANALYSIS*

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## **Abstract**

With the use of economic theory and literature, we will analyse the phenomenon of “deindustrialisation”. First of all, we will consider it from a wide perspective, then we will focus on a restrict example: the city of Taranto. This essay argues that the process of deindustrialisation, even if in small parts, is in progress in all countries of the world, especially the most modern and developed ones, and the impact of such process is felt especially in local economies. If a city is too closely linked with its industry such that its economy becomes completely dependent on it, this can cause problems in the long term. Therefore, the methodological study of the city will be important to analyse, critically, consequences and responses to deindustrialisation. Also, for all my life I lived witnessing this problem and being unable to help my city (Taranto). This is an opportunity for me to be helpful and propose possible solutions.

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## Introduction

There are many interpretations of the term “deindustrialisation”, the broad definition says that it is a socio-economical change which leads to a reduction of industrial output and employment, usually in favour of an expansion in the tertiary sector. The main point is that in the 90s, this process was considered to become larger by time, leading all the countries in the world to gradually reduce their industrial sector in favour of the service sector. This prediction partially became true, and we will explore this in detail in the next paragraphs. To help our analysis, we will take in consideration the work of various Economists. The scope of our research is to evaluate consequences and responses to deindustrialisation, firstly from a global perspective, secondly from a smaller and specific point of view. In the first case, we will just observe the economical situation of different countries, but in the second case we will go deeper, exploring causes, effects and consequences of a decline in the industrial sector, trying to propose solutions and alternative ways to tackle the problem. We will also analyse the city of Taranto, my hometown, and compare it with other cities. Taranto is the perfect example of a small city, quite unknown, with a considerable untapped potential and a complicate relationship with its industry. Is deindustrialisation always the way? Can the economic structure of a city be modified? These will be the main questions to be answered at the end of this research. The results of our analysis will be important not only for this city, but also for many others in the world that suffer similar issues.

Due to the vastness of the argument and the word limit, we could not analyse other important countries like Germany or Japan and make a detailed comparison between the North and the South of Italy and between different cities.

The order of the research will be very straightforward: we will start with a global overview of the industrial sector nowadays, then will focus on some specific countries, until the field is narrowed to UK and Italy. After that we will explore in more detail the Italian economy, focusing on the region of Puglia, where Taranto is settled, and we will conclude analysing the latter.

## Chapter I: A Global Overview

### I.1 Deindustrialisation: theory and model

The process of deindustrialisation can take various meanings. In the IMF Working Paper “Deindustrialization: Causes and Implications”, the authors refer to it as a “secular decline in manufacturing employment”. On the Business Dictionary, it is intended as the reduction of the industrial activities, or capacity, or output of a country’s manufacturing. We can consider it as the sum of all these ones, since it is a decline of the Secondary Sector usually in favour of the expansion of the Tertiary. As said in the IMF Paper, this does not necessarily mean that it is a negative event, on the contrary, it is a signal which indicates that the economy is “mature” enough to develop the service sector further. Employment in manufacturing decreased from the ‘70s to the ‘90s of about 10% in many advanced economies, also employment growth in manufacturing fell from 1.7 between 1960-70 to -0.6 between 1971-94, and with it, also output growth from 6.3 between 1960-70 to 2.5 between 1971-94 (IMF, 1997). The countries that suffered the most were the ones in the EU and the US. The main reason for this decline has been attributed to the difference in productivity growth between the two sectors: industry and service. In fact, productivity in the industrial sector tends to systematically grow faster than the service sector, which pushes the share of employment in services to rise in order to keep the pace with the manufacturing rising output. This causes employment in the industry sector to fall and if this loss is not compensated with, for instance, technological improvement, output will also fall by time. This process is defined in a model of the IMF Paper:

We are in a closed economy, the food’s demand is income inelastic, real demand for services and real national income rise together and labour productivity rises faster in the industrial sector than in the service sector:

$$Y = Y_a + Y_i + Y_s$$

This equation reflects real output equal to output produced in each sector of the economy.

$$Y_a = bL$$

$$Y_s = cY$$

The first one implies that: output of agriculture is equal to a constant “b” times “L”, which indicates fixed consumption of food per person and fixed population, since everyone is employed.

The second one shows that output of services is equal to another constant “c” times real output “Y”, which is defined as: “a constant fraction of real output”.

Now we define equations for output per worker in each sector, assuming that labour productivity grows faster in industry and agriculture, at the same rate, than in services. We also assume that productivity growth stays constant during time and that output per worker, at time zero, is even in the three sectors:

$$y_a = y^0 e^{\lambda \alpha t}$$

$$y_i = y^0 e^{\lambda \alpha t}$$

$$y_s = y^0 e^{\alpha t}$$

Where  $\lambda$ ,  $\alpha$  and  $y^0$  are constants,  $\lambda$  is the “index of uneven productivity growth” and it is  $> 1$ ,  $\alpha > 0$  and  $y^0 > 0$ . We can also write:

$$y_a = \frac{Y_a}{L_a}$$

$$y_i = \frac{Y_i}{L_i}$$

$$y_s = \frac{Y_s}{L_s}$$

Where L is employment, and its equation is:  $L = L_a + L_i + L_s$

If we want to define the share of labour force in each sector, according to the model in the Paper, we will get the following:

$$P_a = \frac{L_a}{L}$$

$$P_i = \frac{L_i}{L}$$

$$P_s = \frac{L_s}{L}$$

Given that the share of the industrial sector is:  $P_i = 1 - P_a - P_s$

If we substitute inside this last equation all the previous ones, from the last one to the first one, we will get:

$$P_i = 1 - \frac{be^{-\lambda\alpha t}}{y^0} - \frac{c}{c + (1 - c)e^{-(\lambda-1)\alpha t}}$$

Therefore, as  $t$  tends to infinity:

$$P_a \rightarrow 0$$

$$P_i \rightarrow 0$$

$$P_s \rightarrow 1$$

This confirms what we said earlier: employment in agriculture and industry falls toward zero, while service sector rises to one. Nevertheless, the industry's share has to be defined better by

$$\text{differentiating } P_i : \frac{dP_i}{dt} = -\frac{dP_a}{dt} - \frac{dP_s}{dt}$$

$$\text{Which gives: } \frac{dP_i}{dt} = \lambda\alpha P_a - (\lambda - 1)\alpha P_s(1 - P_s)$$

Therefore, in a mature economy,  $\frac{dP_i}{dt} < 0$  only if:  $\lambda\alpha P_a < (\lambda - 1)\alpha P_s(1 - P_s)$

Where the left side of the equation indicates the decreasing rate in agriculture employment and the right side indicates the increasing rate in services employment. In an advanced economy,  $P_a$  is small,  $P_i$  will fall, therefore the inequality presented above is fulfilled. In this inequality we have analysed the opposite effect of the one described in the IMF Paper.

A similar process occurs in the share of industrial output:

$$\begin{aligned} \frac{Y_i}{Y} &= 1 - \frac{Y_a}{Y} - \frac{Y_s}{Y} \\ &= 1 - c - \frac{be^{-\alpha t}}{y^0} (c + (1 - c)e^{-(\lambda-1)\alpha t}) \end{aligned}$$

This explains that the share of output, in the industrial sector, usually increases quickly when the economy is in its early stages, but after its development, it starts to stabilise until it stops growing over a certain point.

This theory, written in 1997, has proved to be farsighted for many countries in the world, as nowadays we are witnessing even a greater gap between the industrial sector and the service sector for both employment and output. But it is also noticeable to observe that, from the most recent data, the comparison of industrial production between countries exhibits very different patterns.

## **I.2 Consequences in UK and Italy**

In the last 50 years we have witnessed a decline for the industrial sector in UK. After the Steel Crisis in 1973-75, steel prices have fallen dramatically as a result of the saturation of the market with steel from previous demand, and many steel plants in Europe and US were forced to close. This caused chain effects that triggered different phenomena within various economies.

First, we should consider the so-called “maturity” of the economy that takes different meanings. One of them implies that the stage of development is high enough for the economy to move the flow of employment from the secondary sector to the tertiary sector. In fact, we can notice that UK and several other countries endured a fall in industrial employment from 1960 to 2010. UK mostly suffered a loss of -62.7% during that time lapse (OECD data). Italy, on the other hand, witnessed a fall in its industrial employment from 1980, roughly 20 years later than UK, meaning that the Italian economy is at a lower stage of development.

Another version of “maturity” indicated by Rowthorn and Wells (1987), states that, in terms of volume, “the demand for manufactured goods is as income elastic as the demand for services”. This means that if the industry performs very well, the production growth should be as equal as the GDP’s growth. If the industrial production grows faster, this could lead to a fall in prices compared with the ones in the service sector, carrying to a reduction in the share of output and employment in the industry. If we consider that in 2017 the industrial production growth rate was 3.4% while the GDP’s growth rate was 1.7% (CIA data), this theory seems to hold, given the fact that the tertiary sector has also a great share of labour force and output. The same seems to hold for Italy, where industrial production growth is 2.1% and GDP growth is 1.5%.

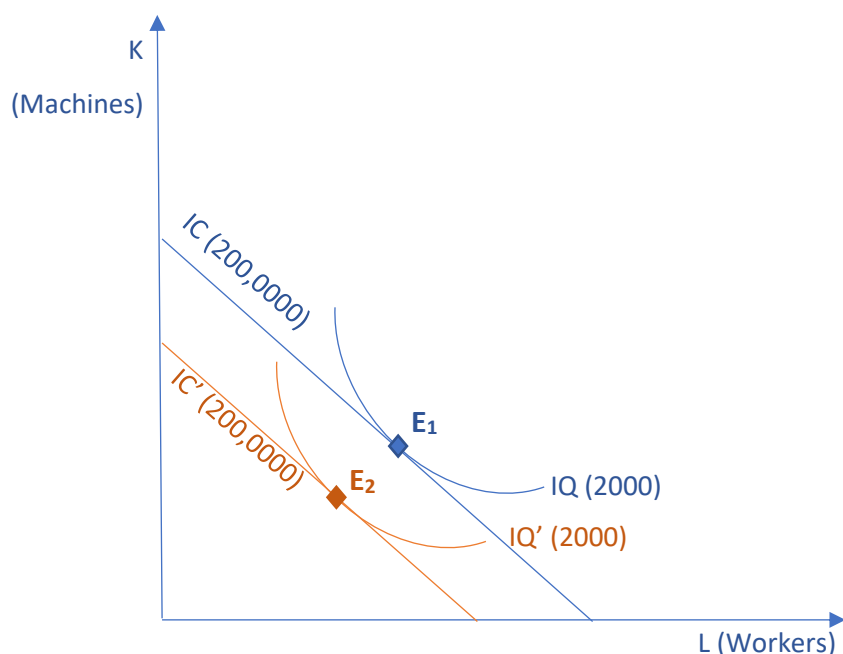
The next cause of this decline is the unfair low-wage competition. We will not consider Third World countries, since their impact on exports is very low, instead we will consider the Chinese production that grew exponentially in the last decades. With 806.7 million people in the labour force, 232.33 of them employed in the industrial sector, USD \$2.216 trillion of exports and an industrial production growth rate of 6.1% (2017 CIA data), China has the biggest labour force, the biggest share of people employed in the industrial sector and is the first exporter in the world, with one of the highest production growth rates. The strength of this country is, therefore, the quantity of goods produced. For this reason, the only way to be competitive on the market nowadays is to produce good/high-quality products by maximising the total factor productivity (TFP, the residual part of output exceeding the labour and capital inputs) and the labour productivity (value added per person employed). These two factors are fundamental to define the economic efficiency of a country.



We can express this concept with a model; we can set industrial output as  $Y_t$ , K and L as capital and labour and A as our TFP:

$$Y_{it} = A_t F(K, L)$$

Therefore, we have that, at time t, industrial output is equal to the TFP at time t, times a normal production function. The parameter A usually indicates the technological innovation and it should increase by time. A higher innovation brings the whole equation to change:



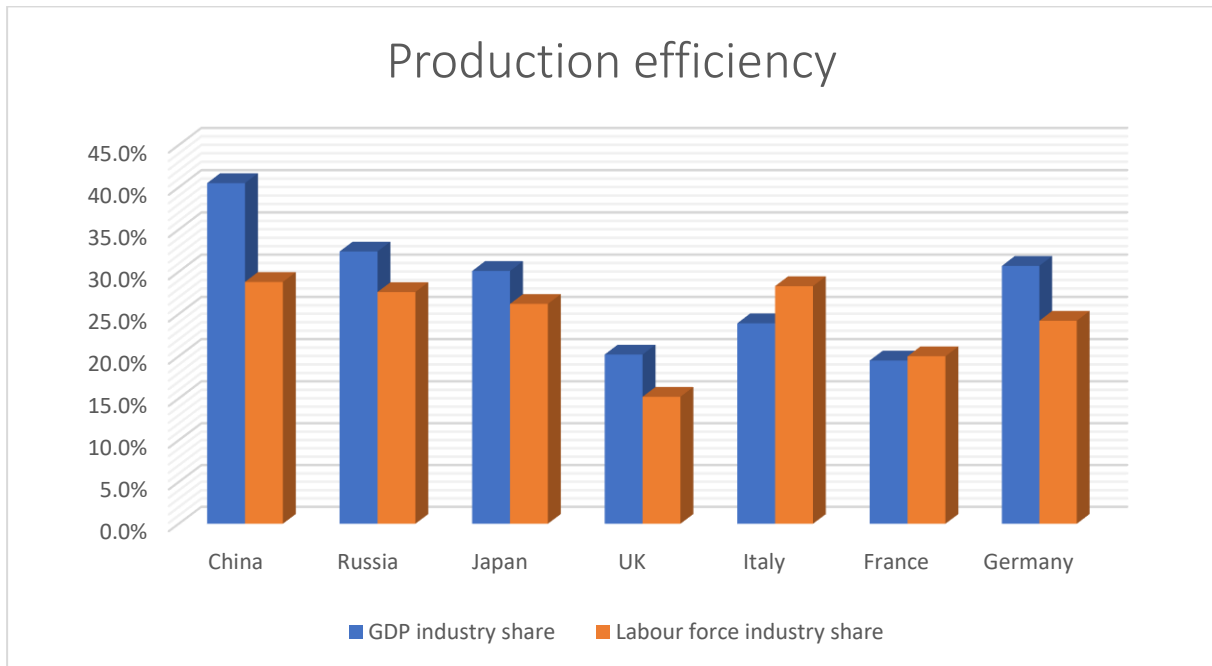
From this graph we can see that a technological improvement shifts both the isoquant and isocost lines down, meaning that you can still produce the same quantity at the same costs but with less capital and less labour. For our analysis we can say that a higher innovation could help mitigate the loss of employment in the industrial sector by increasing, for instance, the number of machines in order to keep production and costs constants.

Having said that, there are some countries, like France, Germany and the US, that, according to the OECD data, have performed better in industrial production and output, while the UK and Italy have endured a fall in volume of manufacturing output between 1973 and 2010. The UK started recovering after 1980 closing the gap with the other countries and producing a quantity of industrial output near to the OECD average. On the other hand, Italy is still behind and after a good peak in 2008, the gross value added per capita has decreased considerably in recent years.

## Chapter II: Italy

### II.1 National and regional economies

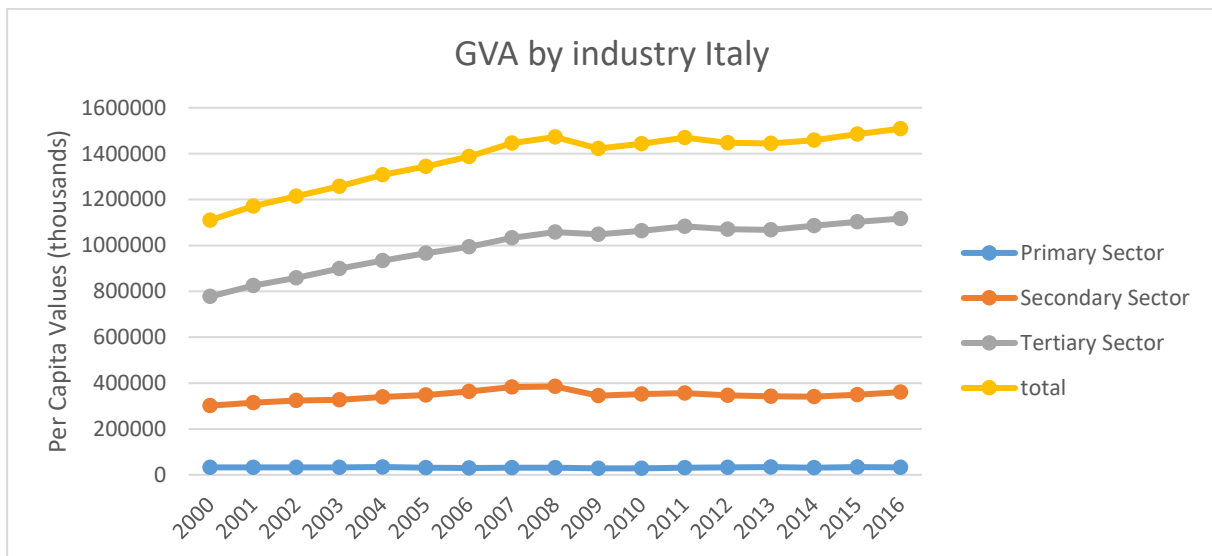
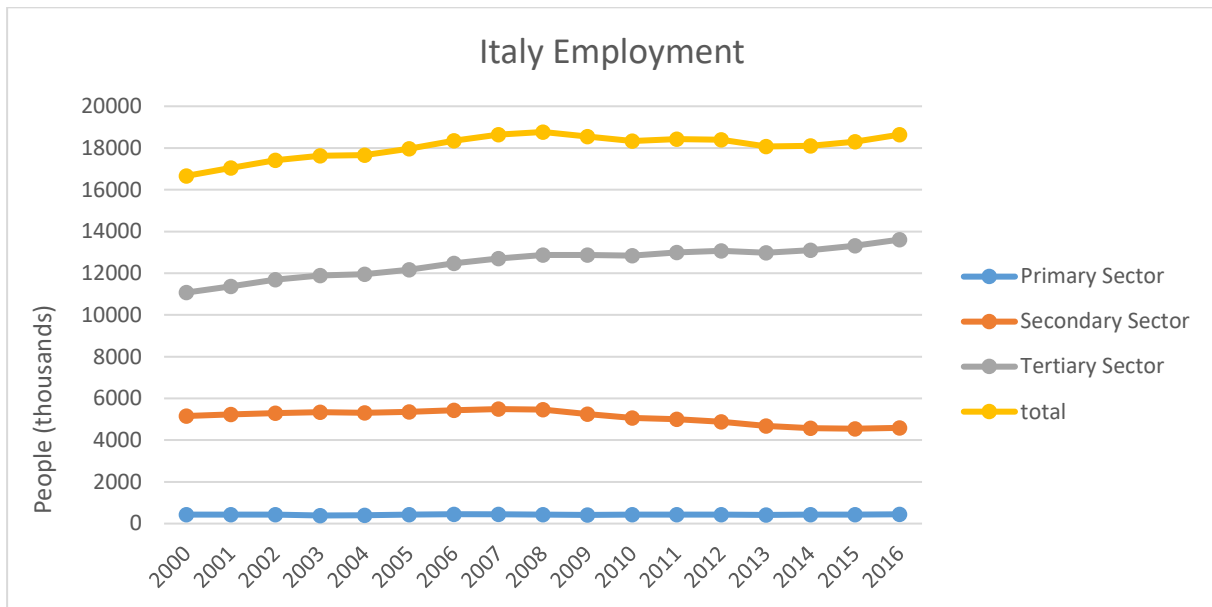
Now that we have explained the fall in the Secondary Sector, focusing in particular on the UK and Italy, and after having defined the importance of technological innovation in the industrial production, we can study this graph:



*Data source: CIA – the world factbook*

We have considered the percentages of GDP and employment shares for the industrial sector (2017 data), discovering that, overall, some of the major industrial countries in the world produce a good share of output by employing a smaller share of labour, except for Italy and France. Regarding France, this is not a significant difference since we are talking about a 0.5% gap, while the real concern is Italy: as we can see, the share of people employed in this country in the industrial sector is the second highest between the countries listed and the contribution of the industrial sector in the overall GDP is only of about 24%. With such a great share of employers in the industry we would expect a much greater contribution on the GDP, the only possible explanation could be that the total GDP is one of the highest and the tertiary sector is really going strong, but the real Italy's GDP is the lowest between these countries and the service sector is averagely good. A possible interpretation of this graph is that most of the countries are very efficient in industrial production, since with a small share of employers they contribute for a bigger share of output (see Germany). Just as we said before with the TFP: a

higher innovation brings to produce the same quantity at the same costs with less capital and labour. It seems that Italy is struggling mostly because the plants and installations are not modern enough to require less labour to produce the same quantity. On the contrary, it seems that it is required a lot of labour to produce a small quantity of goods.



Data source: ISTAT

As we can see from these graphs, industrial production and employment had its peak in 2008, but since then, both started to decrease, and it seems that the tertiary sector was fundamental to increase both total employment and total gross value added. In fact, this sector experienced an exponential growth through time.

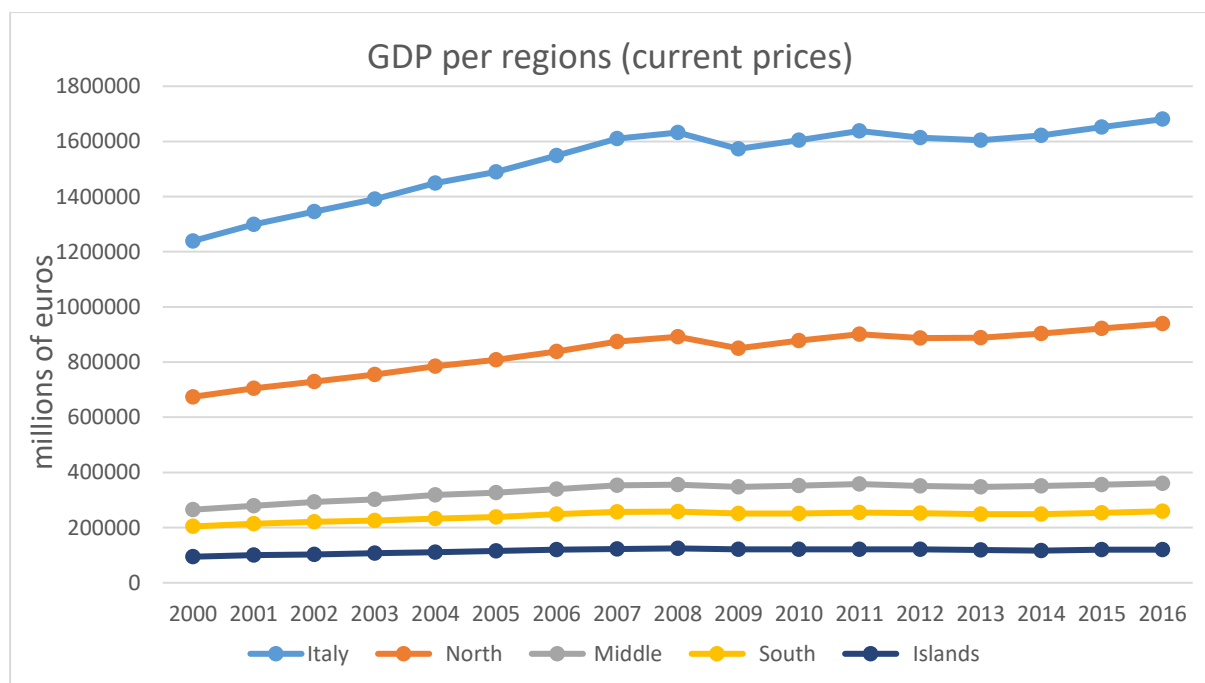
Italy has many historical stratifications, which have contributed to an unbalanced growth within the country: while the Northern part has always been in line with the progress of other countries,

the Southern part was degraded, poor and exploited by decades of Spanish colonialism, started in 1600. This has formed a fertile soil for the growth of criminal organisations, which have spread like a cancer in the whole country, becoming the crucial problem of Italy. From the CIA data: “Italy has a sizable underground economy, which by some estimates accounts for as much as 17% of GDP. These activities are most common within the agriculture, construction, and service sectors”. If we consider that the 2017 GDP was USD \$2,317 trillion, this makes the underground economy equal to \$393.89 billion, a terrifying estimate.

Sokoloff and Engerman (JEP 2000) explained a really important concept:

“These early differences in the extent of inequality across New World economies may have been preserved by the types of economic institutions that evolved [...] This path of institutional development may in turn have affected growth. Where there was extreme inequality, and institutions advantaged elites and limited the access of much of the population to economic opportunities, members of elites were better able to maintain their elite status over time, but at the cost of society not realizing the full economic potential of disadvantaged groups”.

This was referred to the consequences of different patterns of colonialism in America, where extractive economies have caused the evolution of bad institutions, while non-extractive colonies have permitted the growth of modern and civilised systems. This is perfectly related to the economical situation in Italy, clearly showed by this graph:



Data source: ISTAT

The North grows faster and generates more wealth than the rest of Italy, but the South is recovering, especially in recent years.

## II.2 Puglia

In recent years, this region adopted different policies with the aim of developing innovation, together with a wide amount of investments, bringing the local production system to grow and attract more than 40 international industrial groups.

The maritime connections are excellent, thanks to the presence of three important harbours: Bari, Brindisi and Taranto, the latter the third in Italy in terms of size and volume of goods traffic, while the one in Bari is the first passenger port of the Adriatic (data: [trail.unioncamerepuglia.it](http://trail.unioncamerepuglia.it)).

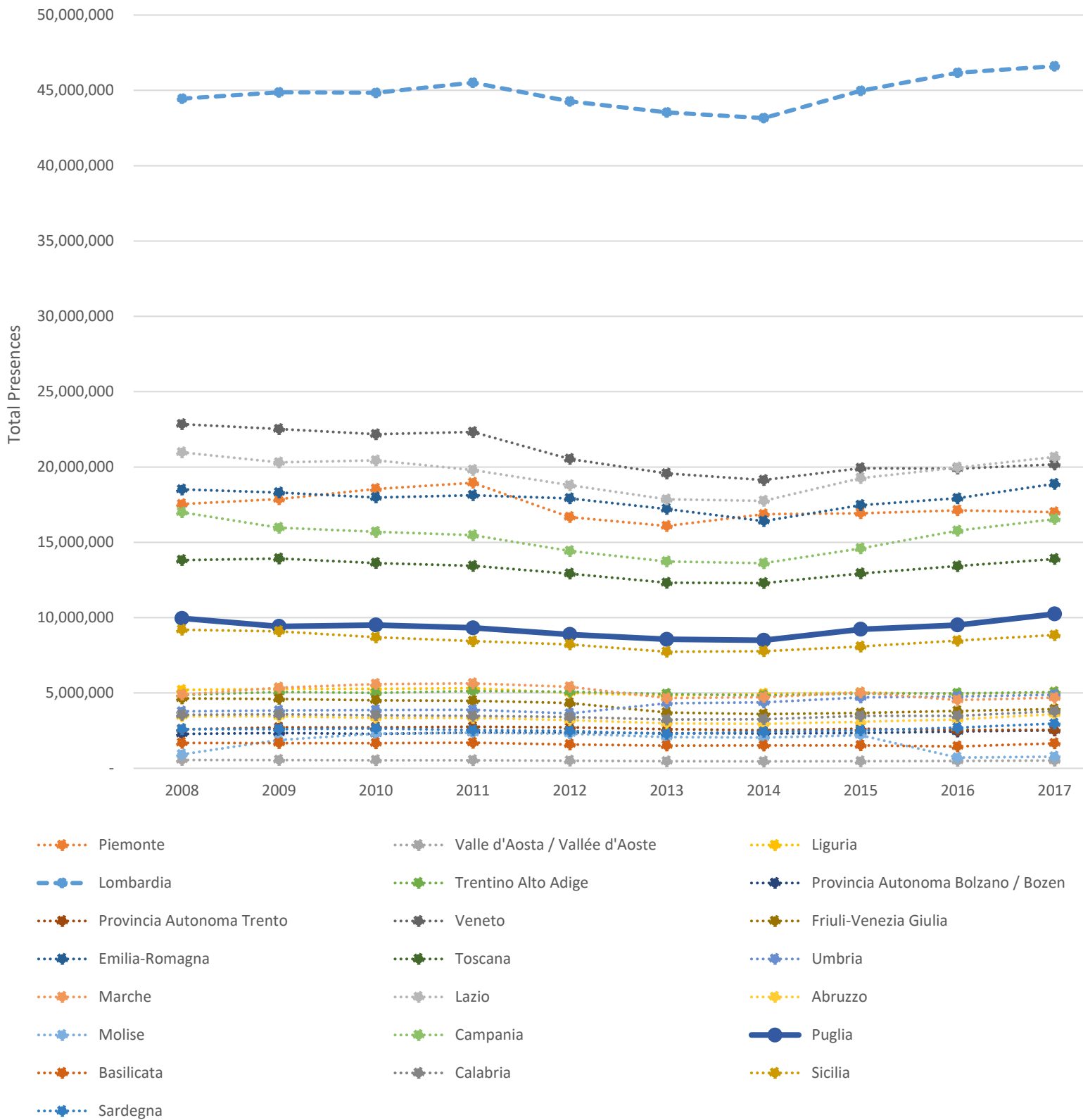
The most important passenger airports are the Karol Wojtyła International Airport of Bari and Brindisi International Airport of Salento. Puglia stands out in comparison with other southern regions: the macroeconomic data are closer to the national ones and in some cases even better. Moving on to the three sectors: the intensive and modern agriculture plays a prominent role in the economic context.

It is also the most industrialized region in the south of Italy, with an industrial triangle composed by Bari, Brindisi and Taranto. Brindisi is the leader in the production of electricity in Italy (GAUDI).

In recent years, data on the diffusion of plants using renewable energy have risen sharply in this region: in 2010, Puglia produced 25% and 14% of Italian wind and photovoltaic energy. According to the most recent data (GAUDI, 2018), both wind and photovoltaic energy produced in Puglia are the highest of all regions.

Regarding tourism, Italy had the 6th highest revenues from tourism in the world and 3rd in Europe (around 40,2 billion), and it remains an evergreen market (UNWTO, 2016). From the following graph we can see that Puglia is the 8<sup>th</sup> most touristic region of Italy and 2<sup>nd</sup> most touristic in the South, with an almost constant trend over time :

## Total Tourism



Data source: ISTAT

## **Chapter III: Taranto**

### **III.1 History of the City and its Industry**

Throughout its past history, the importance of agriculture has always been relevant in the economy of the city, but also the strategic location has contributed to make it one of the most important centres of commercial exchanges and one of the main naval harbours in the country. In its recent history, two major installations have changed the whole economical structure of the city:

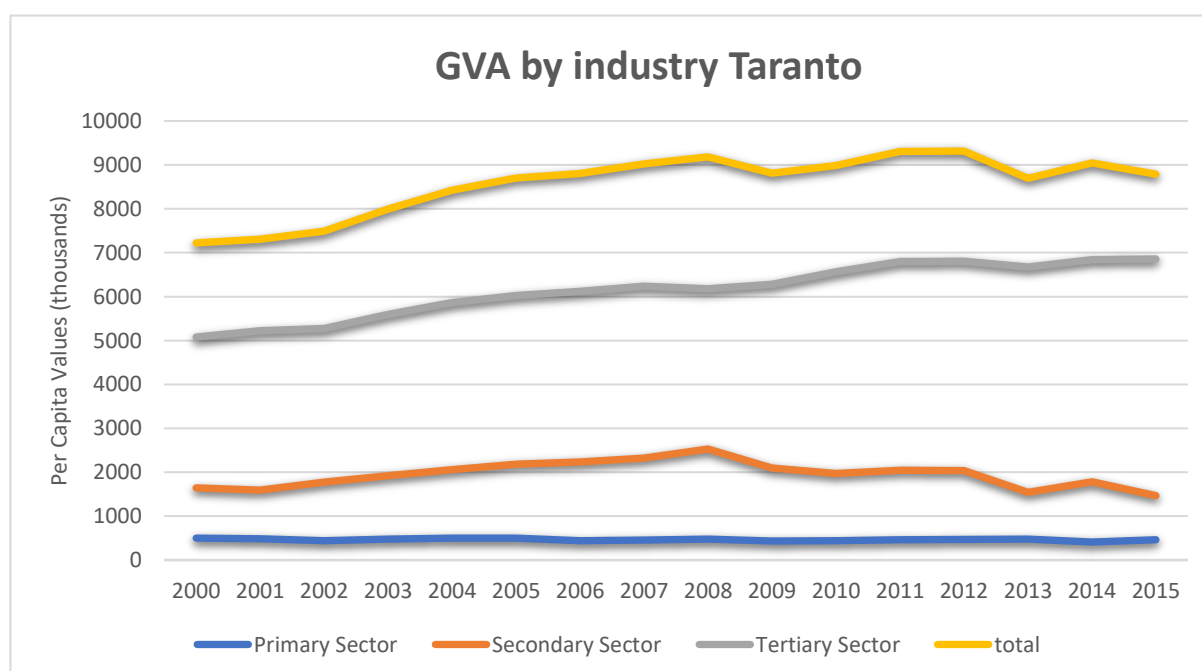
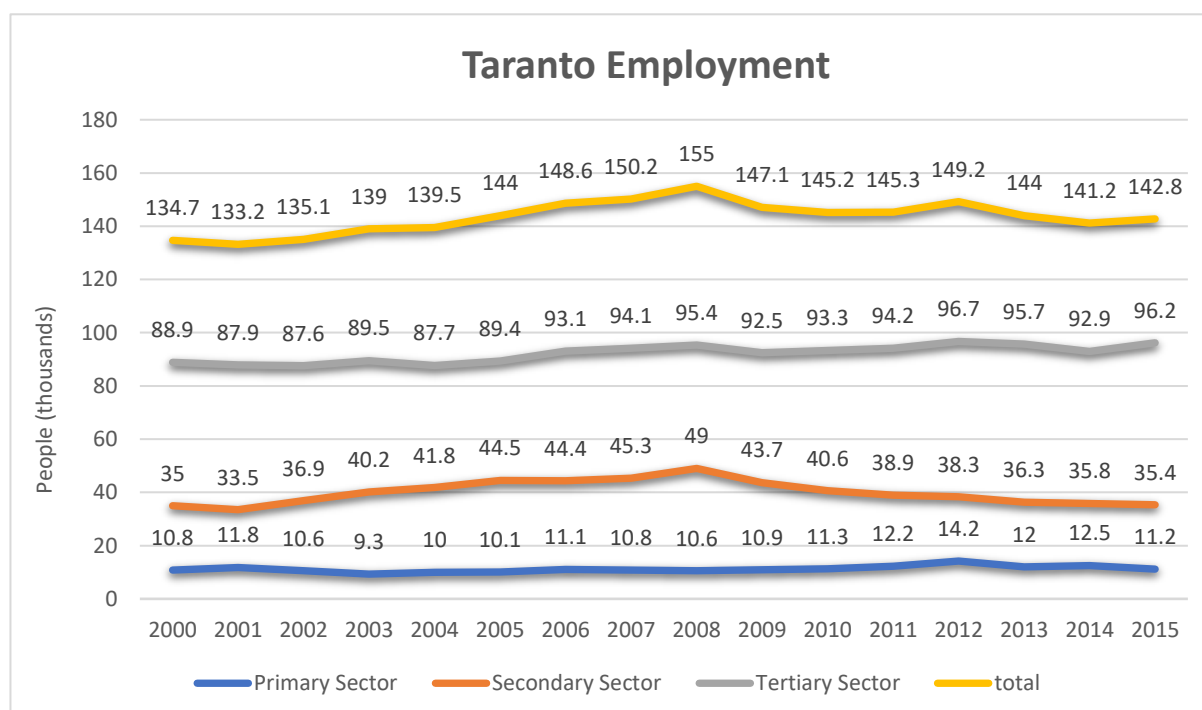
The first one is the Maritime Military Arsenal of Taranto, located in Mar Piccolo and inaugurated on August 21, 1889. It always had a notable impact on the city, both from an economic and business but also social and urban point of view. Currently, the Italian Navy uses it only for the support and maintenance of the fleet.

The second one is the steel Plant: in 1965 the IV Italsider Steel Center was inaugurated, one of the largest industrial steel processing facilities in Europe, provoking an increase in per capita income by 274% after the remodelling of the economy from agricultural to industrial (bancaditalia.it).

At the end of the eighties, during periods of crisis in the steel market, the Ilva company, owner of the factory in Taranto and several others, went through several economical and financial troubles, arriving in 1983 to a voluntary liquidation and was subsequently taken over, with the original name of Ilva, by the Riva steel group. The most important plant, in Taranto, passed in 1995 to the Riva Group, while almost all the other important poles were sold or closed. After the investigation launched in 2012, the state started the company's commissioning procedure and launched an international tender for the reassignment of the company. Am Investco, a partnership formed by ArcelorMittal and Marcegaglia, was chosen to start the acquisition negotiations. In November 2018 it is officially owned by ArcelorMittal and takes the name of ArcelorMittal Italy.

## III.2 Secondary Sector

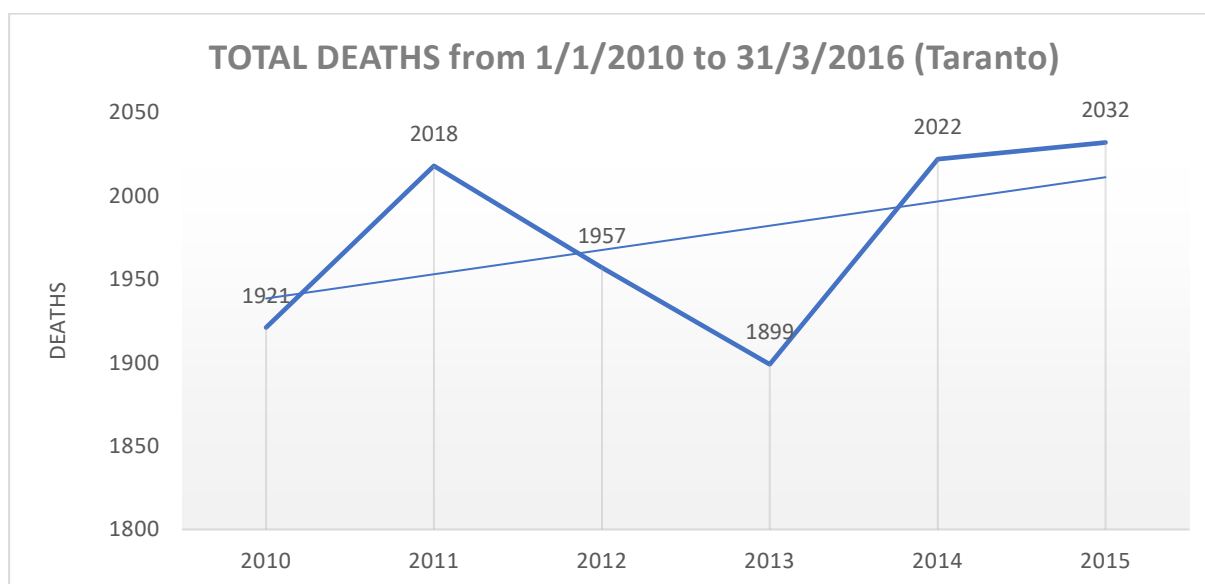
Ilva is at the centre of a vast debate due to its environmental impact. Its emissions were subjects to several criminal trials for pollution that concluded, in some cases and degrees of judgment, with the conviction of Emilio Riva and other executives. It has the merit to have created thousands of jobs, reaching a peak in 1981 with 43,000, but nowadays it only counts slightly more than 10,000 (12,859 registered in 2013), and the last data registered in 2013 shows that industry-linked companies and services employ 3,000 workers (ILVA.pdf). If in 2013 the industry was employing, overall, around 15,000 workers, now the amount of jobs has reduced:



Data source: ISTAT



Taranto's employment in the Secondary Sector had a peak in 2008 with 49,000 workers employed, but now the amount is just 35,400 and the value added has also decreased significantly, showing that the theory we discussed earlier, regarding the TFP and technological innovation, is valid. Moreover, the installations of the industry are very old and some of them were fixed up to standards only with the recent administration (e.g. the mining parks coverages). In fact, the main problem has always been the pollution damages caused over time. The epidemiological models, adopted by the experts appointed by the Public Prosecutor of Taranto, have attributed, in the seven years considered, a total of 11,550 deaths, with an average of 1650 deaths per year, mainly for cardiovascular and respiratory causes and a total of 26,999 hospitalizations (available at: <http://www.epiprev.it/materiali/2012/Taranto/Concl-perizia-epidemiol.pdf>) .



*Data source: ISTAT*

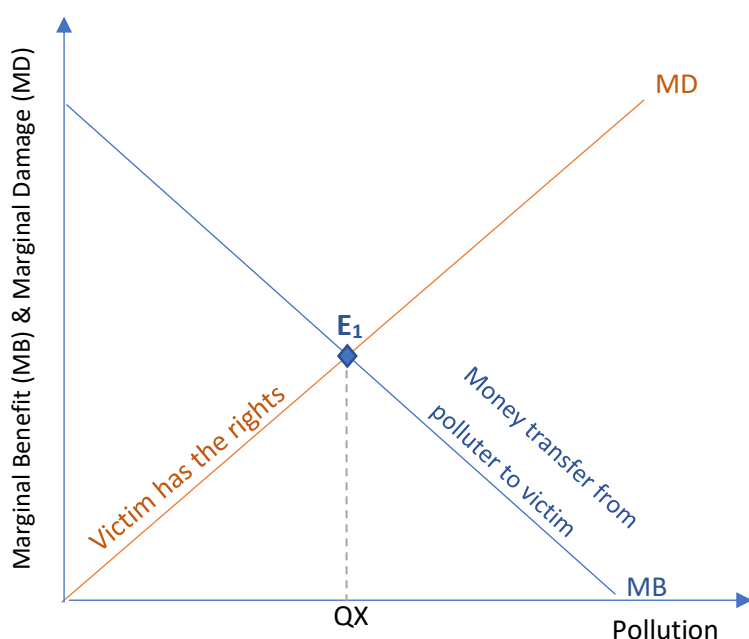
After the commissioning of the industry in 2012, the levels of pollution lowered back to normal. However, widespread uncontrolled emissions continue, in particular the phenomenon of red fumes called "slooping". With the new administration, the main concern is that history could repeat itself.

Recalling the Sokoloff and Engerman theory, we know that in the South is very difficult to have powerful public institutions that are not affected by criminal organisations and self-interests.

As said by the Urban Economists Edward Glaser: "Cities generate negative, as well as positive, externalities; addressing those externalities requires both infrastructure and institutions [...]. Standard welfare economics teaches us that either subsidies or Pigouvian fines can solve that problem, but both solutions are problematic when institutions are weak".

This is fundamental and the weakness of institutions is also one of the reasons of an important lack of information. The industry has never been constant and exhaustive in informing its workers and, above all, the citizenship and the local levels of government of the risks in the workplace and the types and quantities of emissions into the atmosphere. Today, there is plenty and up-to-date information, but many data have been elaborated by environmental associations (ARPA-Puglia), 74 trade unions, citizens and only some by the institutions after years of business. Information is fundamental both in forecasting interventions targeted on the territory and in planning long-term efficient policies and action plans. For instance, the Pigouvian taxes (equal to the external marginal cost that induce the producer to produce at an efficient production level) have never been taken into consideration from the local authorities and yet they would not be easy to implement: firstly, because of asymmetric information between the Plant and the City, secondly, because of the magnitude of the problem. The European Environmental Agency (EEA) published a report entitled: "Revealing the costs of air pollution from industrial facilities in Europe" (2011), where it is revealed that the health and environmental costs caused by Ilva are between 283 and 463 million.

Another theory is shown below:

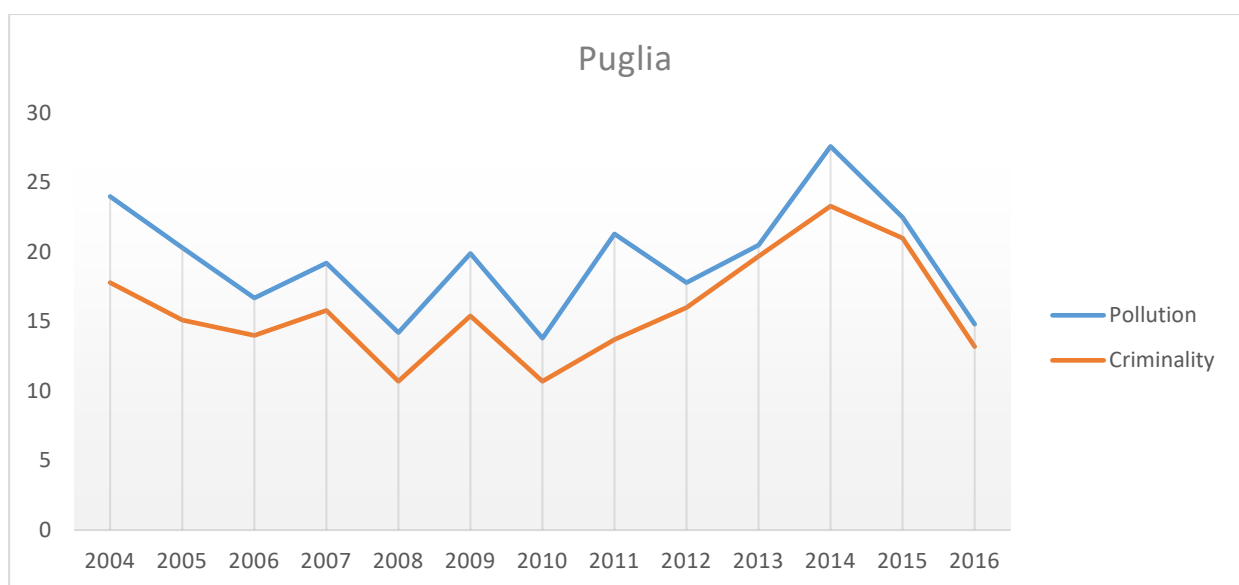


The Coase theorem provides for the establishment of a kind of private negotiation between the parties to achieve a balance between their "pollution rights" and the right not to suffer from it. Finally, the transferable pollution rights entail the establishment of a sort of "polluting quota" market among the various pollutants: once a maximum sustainable limit of all the quotas has been set, the companies agree and "divide" the pollution. In our case, a market could be

established between the industry (polluter) and the local institution (victim), the city would have the rights and in order to avoid asymmetric information between the two parties, the ARPA could act as inspector and report, periodically, the levels of pollution, so that the industry will be obliged to pay a certain amount to the city in order to produce up to point  $E_1$ , where marginal damage is equal to marginal benefit (efficiency level).

This solution could be very useful to put a brake on the overall pollution produced by the various production plants in the area, but it would still be not optimal to get out of the situation of market failure already widely underway.

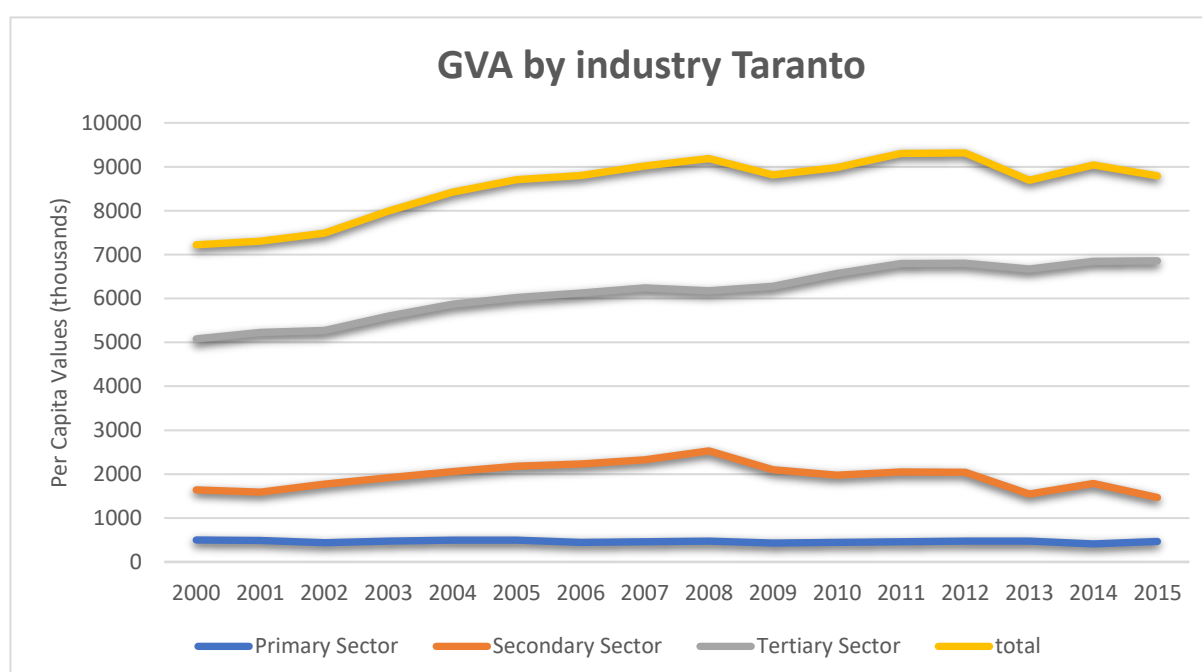
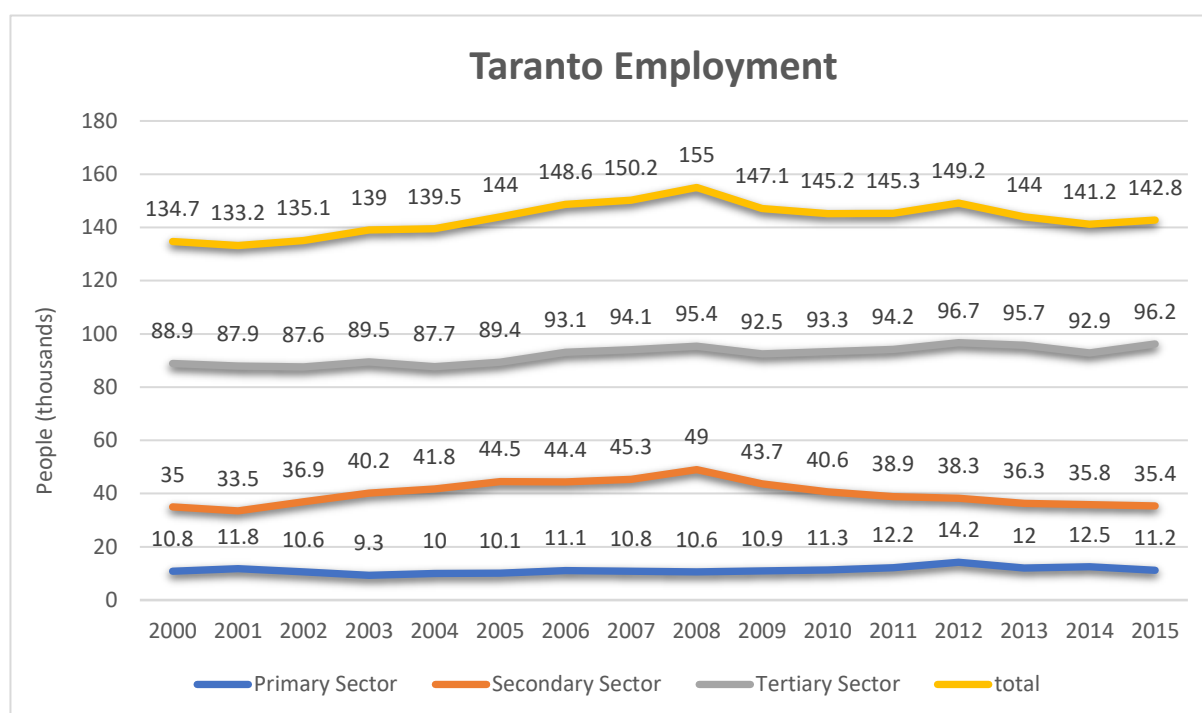
If we look at this graph:



*Data source: ISTAT*

We can notice that pollution and criminality in Puglia are increasing and decreasing almost at the same time every year (except 2011-2012). It seems a reflection of how fluctuating is the power of institutions in Puglia. Therefore, first things that should be improved are the local authorities.

### III.3 Tertiary Sector



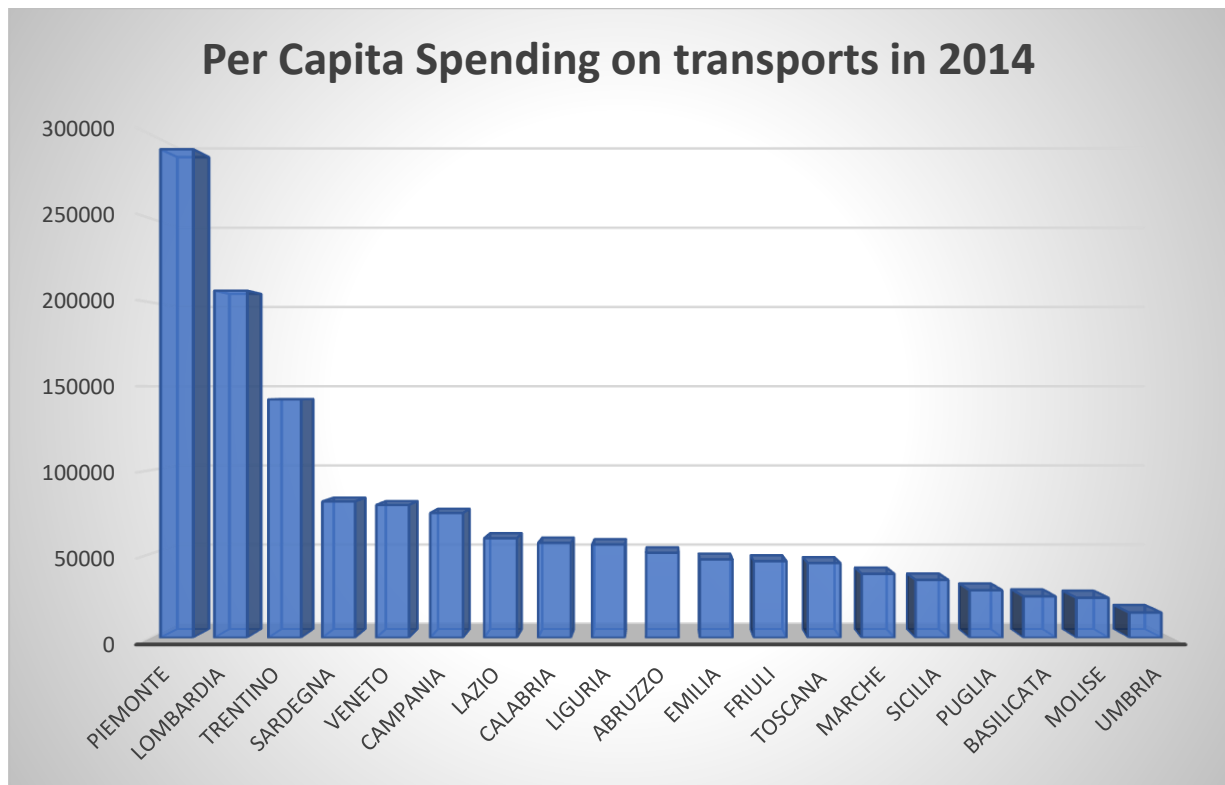
The Tertiary Sector has experienced an exponential increase in output and a significant increase in employment between 2000 and 2015 in this city. The main debate has always been whether to shut down the steel Plant or not. From these data, we can see that the service sector is slowly becoming the real main engine of this economy, increasing the employment by almost 9,000 jobs and its gross value added (GVA) per capita by 25.9% in 15 years. This means that at this rate, the roughly 14,000 jobs made available by Ilva could be replaced by the service sector in

around 20 years and if new opportunities of investment increase the growth rate, a deindustrialisation of Taranto could happen in less than 20 years. The change of the economic structure of this city is already underway and the following list of profitable investments are the proof.

Firstly, it has been presented a request for a state-maritime concession, regarding the tenure and total use of the entire commercial port compendium by the Turkish company YilPort Holding A.S., which can be a good opportunity for an economic revitalisation of this facility (YilPort Holdings, 2005). Another important infrastructure that can be very much exploited is the airport "Marcello Arlotta". Born to be the defence of the naval harbour, it became a small civil airport in 1964, but after 1982 it became partially a military and commercial airport. In 2006 the partnership between Alenia Aeronautica and Boeing transforms the airport into a fabric for some parts of the new Boeing 787, increasing the dimensions of it and the importance of the goods exchanged. In 2010 it becomes a customs airport and in 2018 it has been announced that in 2020 it will become the first Italian spaceport operating for suborbital flights (ANSA, 2018). However, the big deal is tourism, which may represent an important factor in the recovery of the local economy, but the reading of the main tourism indicators suggests that this resource is still far from being fully exploited. If we consider the index of tourist concentration, which measures the ratio between total annual arrivals and the population, Taranto is at 98<sup>th</sup> place at the national level. Focusing on the data of Confcommercio.it from 2013, we see that Taranto is in the penultimate place between the provinces of Puglia for presences (1,100,710) and arrivals (258,745). If the overall provincial figure is compared to the total figure of Puglia, it can be noticed that the province of Taranto contributed just 8.1% to arrivals and 8.2% to total presences in the region. This area struggled to attract international tourists, as evidenced by the 90<sup>th</sup> position of the index of internationalization of tourism. The expense of international tourists in the province of Taranto reached, in 2014, the lowest level of the last five years, reaching 30 million euros. The decline in the period 2011-2014 was particularly significant, the volume of spending fell by 38.8%, from 49 to 30 million euros. Moreover, since the region of Puglia is performing very well in this sector, these results are even more worrying. We can establish two main causes for this: bad advertisement and transports.

Regarding transports, the tourism network in Puglia still has to be properly developed, especially the connections with Taranto. According to the recent data collected by UnipolSai, through the "black boxes" installed in the cars of its policyholders, it appears that in the provinces of Lecce and Brindisi, on average, the car is used for 305 days a year (compared to a

national and regional average of 287). The gap with the regions of central and northern Italy is evident: the worst regions are Puglia, Sardinia and Calabria. According to the Public Transport Committee of Salento: “the sad record that emerges from the data collected is a clear picture of the serious lack of public transport in this area, which often makes the use of cars inevitable”. But the problem is that no one is trying to improve it. From the data obtained on [openbilanci.it](http://openbilanci.it):



We can see that Puglia was the 16<sup>th</sup> region for per capita spending on transports in 2014 and the cities of Taranto, Brindisi and Lecce were, respectively, 2233<sup>rd</sup>, 2394<sup>th</sup> and 2487<sup>th</sup> in Italy. This could be justified if the Total Spending on Puglia was the 16<sup>th</sup> overall, but surprisingly it was 9<sup>th</sup> (33,611 million in 2016) therefore this should be one of the main investments in the next years (tab 02-06-07). This will benefit mostly the tourism but also the commercial trades in Taranto, since the location and the way to reach the city is one of the issues.

Another investment can be done in renewable energies. Puglia is already the leader in this sector and Taranto has many areas that can be exploited to build large wind and photovoltaic parks. These areas are shown in tab. 01-05-08-09-10-11.

### **III.4 Comparison with similar cities**

Regarding the advanced tertiary sector, apart from investments in tourism, another idea comes directly from Tallin: once maritime city, during the XIX<sup>th</sup> century it became an industrial city; after being heavily bombed during the Second World War, it passed under the Soviet government, during which the medieval historical center underwent a phase of degradation. In the summer of 1980, the sailing regattas of the Games of the XXII Olympiad took place and, on that occasion, various buildings were built. From there, the rebirth of the city began, carried forward in recent years with the development of the IT sector. In 2005 the New York Times defined Estonia as "a sort of Silicon Valley on the Baltic Sea". The best-known Estonian start-up in the sector is probably Skype Technologies S.A., which has developed the software of the same name. This is an example of a city, based on the Secondary Sector, that shifted and relaunched its economy into the IT sector.

Another example is Liverpool: city of old industrial tradition; the workers' reality was challenged by the steel crisis, just like Taranto. Both with manufacturing complexes that have often obscured what is valuable from the architectural and landscape point of view. Both cities, with a past founded on fishing and activities of the sea, united by a chaotic industrialization and induced by specific government choices. After the steel crisis, Liverpool's economy and the urban development have returned to bloom again, thanks to the re-modernisation of its structure (ONS). In 1993 UNESCO recognized the architectural and historical value of the Albert Dock warehouses, defining them as world heritage. Since then, the Albert Dock regained new life: where there were naval warehouses, today there are offices of companies in the tertiary sector, television studios, shops and museums. These warehouses represent, today, the main touristic attraction of Liverpool and are to be considered an example of redevelopment of an industrial area, now the pride of the city as a destination for thousands of tourists. The parallels with the Arsenal of the Navy of Taranto and its immense structures are all too evident. Liverpool was able to turn and plan its future, putting its industrial past behind and reclaiming the sea and its waterfront, while Taranto, on the other hand, keeps turning its back on its seas and its potential.

## **Conclusions**

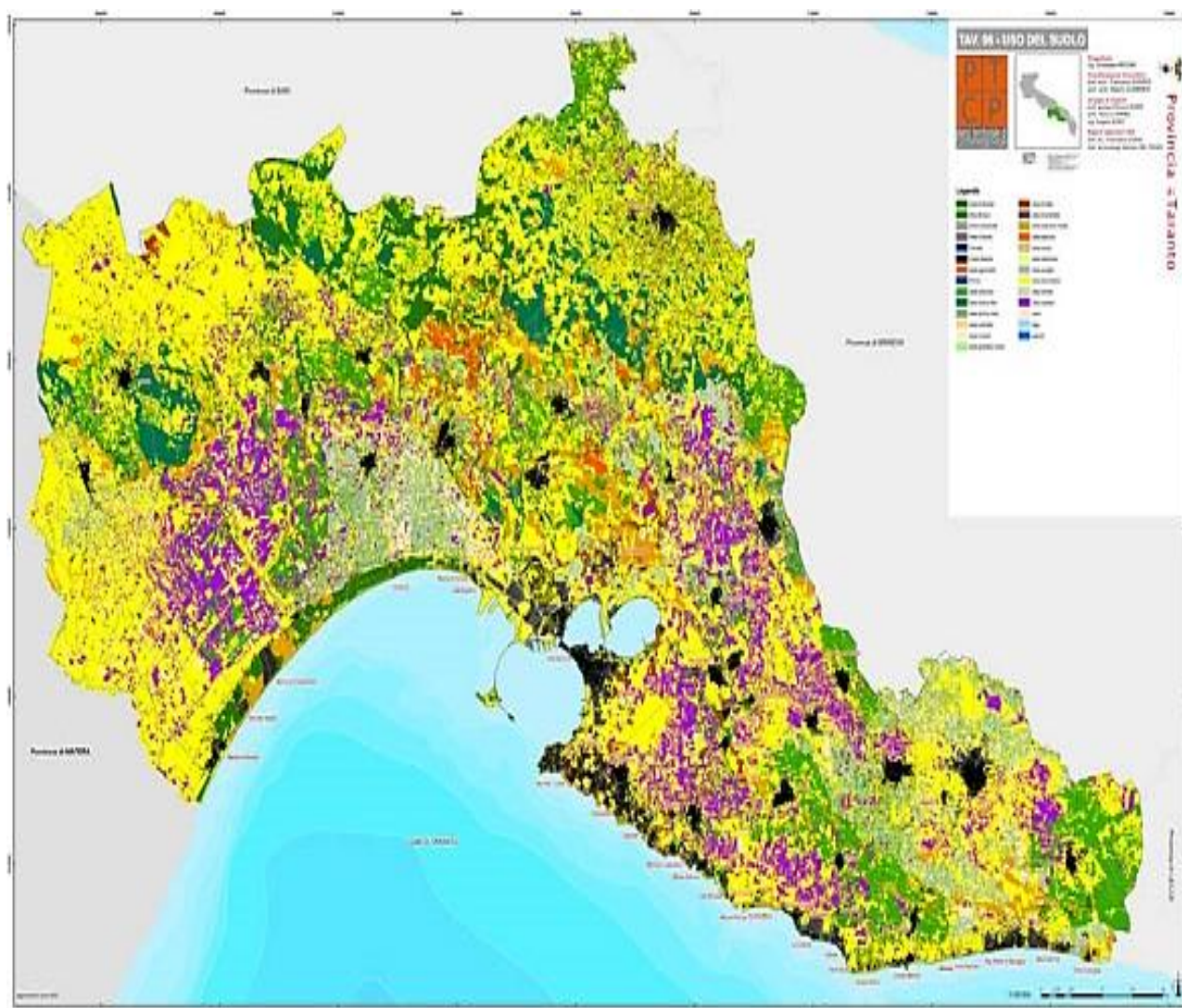
As demonstrated by some Countries, even if the process of deindustrialisation is underway, it does not mean that the industrial sector is destined to fall. On the contrary, with some innovations, it is possible to boost this sector even further, but only if the market is stable. In a situation of deep market failure like Taranto is very difficult to relaunch this sector, but not impossible. In the meanwhile, it is fundamental to invest in those sectors that are outperforming in order to help the recovery and revival of the economy. Therefore, deindustrialisation is not necessarily the only path to follow and the change in the economic structure of an industrial city is possible, as demonstrated by Tallin and Liverpool, if the city has a special vocation. In our case, Taranto has many possible vocations to profit by, such as tourism. Thus, the key for the economic success of a city does not reside merely in its industrialisation, but in exploiting the traditions and cultures typical of each one. The economic revival must rely on the identity of the city itself; however, it is fundamental that the standards of technological progress and quality of services must be applied on every city's facilities.



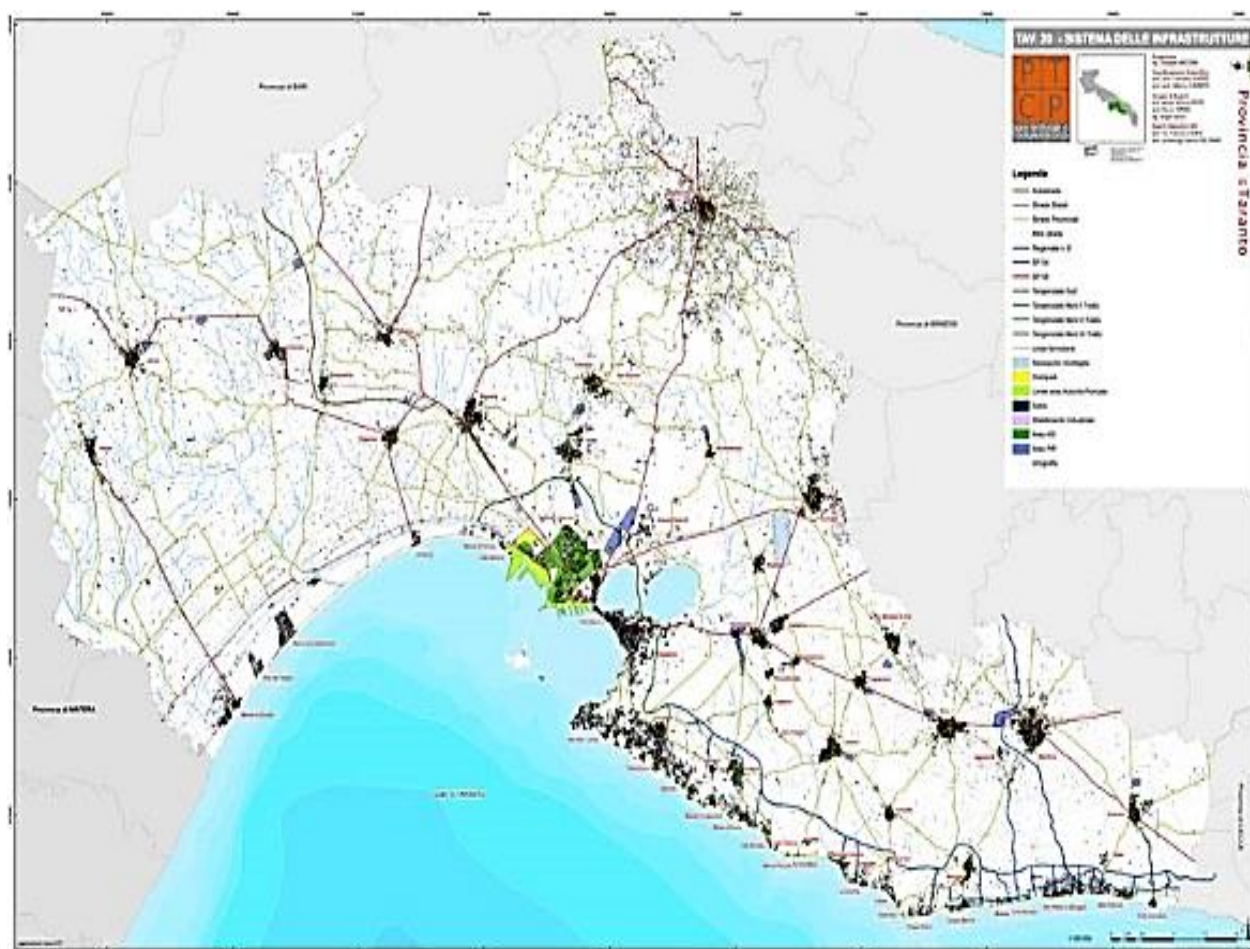
## List of Tables

The following tables have been elaborated by the Province of Taranto and they are part of the territorial plan of provincial coordination.

Tab. 01 – Land use (brown – uncultivated area)



Tab. 02 – Infrastructures system

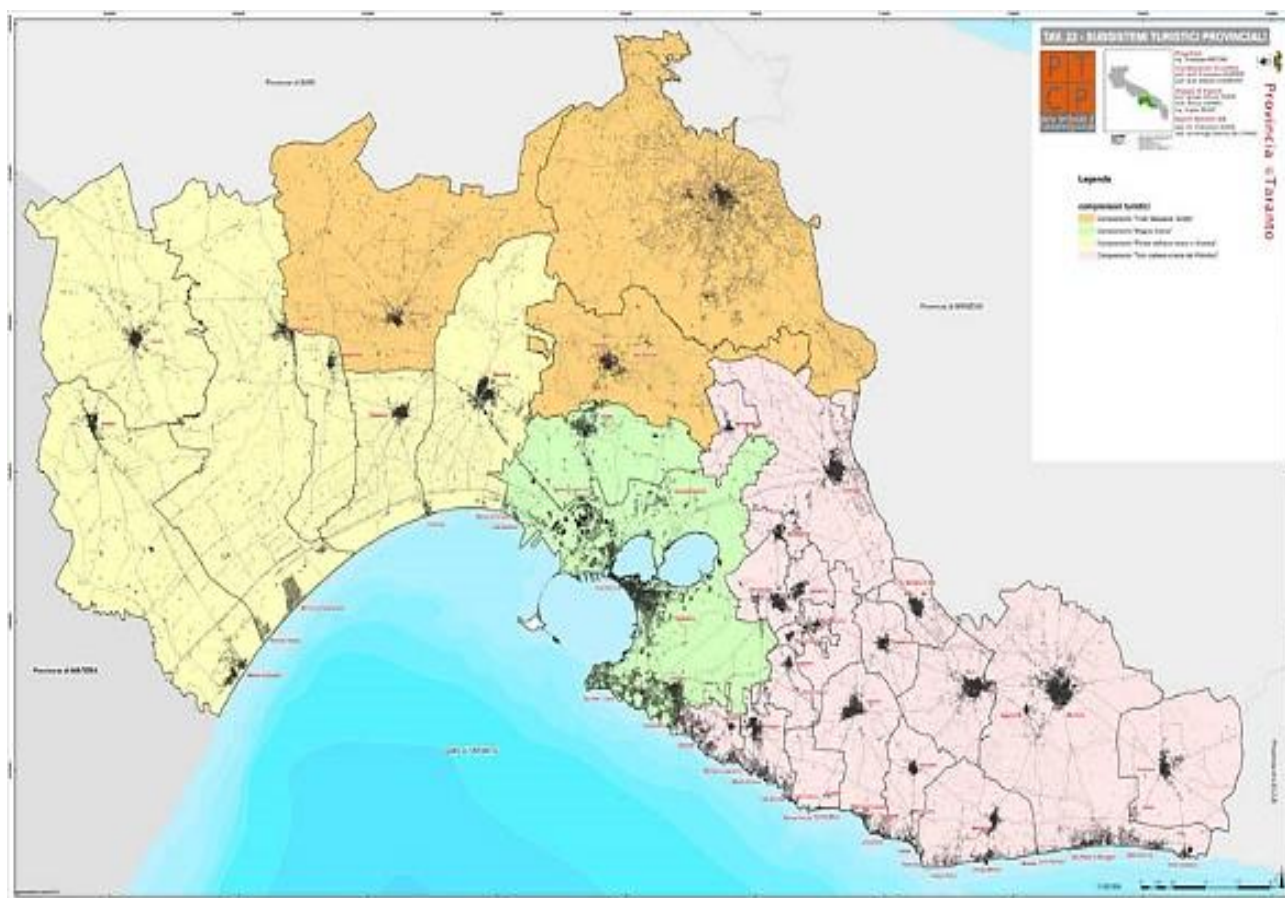


Tab. 03 – Agriculture infrastructures





Tab. 04 - Provincial tourism systems

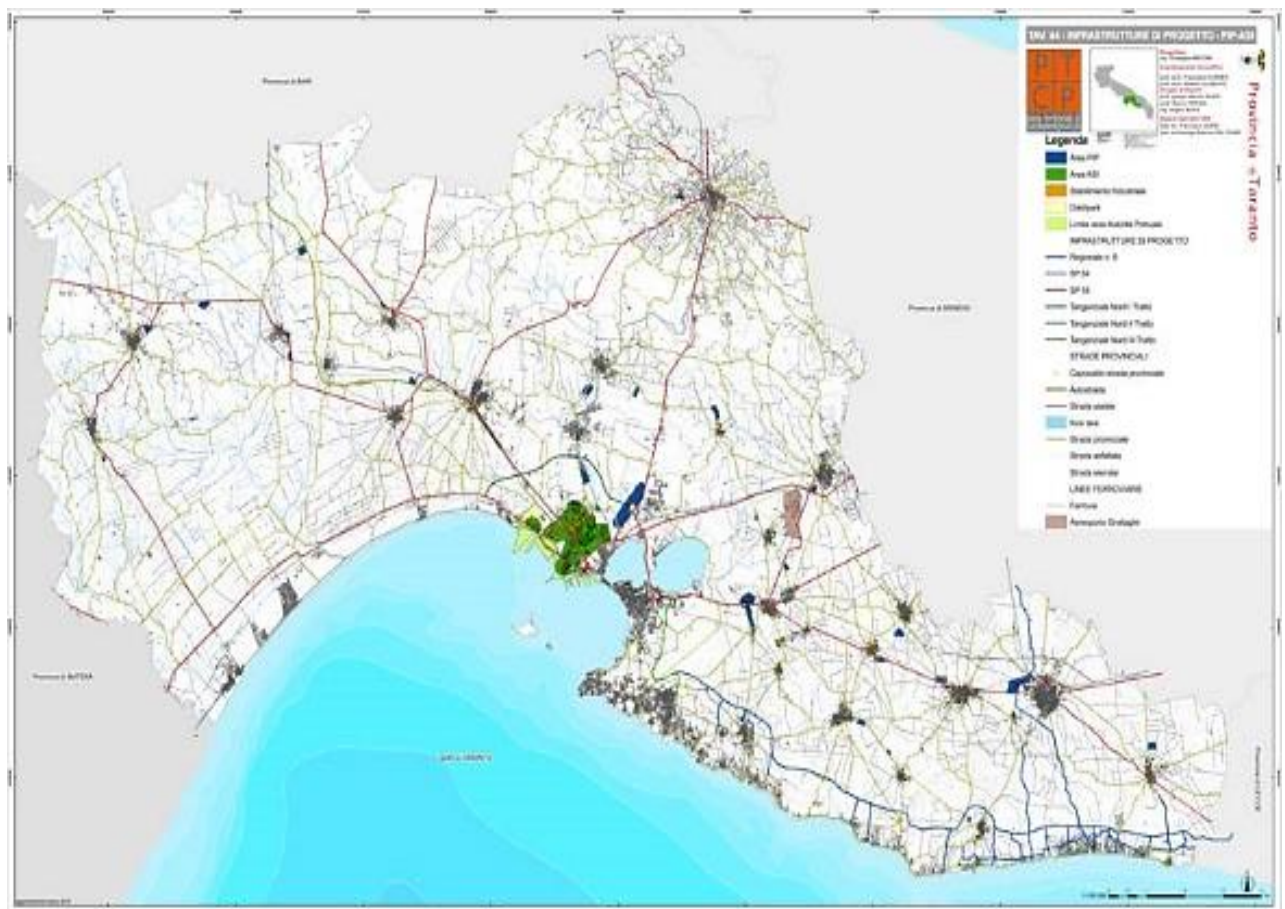


Tab. 05 – Land use (white – arable areas)

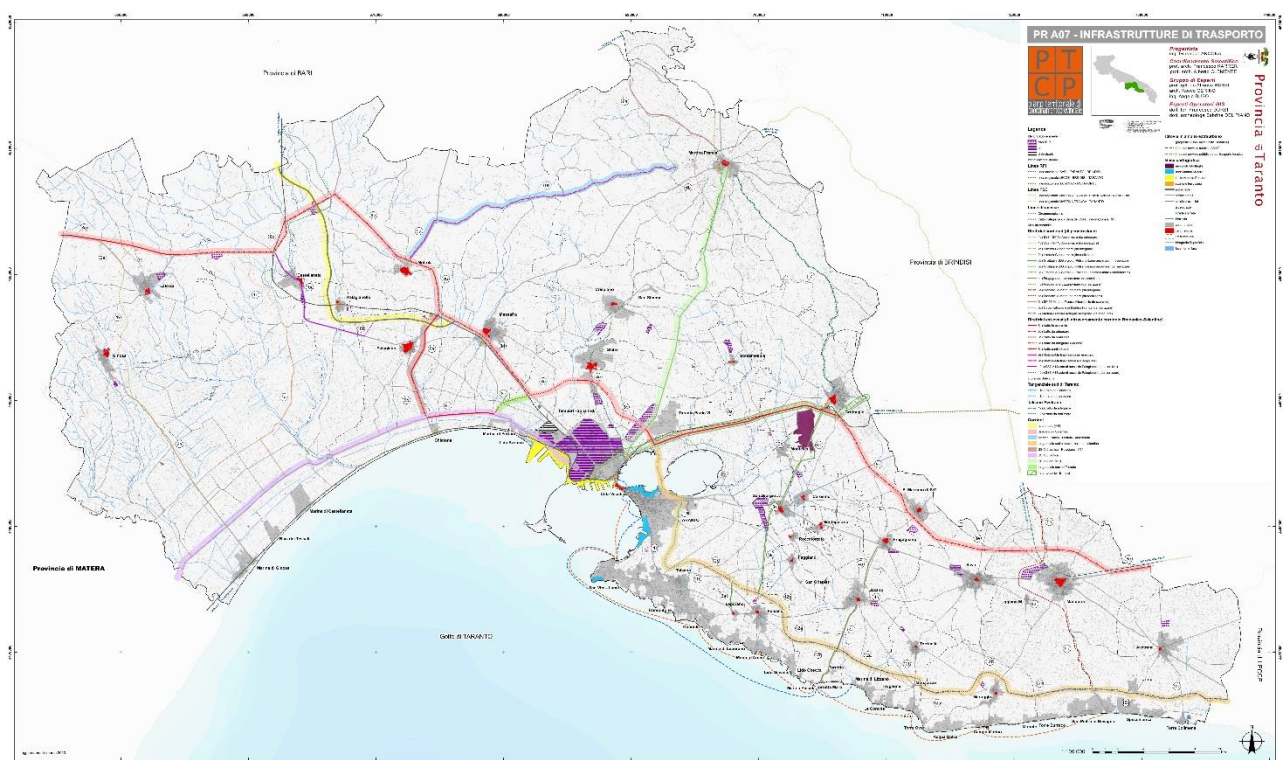




Tab. 06 - Project infrastructures - PIP-ASI

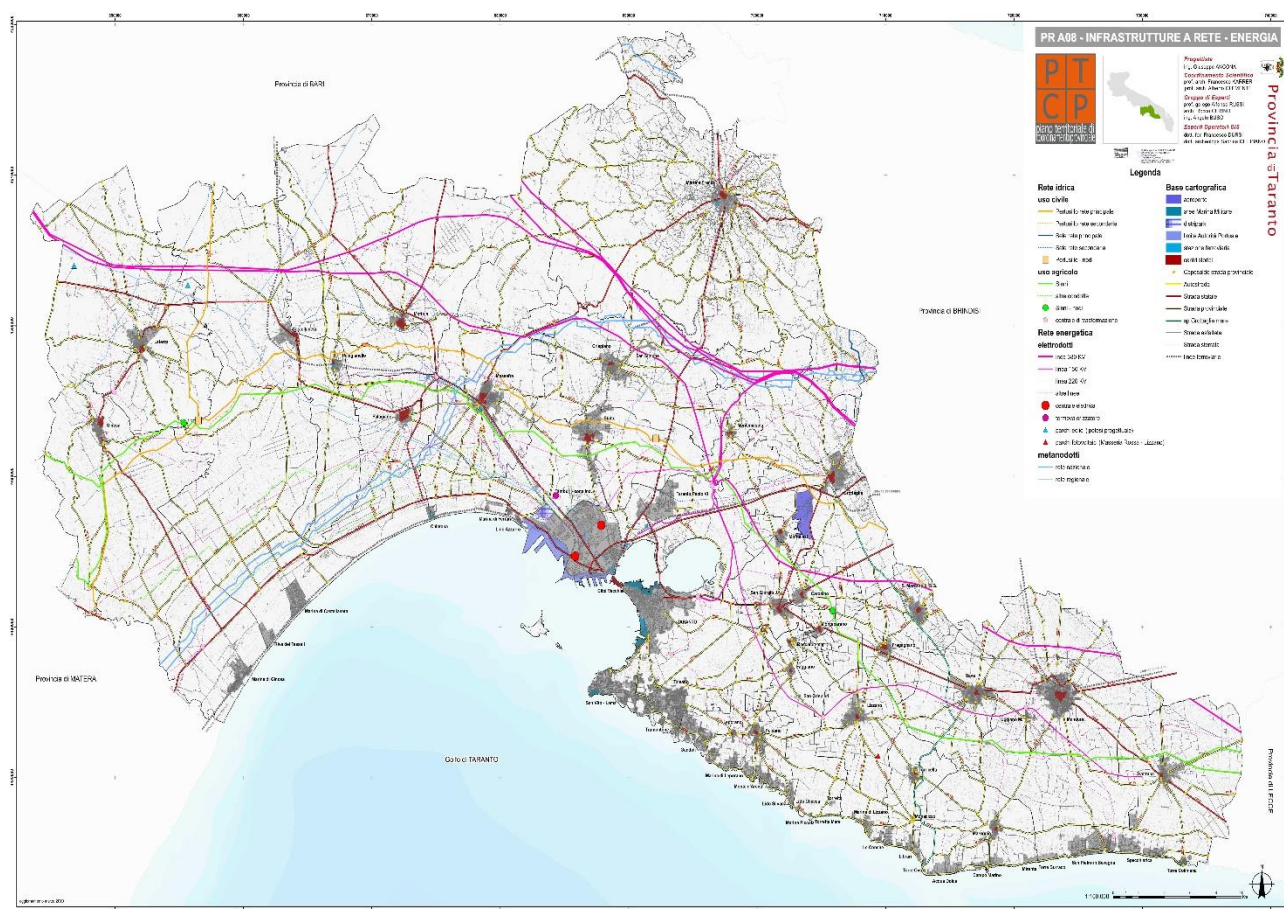


Tab. 07 – Transport infrastructures

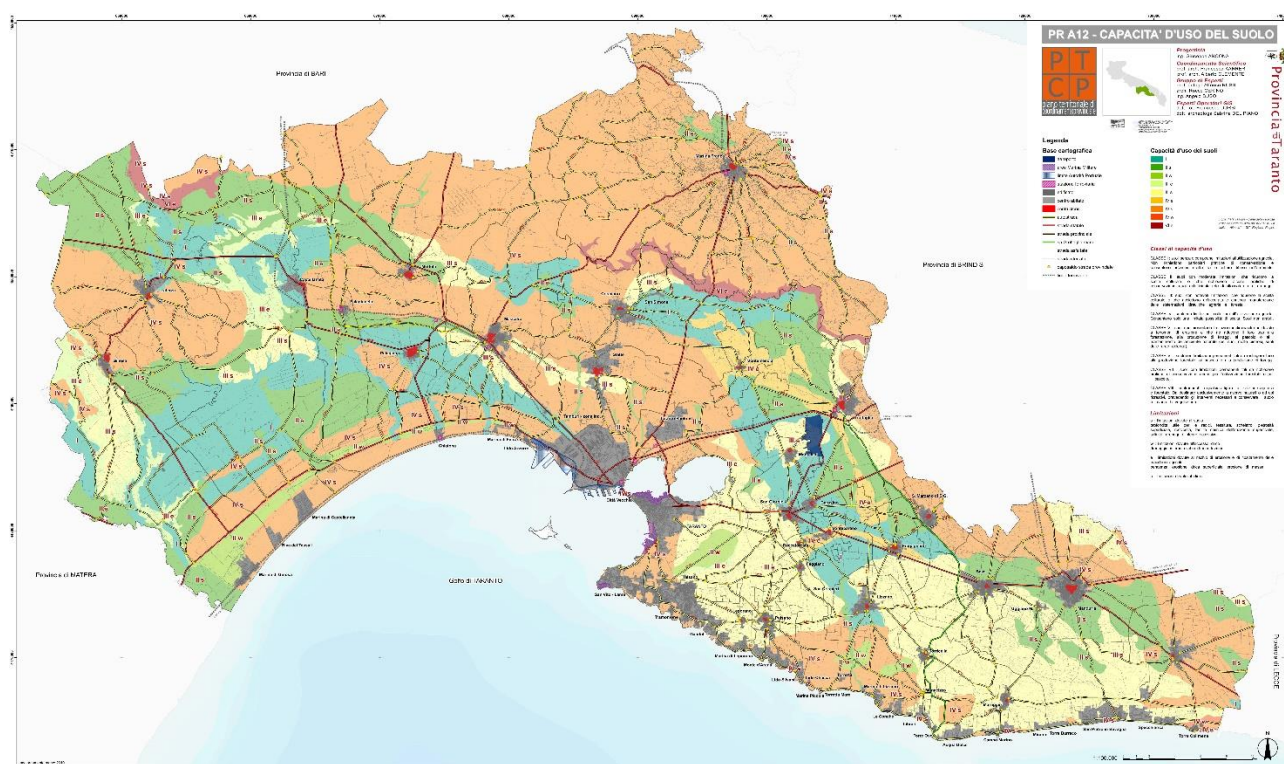




Tab. 08 – Energy network infrastructures

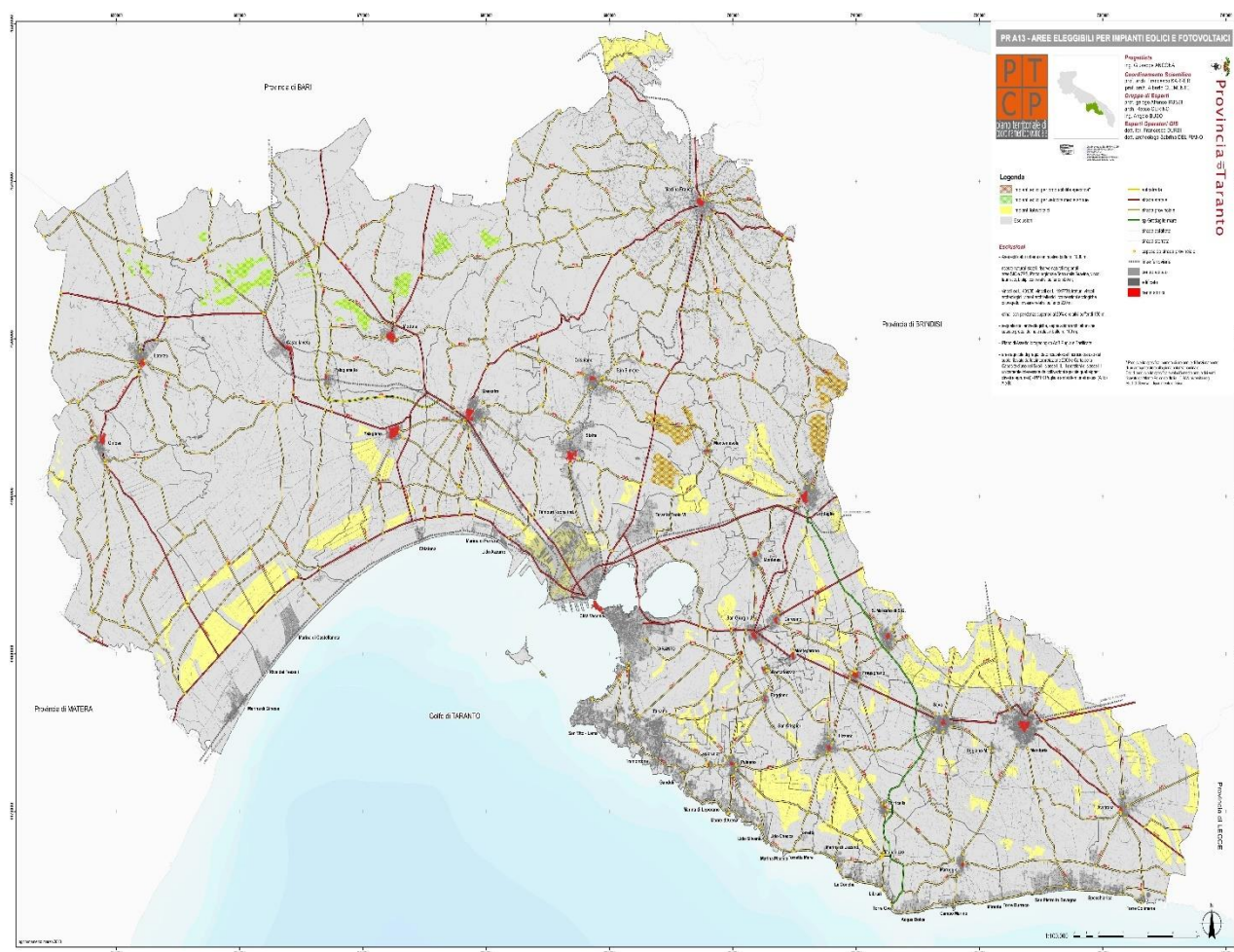


Tab. 09 – Land use capacity

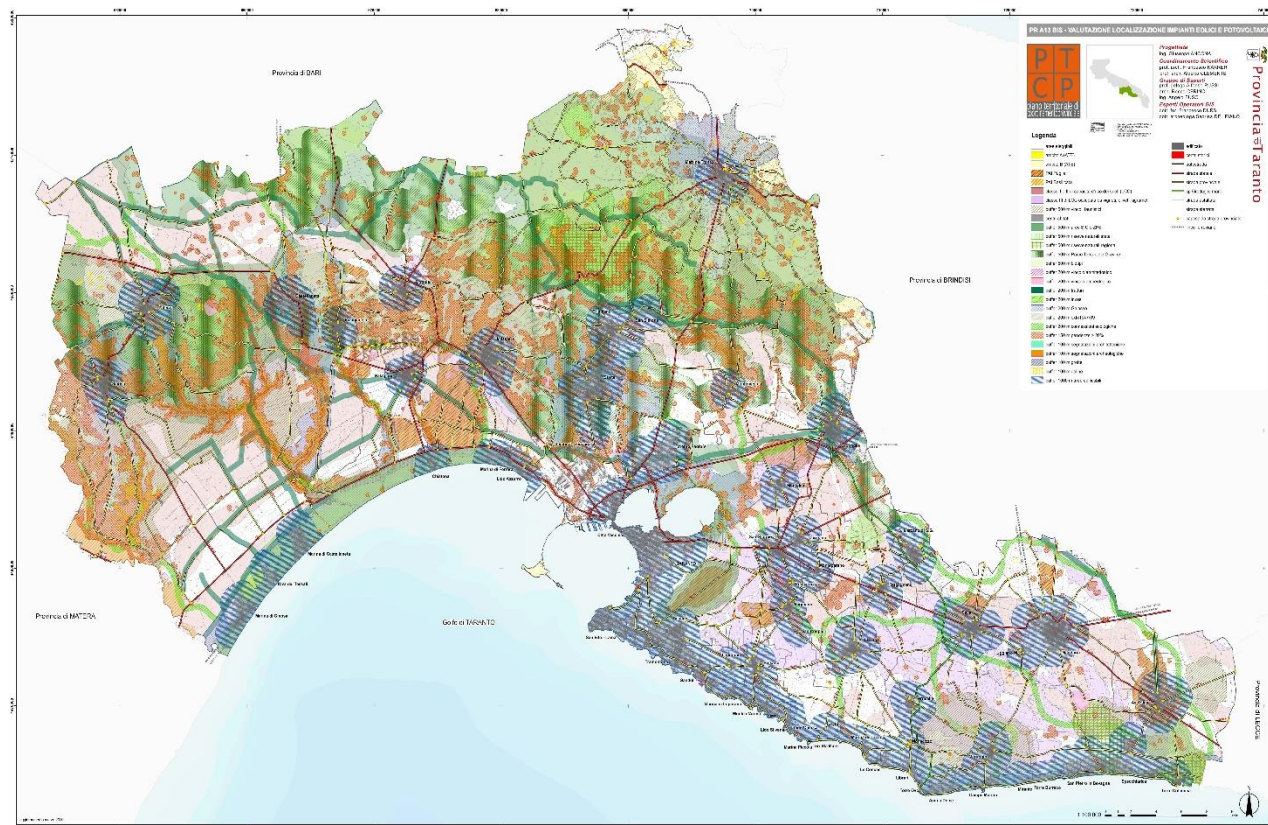




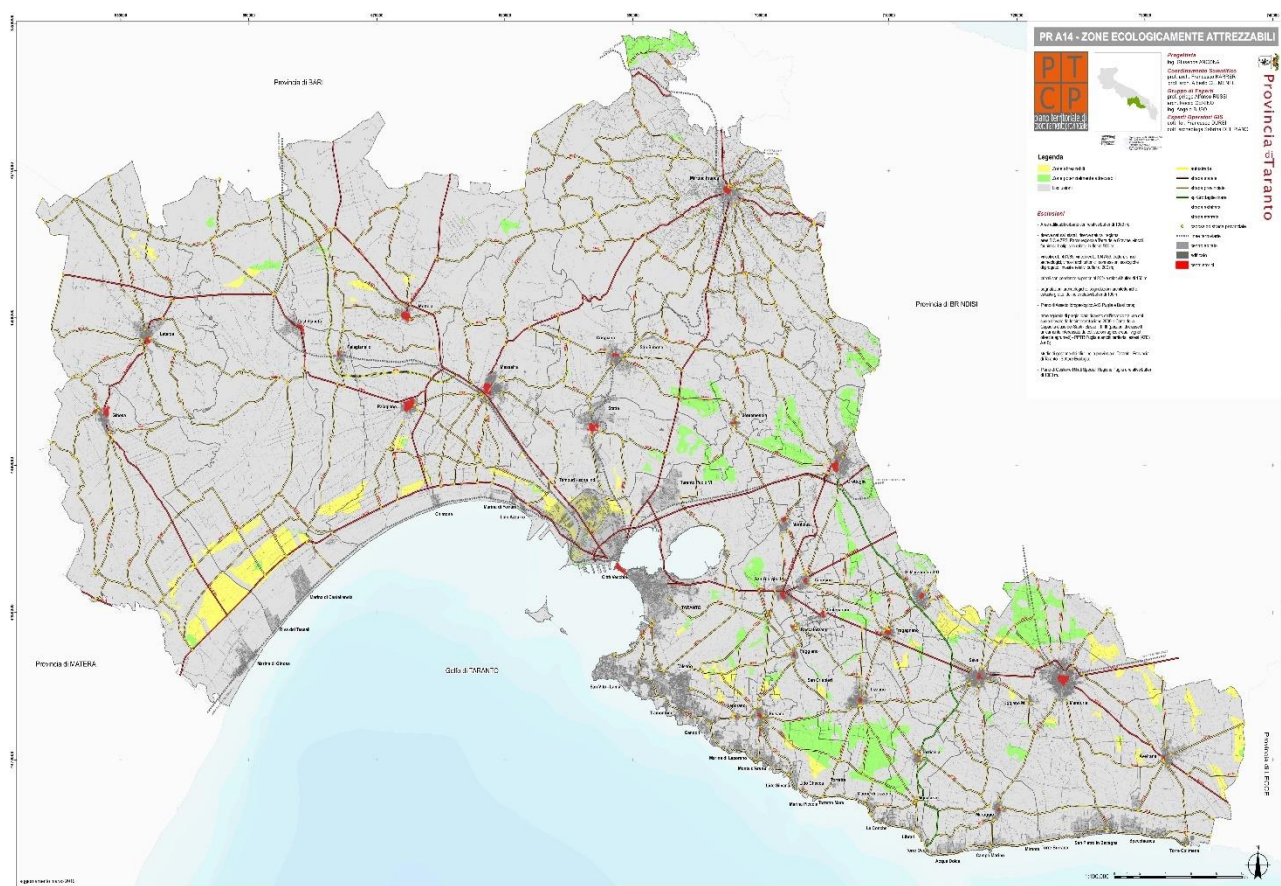
Tab. 10 – Eligible areas for wind and photovoltaic plants



Tab. 11 – Evaluation of wind and photovoltaic plants location (Blue – building areas)



Tab. 12 – Ecologically equipped areas





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