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METHODS, TOOLS AND BEST PRACTICES

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The cover image shows a sea glacier ice that melts away.

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NextGenerationEU in major Italian cities

The increase of urban competitiveness as a success factor for the National Recovery and Resilience Plan

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Abstract

The European Union has reacted to the pandemic with the program NextGenerationEU (NGEU) to boost the recovery and development of the EU countries by relying on National Recovery and Resilience Plans (NRRPs). Given the pivotal role of cities, and in particular major cities, as engines of social and economic growth, the success of the program necessarily depends on the increase of urban competitiveness, intended as an intrinsic characteristic of cities and a fundamental aspect to transforming resources and challenges into opportunities for territorial development. This paper examines the relationships between major cities and the NRRP in the Italian context, firstly highlighting the role of cities in the plan's different phases and then drawing attention to the missions and investments in which the urban dimension is more significant. Furthermore, it highlights how the NRRP goals achievement in cities can lead to higher levels of competitiveness and support the national economic recovery. One of the main results is the identification of five Macro-areas of Competitiveness for the urban dimension: Tourism and culture, Digitalization/smartness, Green transition, Sustainable mobility, Social Inclusion & Cohesion. Additionally, the paper discusses the allocation of the European resources among major Italian cities in relation to their urban suitability and vocations.

Keywords

NextGenerationEU; Major Italian cities; Urban competitiveness.

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1. Introduction

In 2021 the European Union reacted to the pandemic crisis - started in 2020 with the Covid-19 outbreak - by launching the program NextGenerationEU (NGEU), which provides resources and opportunities to give a chance for recovery and development to the EU countries. Specifically, NextGenerationEU is a temporary tool that firstly aims to repair the economic and social damage caused by the coronavirus pandemic, also facing other present and future challenges such as climate change, digital and green transition, and the achievement of higher levels of equity (EC, 2021). In this context, the Italian National Recovery and Resilience Plan (NRRP), approved by the EU Council on 31 July 2021, outlines how Italy will invest €191.5 billion of the total €806.9 billion invested by the European Union on the road to recovery (Governo Italiano, 2021). It is structured to respond concretely to the economic and social consequences of the pandemic and generate, additionally, competitive advantages. Thereby, the Italian NRRP represents a unique opportunity to enhance the competitiveness of the country, and, notably, the competitiveness of urban areas.

In this framework, it is worth considering the role of cities in the NextGenerationEU implementation, since the scientific literature on urban competitiveness lacks of a unified approach to the topic. And yet, it is fundamental to define which urban characteristics are suitable to describe the competitive potential of cities in relation to the investments that will be activate in the coming years. In order to fill this gap, the work deepens the cities' suitability to competition and considers urban competitiveness as a fundamental aspect for the economic and social growth of territories, taking into account also the sustainability paradigm (Begg, 1999; Carvalho et al., 2016; Ni & Kamiya, 2020). Thanks to the high concentration and availability of people, opportunities, and goods, cities have gradually become a driving force for global development (Institute for Urban Strategies, 2021), especially in periods of economic transition (Papa et al., 2014a) such as the one we are experiencing right now. The contribution of cities and, in particular, major cities to the national economies' success greatly depends on their characteristics of competitiveness and on the ability of policymakers to understand and orient their intrinsic resources and vocations (Camagni, 2002; Boddy & Parkinson, 2004; Sharifzadegan & Nedae Tousi, 2016), ensuring the overcoming of territorial disparities and the achievement of sustainable development goals. In this sense, given that urban competitiveness is a function of multiple components and features of urban systems (Ciccarelli, 2006; Sáez & Perriñez, 2015; Yuan, 2017), it provides an innovative perspective on the interpretation of the recovery plans at the cities' scale.

With these premises, the work gives an insight into the role of cities in the development, implementation, and monitoring phases of the plan, highlighting how the Italian NRRP has involved urban administrations in the implementation of interventions to get wider and shared economic advantages. Secondly, it examines the assignment of the European resources among major Italian cities to increase urban competitiveness. Specifically, the study has been conducted in order to get different results. On the one hand, it deepens the relationship between the increase of urban competitiveness and the missions of the plan, drawing attention to those missions and components in which the urban dimension is more significant. One of the objectives of this phase is to understand how the plan can lead to higher levels of competitiveness and support, in this way, the national economic recovery. On the other hand, the paper discusses how the financial resources have been distributed in the territory in relation to the suitability of Italian urban contexts, but also with a view of making territorial and social disparities fading away, both for the dichotomy city centre-suburbs and north-south. Another fundamental objective is to identify several macro-areas in which Italian cities will be called upon to compete to attract the financial resources necessary to boost their competitiveness. In other words, the main contribution of this work to the scientific literature consists in examining the relationship between major cities and the Recovery Plans in light of the importance of urban resources for the communities' overall level of development, giving an insight into the Italian case.

The paper is structured as follows. The next paragraph illustrates the role of cities in the different phases of the plan while pointing out the mutual relationship between the increase in urban competitiveness and the

achievement of the objectives of the NGEU. The third paragraph highlights the resources invested in the increase of urban competitiveness, considering the different missions and components of the plan and illustrating how the resources were distributed in Italian cities. The fourth paragraph, as a discussion of the data from the previous paragraph, deepens the role of major cities in the six missions of the plan and discusses whether the allocated resources are coherent with the vocation of the territories. The last section regards the conclusion of the work and its future developments.

2. The role of cities in the Italian NRRP

Despite the little surface (just 3% of the world's surface), cities globally account for 55% of the world's population and 80% of economic activities (ResourceWatch, n.d.). In this century, the development of national economies depends on the success of the urban economy and on the increase of urban competitiveness, intended as the ability to attract people, activities, businesses, and investments (EIU, 2013) and transform resources into opportunities. The role of cities in the international competition has been definitely and universally recognized since the 1990s due to the effects of globalization and urbanization and the consequent increasing relevance of the urban economy which have made cities the engines of social and economic growth (Kresl & Singh, 1999; Begg, 1999; 2002). Cities and, in particular, major cities are places of social development, democracy, cultural dialogue, and diversity and the main reservoir of economic, functional, and technological resources. As complex systems, cities can rely on their organizational capacity and adaptive behavior (Gargiulo & Papa, 2021) to create economic value, attract and transform resources, and create benefits for citizens (Ni & Kamiya, 2020; Boni & Zevi, 2021). That is why the implementation of the NGEU recovery plans, should start with cities.

Thus, it is significant that the Italian government involved Metropolitan Cities and Municipalities both in the design as well as in the execution and monitoring phases of the NRRP, differently from other countries where the role of urban administrations is often not explicit. The Italian NRRP developed a model of collaboration between the Ministry, Regions and Municipalities (Governo Italiano, 2021). While the central government will function as a control room in this organization, the Municipalities and Metropolitan Cities will play a central role as implementers of most of the territorial projects, through:

- the management of specific projects (as actuators or beneficiaries);
- the participation in initiatives financed by the Central Administration that allocate resources to local authorities to carry out specific projects that contribute to national objectives;
- the localization of investments already programmed in the NRRP whose responsibility of realization is delegated to other levels of implementation.

A selection board admitted 271 proposals, eight of which are high-performance pilot projects reserved for greater municipalities and more complex issues.

If we consider the distribution of the resources among territorial entities, Municipalities and Metropolitan Cities are the protagonists of the implementation of the plan.

Territorial Authority	Resources
Municipalities and Metropolitan Cities	€28.32 billion
Regions and provinces	€10.79 billion
Regions	€10.84 billion
Local health organization	€15.10 billion
Other	€1.36 billion

Tab.1 Distribution of the NRRP resources among territorial authorities in Italy (Governo Italiano,2022)

To ensure the success of the recovery plan, it is necessary that all the initiatives, especially those concerning urban areas, will have a complete implementation and provide an actual economic advantage. This is due firstly to the fact that cities are the main recipients of the financial resources for the implementation of several

competitiveness since it refers to the tourism and culture sectors, currently corresponding to 12% of the Italian GDP. This component includes not only big city centers but also the suburbs and internal areas and provides € 6.08 billion, divided as follows:

- Cultural heritage € 1.1 billion;
- Cultural regeneration of small villages, rural and suburban areas € 2.42 billion;
- Cultural and creative industry € 0.16 billion;
- Tourism 4.0 € 2.40 billion.

Of these resources, € 3.11 billion are reserved for cities. In particular € 820 million are dedicated to municipalities with a population lower than 5,000 inhabitants for the restoration of "borghi", while € 1.2 billion are for other Municipalities and Metropolitan Cities and they are divided as follows: €0.6 billion are destined for new projects for the valorization and conservation of architectural heritage and landscape, whereas € 0.3 billion are for programs of valorization of places' identity and for the redevelopment of parks and historic gardens within urban contexts. Tourism is a fundamental sector for Italian cities and a substantial source of income for local economies (Fortis, 2016). The touristic attractiveness of each city depends on diverse factors, such as the presence of sites of historical interest, the accommodation facilities, the geographical location, and the municipal budget for tourism and valorization of culture.

The 14 Italian major cities account for 21% of the national total beds, 39% of arrivals, and 31% of the national tourist turnout, thus representing a significant part of national tourism (ISPRA, 2017). According to an ISTAT classification (2020), Italian municipalities can be divided into 11 categories on the basis of their main touristic vocation. The category "Big cities (with multidimensional tourism)" includes 12 Italian municipalities with more than 250 thousand inhabitants, 11 of which have a metropolitan area. Napoli is the first metropolitan city for density and relevance of museum heritage, intended as the number of permanent exhibition facilities per 100 square kilometers weighted with the number of visitors. This variable denotes a cultural component of tourism, for which also Rome and Florence excel. Rome distinguishes itself also for the availability of hotel facilities, while Venice is the first city for the rate of tourism (ratio between the number of presences and the population), and the number of foreign tourists. It is worth noting that Messina, Reggio Calabria and Cagliari are not included in the "Big cities" list, substituted by Verona. And in fact, the local expenditure both for tourism and culture is very low in these municipalities, which, for their characteristics, cannot be considered big cities with multidimensional tourism (ISTAT, 2021).

Metropolitan city	Density and relevance of museum heritage	Rate of tourism	Foreigner tourists (%)
Bari	0.42	1.2	18.2
Bologna	1.45	2.0	25.8
Cagliari	0.82	1.4	22.7
Catania	0.34	0.7	25.4
Firenze	13.03	3.3	44.7
Genova	1.87	2.7	31.5
Messina	1.48	2.4	21.1
Milano	12.92	1.4	39.9
Napoli	34.94	1.3	21.9
Palermo	1.24	1.1	24.0
Reggio Calabria	0.51	0.5	6.7
Roma	21.94	1.8	42.3
Torino	2.96	1.3	25.5
Venezia	7.01	19.9	50.4

Tab.2 Tourism and culture data for metropolitan cities in Italy (Il Sole 24ore, 2021; ISTAT,2021)

Concerning the municipal budget for tourism, it includes programming, promotion, and development activities such as the organization of events and tourist initiatives, or the incentives for the organizations operating in the tourist sector. Whereas the local expenditure for culture includes a budget for the valorization of cultural heritage and for the promotion of cultural activities and facilities. About these aspects, according to Open Bilanci (2020), among the provincial capitals, Bari is in the first position for local expenditure for tourism, with €78.83 per capita, Venice is the second (€ 39.54), followed by Bologna (€ 27.07). Significantly, two of the top three cities in local expenditure for tourism are northern cities. Conversely, the cities with a lower budget for tourism are the southern cities: Catania and Messina. Bari is an exception since, together with Venice and Bologna, occupies the top places in the ranking, with a large gap compared to all the other cities. If we consider the cultural expenditure, indeed, Milano is in the first place (€ 163.08 per capita), followed by Firenze (152.95) and Rome (88.13). Reggio Calabria is at the bottom of the ranking (only € 17.92) together with Napoli (18.47) and Palermo. This framework confirms the disparities existing between the north and the south, with the only exception of Bari which has recently invested in the touristic and cultural sectors. Moreover, data testifies how not always the availability of cultural resources corresponds to a proportional commitment of the public administration, such as in the case of Napoli.

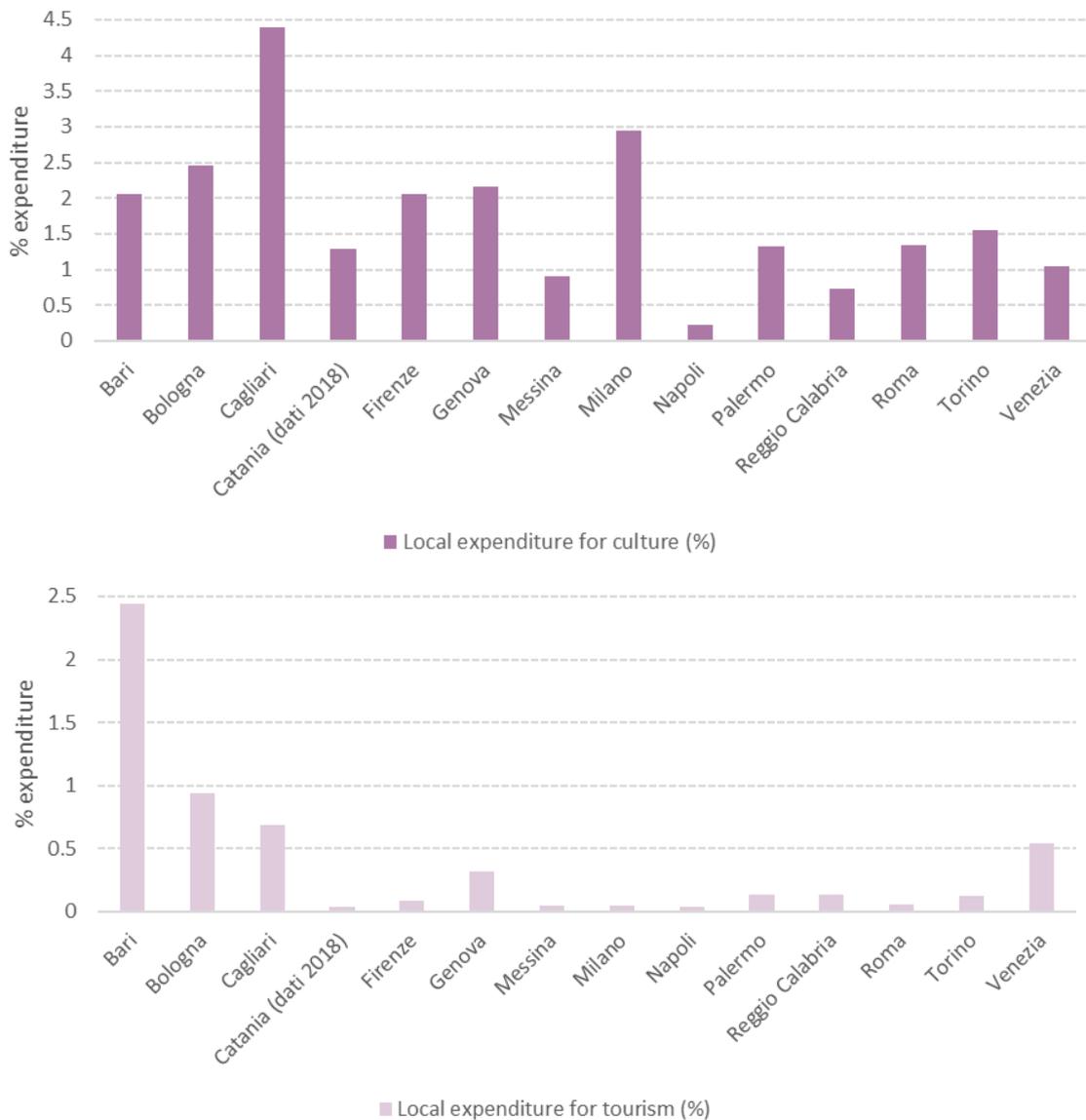


Fig.2 Local expenditure for tourism and culture per capita of the Italian municipalities with a metropolitan area in percentage on the total municipality budget (Source Authors - Data from Openbilanci, 2020)

The cities of the Northeast and the Centre intercept most of the international tourist flows, thanks to the presence of attractive destinations like Rome, Florence and Venice, that almost all foreign tourists aim to visit at least once. Whereas the Northwestern cities have recently strengthened their role in international tourism (25% of foreigners spending), thanks to the major international events hosted by cities such as Milan and Turin. In the South, the foreign spending amounted to just 15% of the total expenditure, despite the touristic vocation and potentialities of the southern regions. Indeed, the area accounts for 78% of the Italian coast, hosts more than half of the country's archaeological sites and almost a quarter of the museums, and, on top of that, 75% of the territory belongs to National Parks (Banca d'Italia, 2019).

3.2 Green revolution and ecological transition

The second mission of the plan "Green revolution and ecological transition" relies on €59.46 billion, 19.69 of which are for territorial authorities. The interventions linked to the increase of urban competitiveness reserved for Municipalities and Metropolitan Cities concern: the realization of green islands (€0.2 billion) and the conservation and maintenance of existing green areas (€330 million), the strengthening of cycling mobility (€2 million for existing projects and €4 million for new projects), local public transport (€6 billion), the energy adaptation of school buildings (€0.8 billion), and the climate resilience, the valorization of territory, and energy efficiency (€6 billion). The measures aim, firstly, to replace part of the obsolete public building stock, create safe, modern, inclusive, and sustainable facilities, promote the reduction of consumption and polluting emissions, reduce the expenditure on energy and increase the surplus for housing and property value. The local expenditure for sustainable development and protection of territory and environment includes expenditures for soil protection, environmental recovery, waste management, water management, natural parks, protected areas, air quality and reduction of pollution. Data in Fig.3 regard the local expenditure for sustainable development per capita during 2019, before the pandemic and reflects the commitment of the major Italian cities to the green transition.

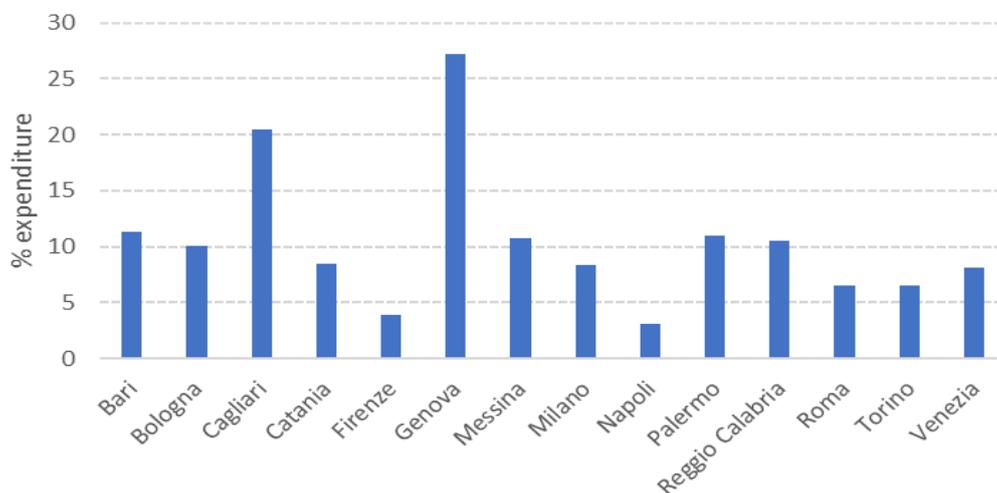


Fig.3 Local expenditure for sustainable development and protection of the environment per capita of the Italian municipalities with a metropolitan area in percentage on the total municipality budget (Source Authors - Data from Openbilanci, 2019)

As regards waste management and circular economy, northern cities are the most avant-garde cities. In fact, 5 cities (Venezia, Firenze, Bologna, Milano, Torino) account for 71% of the total amount of separate waste collection. Bari is the first city for clean energy both from photovoltaic sources (625.92 kW/h) and renewable sources (518.7 kW/h). The city has enhanced its local expenditure for sustainable development from € 429.46 per capita in 2019 to € 450.22 in 2021. Moreover, it is one of the most virtuous cities for pedestrian areas and public transport relying on 53.8 m²/inhabitants of pedestrian areas and 271 public busses. Bari is an exception because there is a clear distinction between northern and southern cities also in terms of incentivized energy

requalification. According to IISole24ore data (2021a), Torino, Genova and Bologna are the cities with the greatest number of tax-deductible investments for energy requalification. Cagliari, Bari, Palermo, Messina, Catania, Napoli and Reggio Calabria are at the bottom of the ranking.

Metropolitan city	Separate waste collection per capita (kg/year)	Energy from renewable resources (kWh/inh.)	Green urban areas/total population (%)	Energy requalification (€/inh.)
Bari	267.8	518.7	2.13	34
Bologna	388.1	360.5	8.15	107.8
Cagliari	317.6	367.6	8.79	39.6
Catania	168.6	252.6	2.30	13.1
Firenze	388.2	115.8	6.91	80.3
Genova	223.5	31.1	3.61	121.6
Messina	149.2	125.0	1.81	13.3
Milano	320.6	102.1	7.29	95.6
Napoli	225.7	57.9	2.57	12.5
Palermo	140.9	176.9	5.75	19.7
Reggio Calabria	136.5	149.6	4.97	9.2
Roma	268.1	123.9	11.29	40
Torino	278.7	199.7	7.93	122.2
Venezia	424.5	232.5	9.46	82.8

Tab.3 Green transition data for metropolitan cities in Italy (IISole24ore, 2021; ISTAT,2021)

3.3 Sustainable mobility

Likewise, major Italian cities are still lagging in many aspects regarding sustainable mobility (Battarra et al., 2018). The topic of sustainable mobility is attributable both to mission 2 and mission 3, the last one titled "Infrastructure for sustainable mobility" relating to a more infrastructural approach to mobility, with a budget of €25.40 billion including €0.27 billion for cities. An international report by the Clean Cities Campaign analyzed the state of urban mobility and air quality in 36 major European cities. Milan, Turin, Rome and Naples are at the bottom of the ranking. In general, there is still much dependence on motorized modes of transport and a low developed public transport system, especially in southern cities, which leads to a general worsening of air quality (Clean Cities, 2022). Milan is one of the most virtuous cities for public transport, ranking in first place for local expenditure on public transport and right to mobility. Milan is also one of the first cities for electric mobility and car and scooter sharing, together with Bologna and Firenze. Although, the city is affected by congestion, traffic, and high accidents rate (2.5/1,000 inh.). And the situation is worse in southern cities where the local expenditure on public transport is very low if compared to the national average. In general, Italian Metropolitan Cities are characterized by positive trends for bike lanes (passed from an average of 65 to 68 km) and ecological vehicles (raised from 17% to 22%).

From an infrastructural point of view, in the south connection among cities is not as much efficient as in the north of the country. This leads to the necessity of creating a mission ad hoc to improve the connectivity and the efficiency of the high-speed system and railway.

Metropolitan city	Electric vehicles (%)	Pedestrian areas (m ² /inh.)	Cycling lanes density (km/100 m ²)
Bari	0.8	53.8	4.78
Bologna	3.4	29.3	12.40

Cagliari	1.1	64.3	6.05
Catania	0.4	17.8	2.19
Firenze	1.9	110.8	7.23
Genova	2	7.6	1.26
Messina	0.4	41.1	0.92
Milano	3.2	54.8	4.75
Napoli	0.4	47	0.43
Palermo	0.6	60.4	1.91
Reggio Calabria	0.5	8	0.45
Roma	2.4	14	1.31
Torino	2	59	6.93
Venezia	1.8	510	11.56

Tab.4 Sustainable mobility data for metropolitan cities in Italy (ISTAT,2021)

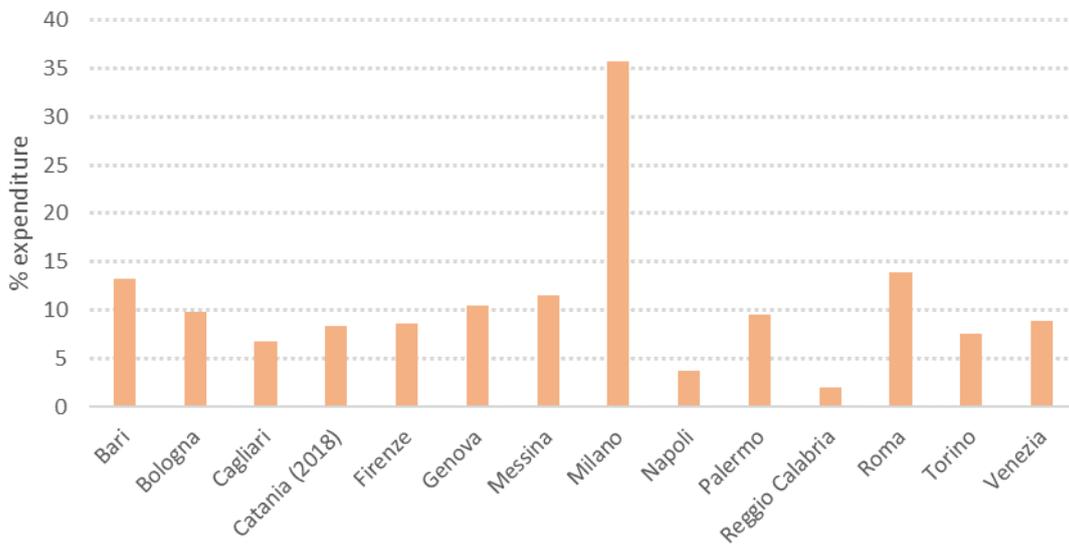


Fig.4 Local expenditure for public transport and right to mobility per capita of the Italian municipalities with a metropolitan area in percentage on the total municipality budget (Source Authors - Data from Openbilanci, 2019)

Mission 4 “Research and Education” counts €30.88 billion. €9.76 billion is destined for cities. The interventions that the municipalities are responsible for are the plan for kindergartens and for school services (€4.6 billion), new infrastructures for sport and education (€0.3 billion), and the plan for securing school buildings (3.9). Measures and investments aim to adapt and improve educational facilities in order to make cities more attractive for students and for high-quality human capital, with wider benefits for urban competitiveness. M4C1, in particular, is intended to empower services of support for education, promoting, within urban contexts, the redevelopment of 230,400 m² of sports facilities and the creation of 264,480 new jobs in kindergartens. Regarding sports facilities €0.16 billion are reserved for southern cities, while €1.56 billion are for southern kindergartens.

3.4 Innovation, education and digitalization

For what concerns the potentialities of Italian Metropolitan Cities in the sector of research, development and education, Turin has one of the most attractive university systems with a percentage of students from other regions of 55.33% (Città Metropolitana di Bologna, 2019). The city distinguishes itself also for the number of graduates (about 20,000) (ISTAT, 2019) and the number of patents (92) (The European House – Ambrosetti

et al., 2016). Milano, Roma, and Napoli are also characterized by good results in terms of education and research, while island cities and small cities in the south of the countries are the most disadvantaged.

Metropolitan City	University attractiveness (%)	Number of graduated	Number of patents
Bari	7.77	9,506	57
Bologna	43.8	17,906	51
Cagliari	1.39	3,978	49
Catania	0.80	6,441	28
Firenze	22.74	7,886	53
Genova	17.2	5,770	85
Messina	24.34	3,685	17
Milano	17.73	29,153	82
Napoli	5.25	21,712	59
Palermo	1.06	7,238	27
Reggio Calabria	8.14	928	17
Roma	19.67	31,153	90
Torino	55.33	19,046	92
Venezia	28.63	6,024	5

Tab.5 Research and education data for Metropolitan Cities in Italy (Sources: Città metropolitana di Bologna, 2019; ISTAT, 2019; The European House – Ambrosetti et al., 2016)

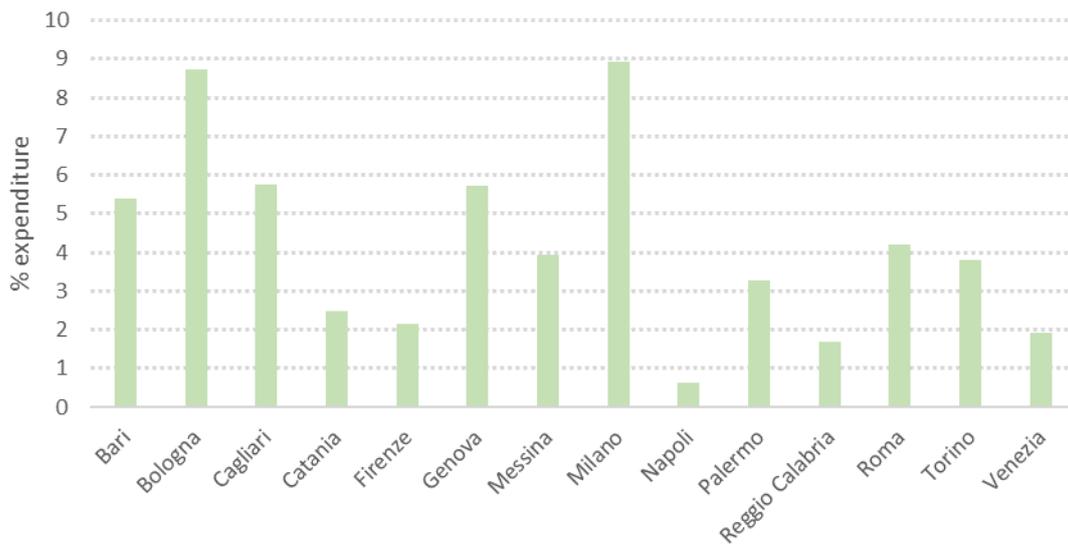


Fig.5 Local expenditure for the education per capita of the Italian municipalities with a metropolitan area in percentage on the total municipality budget (Source Authors - Data from Openbilanci, 2019)

Regarding local expenditure for education, Milano ranks first at a great distance from other major cities, resulting in the municipality which invests more in education. However, there are no significant disparities between the remaining cities, which turn out to be very close in terms of public spending on education, except for Naples which is in the lowest place in the ranking.

3.5 Inclusion and cohesion

For M5 "Inclusion and cohesion" the investments are €19.85 billion. €18.47 billion are for cities. About €3.3 billion are reserved for interventions of urban regeneration and measures to reduce social exclusion and degradation. Metropolitan Cities and Municipalities will be also the protagonists of the drafting and implementation of Integrated Urban Plans (Piani Urbani Integrati) with a budget of 2.5 billion, to which are

added €0.2 billion for Integrated Urban Plans for unauthorized settlements and 0.272 for the Fondo dei Fondi. €2.8 billion are for social housing and in particular for the Innovative plan for housing quality (Piano Innovativo per la qualità dell'Abitare PinQua), some of which are reserved for existing projects and others for future projects. A portion of financial resources is allocated to improve sports facilities and increase social inclusion (€ 0.7 billion) (Governo Italiano, 2021). Other interventions are for the redevelopment of internal areas, in order to enhance their attractiveness and reduce the processes of abandonment of small villages of the hinterland (€ 0.725 billion), for the recovery and re-functionalization of properties confiscated from the mafia (€0.3 billion), in order to redefine their role for urban settlement and cities' communities.

These interventions are particularly important for the enhancement of urban competitiveness, because they contribute to the quality of residential buildings and public spaces, attracting new people and opportunities in the territory (Gargiulo and Sgambati, 2022). At the same time, they aim at reducing social disparities, allowing the whole population, also those people living in the suburbs, to have a decent lifestyle and new opportunities for social interactions and activities (Degen and García, 2012). For what concerns the program PinQua the implementation of the projects is left to Regions, Metropolitan Cities and Municipalities with more than 60,000 inhabitants, through the presentation of project proposals for a maximum amount of €15 million and «Pilot» projects with a high strategic impact on the national territory of a maximum of €100 million to reduce housing disparities and the redevelop degraded areas.

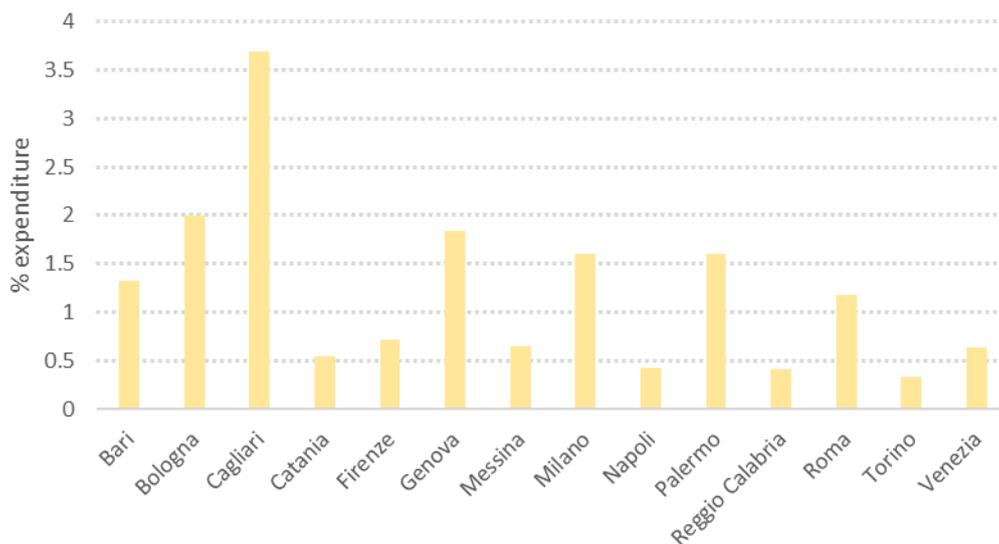


Fig.6 Local expenditure social inclusion per capita of the Italian Metropolitan Cities in percentage on the total municipality budget (Source Authors - Data from Openbilanci, 2019)

M6 "Health" seeks to strengthen the healthcare system and counts €15.63 billion. 15.10 billion are for cities. Metropolitan areas are more exposed to health risks due to the effects of pollution, the deterioration of the environment and resources and daily stress (ISPRA, 2017). Regarding the availability of hospital beds, values vary from 53.79 (per 10,000 activities) in Roma to 31.15 in Naples. It is the provinces of Central-North that have a higher rate for long-term rehabilitation, while there is no particular North-South gradient for the rate of beds. In Roma, Reggio Calabria, Cagliari, Florence, and Catania, there is a greater presence of the accredited private, with rates that exceed the value of 11 beds per 10,000, against a national average value of the accredited private of 7.98 per 10,000.

4. Discussion

Considering the results of the previous section, it is worth identifying several macro-areas of urban competitiveness, able to orient the future development of the scientific research about which urban features are pivotal to attracting the Next Generation EU resources in the coming years. These macro-areas are derived from the deepening of the Italian case that, rather than a field of experimentation, has been an opportunity for reflection to draw considerations that are also valid for other contexts in Europe. The identification of macro-areas of competition might be the first step to developing rankings to evaluate the actual level of competitiveness of cities against the sectors of investment, namely the ecological and digital transition, and so on. Furthermore, in this section, there are some considerations about major Italian cities on their path to becoming more competitive, a case study that can be considered relevant to the future choices of investment in the country.

The outlined "Macro-areas of Competitiveness", that may be functional to deepen which urban characteristics make a territory competitive and on which aspects public investments should focus, are: Tourism and culture; Digitalization/Smartness; Green transition; Sustainable mobility; Social Inclusion & Cohesion.

The Macro-area "Tourism and culture" corresponds to M1C3, which is central for urban competitiveness since it refers to tourism and culture as a means of relaunching the country's economy, starting from the identity of its cities that can count on a unique historical, artistic and cultural heritage. The identification of this Macro-area is due to the key role that major cities play in the country's tourism sector – Metropolitan Cities are able to attract 39% of the touristic flows – thanks to their cultural resources and the higher density of tourists facilities. Furthermore, it is worth noting the close relationship between territorial competitiveness and creative and cultural production: cultural and creative activities have been gradually becoming a driving force for innovation, growth, and development of urban areas (Zenker et al., 2013; Guzmán et al., 2017). One of the evidence of this work, emerging from the examination of the NextGenerationEU program and the study of the scientific literature, is that the development of a creative economy and the promotion of cultural facilities are able to enrich social and economic capital and produce, at the same time, economic surplus (Du et al., 2014; Florida, 2002). Cities and territories that invest in cultural resources are more suitable to enhance their competitive level (Openpolis, 2021) since they become more attractive both to tourists and talented and creative migrants. Referring to the touristic and cultural competitiveness, cities have to:

- a. Increase the level of cultural attractiveness and the participation in culture;
- b. Improve accessibility to culture by promoting interventions of adaptation of cultural heritage;
- c. Promote the regeneration of towns and of suburban areas;
- d. Support cultural and creative industry, enhance places' identity and strengthen the social structure of the territory;
- e. Improve touristic facilities, for what concerns environmental sustainability, digital resources, and accessibility.

The promotion of culture and tourism acts synergically with other strategic priorities of the Plan: "the green transition and environmental sustainability in our country can only be based on the protection and the enhancement of the landscape and cultural heritage, through intrinsically ecological policies that involve the limitation of land consumption" (Governo Italiano, 2021). In this sense, this Macro-area of Competitiveness can be associated with objectives and strategies linked to social inclusion, the improvement of the energy efficiency of the building stock, sustainability, and digitalization.

The Macro-area "Ecological Transition" mainly refers to the second mission of the plan M2 "Green revolution and ecological transition" and, in the vision provided by this paper, should include the urban characteristics related to sustainable development, climate resilience, and the commitment of local authorities in reaching climate and environmental goals. Major cities play a central role in the achievement of the green transition goals and targets, suffice it to say that cities are responsible for 70% of the global greenhouse emissions into the atmosphere (ResourceWatch, n.d.). In this sense, this paper wants to emphasize the role of the ecological

transition as one of the main components of urban competitiveness, for several reasons. First of all, the reduction of GHG emissions and the minimization of environmental impacts of anthropogenic activities can improve the level of wellbeing for inhabitants and city-users (Papa et al., 2016). In parallel, the ecological transition can also "constitute an important factor in increasing the competitiveness of our production system, encouraging the start-up of new and high value-added business activities and encouraging the creation of stable employment". At the same time, this component refers also to the need of increasing the resilience of the territory to cope with climate impacts (Granberg & Nyberg, 2017) since climate change adaptation provides a multitude of opportunities to strengthen the urban economy, improve the quality of neighborhoods and districts, and support employment in ecological sectors (Kamal-Chaoui & Robert, 2009). Another element of connection between urban competitiveness and ecological transition, identified by this study, is climate resilience: cities that are less vulnerable to extreme climate events are by far more attractive for new activities and new residents and may well be the motor for a renovated future green growth. The general objectives to increase the competitiveness of urban areas for what concerns ecological transition are:

- a. The mitigation of the effects of anthropogenic activities within urban contexts;
- b. The enhancement of energy efficiency and climate safety of public and private buildings;
- c. The prevention and contrast of climate change consequences, particularly for what concerns the hydrogeological instability and territorial vulnerability to climate emergency;
- d. The safeguard of air quality and biodiversity through the protection of green areas and optimization of land use.

Another Macro-area of Competitiveness, identified by this work, is "Digitalization/Smartness", which can be considered horizontal to the other macro-areas identified. Digitalization is a fundamental prerequisite to activating smartness policies in cities and, in particular, major cities. The objective of digitalization occurs in all the missions of the plan since it is considered an important aspect to guarantee the advancements of the country in different fields: tourism, public administration, mobility, and healthcare. This topic is linked to the paradigm of the smart city. Smart cities are, in the first instance, committed to the optimization and improvement of services and infrastructure through technological innovation (Aldegheishem, 2019; Appio et al., 2019). But a smart city is also and above all a sustainable, efficient, and innovative city (Moraci & Fazio, 2013), capable of ensuring high standards of quality of life for its citizens through the use of connected and integrated solutions. In smart cities, innovation is a key element for economic development and competitiveness (Papa et al., 2014b). Thus, a city's competitiveness necessarily depends on:

- a. The rationalization and digitization of the public administrations and public services;
- b. The deployment of high-capacity and adequate telecommunications networks in urban areas;
- c. Sustainable costs and equal opportunities for connectivity to all citizens;
- d. The support of research and development (R&D) activities by providing adequate facilities for research, encouraging tertiary education and promoting collaboration with enterprises;
- e. The promotion of synergies between digital investments and other sectors like tourism, mobility, waste management and green economy.

The fourth Macro-area proposed within this work is "Sustainable mobility" and it refers both to mission M2 and M3 since it should take into account either infrastructural component (M3) or soft measures aimed at the decarbonization of urban mobility (M2). It is necessary to consider the coverage of high-speed and rail networks and of port infrastructures in order to enhance connectivity between Italian regions and overcome territorial disparities. At the same time, it is fundamental to ensure the integration between the strengthening of the physical mobility network with the improvement of accessibility at the neighborhood scale. The integration of different levels of accessibility can raise the competitiveness of urban areas, especially those that are currently penalized by their marginality and poor accessibility, increasing the number of opportunities for citizens and city-users (Papa et al., 2018; Silva & Larsson, 2018; Guida & Carpentieri, 2021) and promoting

sustainable types of mobility, such as walking and cycling, that have positive impacts air quality and well-being of the population (Gargiulo & Sgambati, 2022). This Macro-area of Competitiveness can be considered interrelated with "Ecological Transition" and "Social Inclusion" while maintaining its own conceptual autonomy. The lines of action aimed at strengthening the competitiveness of cities in "sustainable mobility" are the following:

- a. The improvement of the railway network and the connectivity between cities in order to increase territorial cohesion and also support the logistic of the production system;
- b. The decarbonization of mobility and the digitalization of public transport systems;
- c. The promotion of soft mobility at the neighborhood scale (pedestrian areas, cycling lanes and shared mobility);
- d. The guarantee of a wider range of opportunities within walking distance to increase the accessibility of vulnerable people, encourage people to do daily physical exercise and improve the attractiveness of neighborhoods.

The fifth Macro-area proposed in this work is "Social inclusion & Cohesion", which can be considered interrelated with M4 and M6, finding its maximum expression for urban planning in M5.

In particular, Mission 4 "Research and Education" aims to promote the knowledge economy as an engine of competitiveness thanks to the empowerment of the education system and the attraction of skilled workers and researchers that may well enhance competitiveness, encouraging urban and economic growth (Florida, 2002; Rodrigues and Franco, 2018). Mission 6 "Health" seeks to strengthen the healthcare system at a national level. The effects of the COVID-19 increased the urgency to contend with health challenges to reduce inequities in accessing healthcare services and the costs of health assistance. This must be taken into account also from an urban perspective, considering, first of all, the direct relationship between the efficiency of the healthcare system and the economic growth of a territory. Health is a capital stock and a fundamental aspect to guarantee the sustainable and economic development of a country, being able to affect social equity, wellness and productivity of territories (Grossman, 1972). Secondly, the twofold relationship between urban livability and health system efficiency (de Leeuw, 2020) affect the competitiveness of territories. On the one hand, high livability in cities improve health conditions and, thus, reduce the costs associated to health assistance. On the other hand, the improvement of accessibility to healthcare services can enhance urban livability. This has a great impact in terms of urban competitiveness since quality healthcare services can attract additional activities (day-hospital, nursing homes, hospitality centers) and new residents to the territory, while, at the same time, reducing local expenditure. The relationship between livability and competitiveness implicates that incorporating health objectives into urban planning policy has the potential to create competitive surplus. Regarding the plan, the component M6C1 "Proximity networks, intermediate structures and telemedicine for local health care" has a territorial pattern. It aims to boost the territorial health system through the strengthening and creation of facilities (such as Community Homes and Community Hospitals), the empowerment of home healthcare services, and the integration with other social and health services.

Mission 5 "Inclusion and cohesion" M5 aims at overcoming existing territorial, gender, job, and generational gaps by acting in the social and economic sphere and fostering social inclusion. This is possible, in urban contexts, thanks to urban regeneration processes, especially in the most degraded areas. Redevelopment processes must be accompanied, according to the NRRP, by the construction or renovation of existing buildings intended to be occupied by the most vulnerable people such as the elderly or people with disabilities. The promotion of culture and sport in urban environments contributes to the improvement of public welfare and sustainable economic development (Moradi et al., 2019).

According to the plan, the lines of action to intervene in the Macro-area "Social Inclusion & Cohesion" to reduce social exclusion and degradation and, at the same time, improve the quality of urban life include:

- a. The maintenance and re-functionalization of existing public areas and facilities, involving citizens in the processes of transformation;
- b. The improvement of urban decorum and social and environmental structure;
- c. The development of social, health, sporting, cultural, and educational services.

The increase in competitiveness will be the result of the general revitalization of the territory and the parallel creation of new services. In Italy, at a first glance, southern cities are currently more disadvantaged, referring to all the missions of the plan. The NRRP recognized this territorial gap and, for this reason, allocated 40% of its resources to the South of the country, aiming to increase its contribution to national GDP from 22% in 2019 to 23.4% by 2026. However, what this study wants to emphasize is that some cities are more suitable to develop in a given Macro-area rather than others, according to their intrinsic features, attitudes to competition, and vocations. The task of the scientific literature in this field should be to interpreting the intrinsic structures of cities to understand which investment choices are able to increase their competitive gradient, accordingly to their features. And this work fits into this gap. For what concerns the Italian case, indeed, by interpreting the data illustrated in the previous section, although Venezia and Firenze are renowned for being privileged tourist destinations, they are also suitable for growth in other sectors such as education and R&D. Among major cities, Venice is in third place for the attractiveness of university facilities, while Firenze is in the fifth position. Napoli and Roma are two of the most attractive destinations for tourists, as well. They are distinguished by mass foreign tourism and also by a high concentration of cultural resources like museums, historical gardens, and archeological sites. Napoli is also the city with the greatest number of graduates, so one of the likely sectors of development may well be the knowledge economy. Torino is already advanced in this field, presenting the highest number of scientific patents and ranking third place for innovative startups. Milano is one of the "smartest" cities in Italy, for what concerns public administration services and also digitization of mobility. However, it has room for improvement also in the Macro-area "Ecological transition", especially as regards energy management. Bari, as well, has its own resources for ecological transition and, in particular, clean energy production. Milano is one of the most committed to social redevelopment and, together with Bologna, is a multicultural city thanks to a great consistency of foreigners. The two cities are leaders in female employment.

These observations are the result of an initial comparison of the data proposed and are not intended to be exhaustive. Rather, one of the future objectives of the research is to deepen the existing relationships between different cities in terms of competitiveness by using statistical techniques. Such a comparison can support decision-makers in the distribution of economic and financial resources for the transformation of the territories, so that they can be governed rationally, following the suitability and vocations of the cities involved.

5. Conclusion

This study aims to examine the role of major cities in the Italian NRRP and deepen why urban competitiveness can be an interesting key to understanding this role. Urban areas are characterized by a high concentration of people, skills, and resources and, for this reason, they have gradually become the main engines of the global economic, social and technological development. Nevertheless, the COVID-19 emergency confirmed that the success of the territories in the international competition no longer consists in the search for an advantage of a predominantly economic nature, but rather in the ability to develop, in adverse conditions, resilient and reactive behaviour (Papa et al., 2014c). The COVID-19 pandemic is just one of the many challenges/trials that cities face and will face in the years to come. Scientific research in this field must ask how such challenges can become an opportunity to increase the competitiveness of cities in attracting people, activities and investments, because of urban resources and vocations. This is even more true in the period of recovery that many countries are experiencing thanks to the launch of the European plan NextGenerationEU. It follows the need to transpose the NRRPs objectives to the urban scale as well, in order to get wider advantages from the

local development of communities. The acknowledgement of the importance of further integrating national policies with urban strategies and actions can be considered one of the main results of this study, especially if we look at the successful results obtained by those countries that have already put in place the integration between national and local policies. In this sense, Italy can be considered an example of dialogue between national reforms and urban transformation, at least for what concerns the drafting phase of the recovery plan. This aspect makes the Italian NRRP significant as a case study. In this regard, fulfilling the premises of the work, this paper provides an insight into the role of major Italian cities in the different stages of the plan and examines the distribution of the financial resources between cities and missions from an urban perspective. The study provides also an insight into the available resources in the Italian metropolitan areas, giving a first perspective on the relationship between the NRRP funding and the opportunities for the development of major Italian cities. Thereby, not only does this paper consider the missions of the plan at the urban scale, but it examines also how the achievement of each mission can improve economic performance and quality of life in urban areas and, consequently, increase their competitiveness. The paradigm of urban competitiveness has revealed a useful means for the interpretation of the relationship between cities and the main contents and goals of the national recovery plan. The usefulness of the urban competitiveness approach finds confirmation in its definition as a multidimensional concept, made up of several macro-areas of urban systems. Taking into account the results of the examination of the NRRP resources for the increase of urban competitiveness, this work identified five "Macro-areas of Competitiveness", which make up competitiveness as a whole, and that can be enhanced by policymakers to increase attractiveness for people, investments and activities. The macro-areas are useful to measure the competitive level of Italian cities against the NRRP, and they are respectively: Tourism and culture, Digitalization/smartness, Green transition, Sustainable mobility, Social Inclusion & Cohesion. The identification of the Macro-areas is preliminary to the measurement of urban competitiveness and it is a fundamental step to understanding if a city is suitable to grow up in a given sector rather than another and if it can return a positive advantage to public investments. However, only the implementation of the plan will reveal if the resources have been properly allocated according to the actual vocations and suitability of competitiveness of Italian urban areas. That is why this work should not be considered closed but as a key step in a more complex study that needs to be continuously updated and verified. In this sense, the development of a method for measuring urban competitiveness could support decision-makers in understanding the vocations of territories and the areas of interventions characterized by better chances of growth.

Author Contributions

The work, although the result of a common reflection, was divided as follows: Carmela Gargiulo wrote sections 1, and 5; Nicola Guida wrote sections 2, 3.3, 3.4 and 3.5; Sabrina Sgambati wrote sections 3.1, 3.2 and 4.

References

- Aldegheishem, A. (2019) Success Factors of Smart Cities: A Systematic Review of Literature from 2000-2018. *TeMA-Journal of Land Use, Mobility and Environment*, 12(1), 53-64. <https://doi.org/10.6092/1970-9870/5893>
- Appio, F. P., Lima, M., & Paroutis, S. (2019) Understanding Smart Cities: Innovation ecosystems, technological advancements, and societal challenges. *Technological Forecasting and Social Change*, 142, 1-14. <https://doi.org/10.1016/j.techfore.2018.12.018>
- Banca d'Italia (2019) Questioni di Economia e Finanza (Occasional Papers) Turismo in Italia: numeri e potenziale di sviluppo. Retrieved from: <https://www.bancaditalia.it/pubblicazioni/qef/> (accessed January 2022)
- Battarra, R., Gargiulo, C., Tremitterra, M. R., & Zucaro, F. (2018) Smart mobility in Italian metropolitan cities: A comparative analysis through indicators and actions. *Sustainable cities and society*, 41, 556-567. <https://doi.org/10.1016/j.scs.2018.06.006>
- Begg, I. (1999) Cities and competitiveness. *Urban studies*, 36 (5-6). 795-809.

- Begg, I. (Ed.). (2002) *Urban competitiveness: policies for dynamic cities*. Policy Press.
- Boddy, M., & Parkinson, M. (Eds.). (2004) *City matters: Competitiveness, cohesion and urban governance*. Policy Press.
- Boni, A. L., & Zevi, A. T. (2021) Next generation EU cities: local communities in a post-pandemic future. *Next generation EU cities*, 1-157.
- Camagni, R. (2002) On the concept of territorial competitiveness: sound or misleading?. *Urban studies*, 39(13), 2395-2411. <https://doi.org/10.1080/0042098022000027022>
- Carvalho, L., van den Berg, L., Galal, H., & Teunisse, P. (Eds.). (2016) *Delivering Sustainable Competitiveness: Revisiting the organising capacity of cities*. Routledge.
- Ciccarelli, A. (2006) L'articolazione della competitività a livello territoriale. In E. Del Colle, *Tecnopoli. L'articolazione territoriale della competitività in Italia*, FrancoAngeli, Milano.
- Città Metropolitana di Bologna. (2019) I poli universitari metropolitani in Italia. Materiali per un confronto. Retrieved from: http://inumeridibolognametropolitana.it/cittametropolitaneconfronto/sites/inumeridibolognametropolitana.it.cittametropolitaneconfronto/files/confrontocm_istr_report_universita_2019_cm_0.pdf (accessed January 2022)
- Clean Cities (2022) Clean Cities ranking. Retrieved from: <https://cleancitiescampaign.org/city-ranking/>
- de Leeuw, E. (2020) One Health (y) Cities: Cities are pandemic ecosystems and that's where the action ought to happen. *Cities & health*, 1-6. <https://doi.org/10.1080/23748834.2020.1801114>
- Degen, M., & García, M. (2012) The transformation of the 'Barcelona model': an analysis of culture, urban regeneration and governance. *International journal of urban and regional research*, 36 (5), 1022-1038. <https://doi.org/10.1111/j.1468-2427.2012.01152.x>
- Du, Q., Wang, Y., Ren, F., Zhao, Z., Liu, H., Wu, C., ... & Shen, Y. (2014) Measuring and analysis of urban competitiveness of Chinese provincial capitals in 2010 under the constraints of major function-oriented zoning utilizing spatial analysis. *Sustainability*, 6(6). <https://doi.org/10.3390/su6063374>
- Economist Intelligence Unit (2013) Hotspots 2025: Benchmarking the future competitiveness of cities. Retrieved from: <https://www.citigroup.com/citi/citiforcities/pdfs/hotspots2025.pdf> (accessed November 2021)
- Euro Cities (2021) Briefing note on the involvement of cities in the governance of National Recovery and Resilience Plans (NRRPs). Retrieved from: https://eurocities.eu/wp-content/uploads/2021/10/Eurocities_Briefing2_NRRPs.pdf (accessed February 2022)
- European Commission (2021) NextGenerationEU. Retrieved from: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/thematic_analysis.html?lang=en (accessed April 2022)
- Florida, R. (2002) *The rise of the creative class Basic Books*. New York.
- Fortis, M. (2016) *Pillars of the Italian Economy*. Cham: Springer International Publishing Switzerland.
- Gargiulo, C., & Papa, R. (2021) Chaos and chaos: the city as a complex phenomenon. *TeMA - Journal of Land Use, Mobility and Environment*, 14(2), 261-270. <https://doi.org/10.6093/1970-9870/8273>
- Gargiulo, C., & Russo, L. (2016). Smart governance: la dimensione della competitività. In Papa, R., Gargiulo, C., Battarra, R. *Città metropolitane e smart governance. Iniziative di successo e nodi critici verso la smart city*. FedOAPress <https://doi.org/10.6093/978-88-6887-005-8>
- Gargiulo, C., & Sgambati, S. (2022) Active mobility in historical centres: towards an accessible and competitive city. *Transportation Research Procedia*, 60, 552-559. <https://doi.org/10.1016/j.trpro.2021.12.071>
- Governo Italiano (2021) Italia domani. Piano Nazionale di Ripresa e Resilienza. Retrieved from: <https://italiadomani.gov.it/en/home.html> (accessed February 2022)
- Granberg, M., & Nyberg, L. (2017). Climate change adaptation, city competitiveness and urban planning in the city of Karlstad, Sweden. In *Local action on climate change* (111-125). Routledge.
- Grossman, M. (1972) On the Concept of Health Capital and the Demand for Health. In *The Journal of Political Economy*, volume 80, 223-255.
- Guida, C., & Carpentieri, G. (2021) Quality of life in the urban environment and primary health services for the elderly during the Covid-19 pandemic: An application to the city of Milan (Italy). *Cities*, 110, 103038. <https://doi.org/10.1016/j.cities.2020.103038>
- Guzmán, P. C., Roders, A. P., & Colenbrander, B. J. F. (2017) Measuring links between cultural heritage management and sustainable urban development: An overview of global monitoring tools. *Cities*, 60, 192-201. <https://doi.org/10.1016/j.cities.2016.09.005>
- Kamal-Chaoui, L., & Robert, A. (2009) *Competitive cities and climate change*.

Kresl, P. K., & Singh, B. (1999) Competitiveness and the urban economy: twenty-four large US metropolitan areas. *Urban studies*, 36(5-6), 1017-1027.

ISole24Ore (2021a) Qualità della vita. Retrieved from: <https://lab24.ilssole24ore.com/qualita-della-vita/>

ISole24Ore (2021b) Ecosistema Urbano. Retrieved from: <https://lab24.ilssole24ore.com/ecosistema-urbano/>

Institute for Urban Strategies. (2021) The Mori Memorial Foundation, Global Power City Index Report 2021. Retrieved from: http://www.mori-m-foundation.or.jp/pdf/GPCI2020_summary.pdf

ISPRA (2017) Città Metropolitane. Retrieved from: https://www.isprambiente.gov.it/files2017/publicazioni/stato-ambiente/rau-2017/11_Citta%20metropolitane.pdf

ISTAT. (2019) Data retrieved from: <https://www.istat.it/it/archivio/104317>

ISTAT (2020) Classificazione dei Comuni in base alla densità turistica come indicato dalla Legge 17 luglio 2020, n. 77, art. 182. Retrieved from: https://www.istat.it/it/files//2020/09/Decreto-rilancio_Classificazione-territori_16_09_2020.pdf (accessed January 2022)

ISTAT (2021) Report Movimento turistico in Italia | Gennaio Settembre 2021 Retrieved from: https://www.istat.it/it/files//2022/01/REPORT_MOVIMENTOTURISTICO_2021.pdf (accessed February 2022)

Moraci, F., & Fazio, C. (2013) The Smart Cities and the challenges of sustainability. *TeMA Journal of Land Use, Mobility and Environment*, 6(1), 35-45. <https://doi.org/10.6092/1970-9870/1459>

Moradi, F., Saeideh Zarabadi, Z. S., & Majedi, H. (2019) An exploratory study of culture-led urban regeneration principles with the approach of competitiveness promotion. *The Monthly Scientific Journal of Bagh-E Nazar*, 16(70), 5-16. <https://doi.org/0.22034/bagh.2019.84923>

Ni, P., Kamiya, M. (2020) The Global Urban Competitiveness Report–2019–20. Retrieved from: https://unhabitat.org/sites/default/files/2020/10/global_urban_competitiveness_report_2019-2020_the_world_300_years_of_transformation_into_city.pdf (accessed December 2021)

Openbilanci (v.d.) Data retrieved from: <https://openbilanci.it/armonizzati/bilanci/bari-comuneba/spese/dettaglio?year=2017&type=preventivo>

Openpolis (2021) Sui territori si dovrebbe investire di più per lo sviluppo del turismo. Retrieved from: <https://www.openpolis.it/sui-territori-si-dovrebbe-investire-di-piu-per-lo-sviluppo-del-turismo/> (accessed April 2022)

Papa, E., Carpentieri, G., & Guida, C. (2018) Measuring walking accessibility to public transport for the elderly: the case of Naples. *TeMA Journal of Land Use, Mobility and Environment*, 105-116. <https://doi.org/10.6092/1970-9870/5766>

Papa, R., Gargiulo, C., Franco, S., & Russo, L. (2014a) The Impacts of the 2008-09 Financial Crisis on Urban Competitiveness in Italy. *Journal of Economy, Business and Financing*, ISSN 1339-3723, Vol. 2, issue 1, 84-89.

Papa, R., Gargiulo, C., Franco, S. & Russo, L. (2014b) Urban Smartness Vs Urban Competitiveness: A Comparison of Italian Cities Rankings. Special Issue, *TeMA - Journal of Land Use, Mobility and Environment*, ISSN 1970-9870. <https://doi.org/10.6092/1970-9870/2555>

Papa, R., Gargiulo, C., Franco, S., & Russo, L. (2014c). Measuring the effects of 2008-09 financial crisis on the competitiveness of Italian provinces. Sustainable recovery? Rebalancing, Growth, and the Space Economy. In *Proceedings of the Winter Conference of Regional Studies Association*, November, 27-28.

Papa, R., Gargiulo, C., Russo, L., & Franco, S. (2016). On the relationship between the promotion of environmental sustainability and the increase of territorial competitiveness: the Italian case. *Urban Regeneration & Sustainability*, 295. <https://doi.org/10.2495/SDP-V12-N4-655-666>

ResourceWatch (n.d.) Cities Retrieved from: <https://resourcewatch.org/dashboards/cities> (accessed February 2022)

Rodrigues, M., & Franco, M. (2018) Measuring the performance in creative cities: Proposal of a multidimensional model. *Sustainability*, 10(11), 4023. <https://doi.org/10.3390/su10114023>

Sáez, L., & Periañez, I. (2015) Benchmarking urban competitiveness in Europe to attract investment. *Cities*, 48, 76-85. <https://doi.org/10.1016/j.cities.2015.06.002>

Sharifzadegan, M. H., & Nedae Tousi, S. (2016) Suitability Assessment of Success Factors of Regional Development Competitiveness in Iran. *Human Geography Research*, 48(1), 105-123. <https://doi.org/10.22059/JHGR.2016.51802>

Silva, C., & Larsson, A. (2018) Challenges for Accessibility Planning and Research in the context of Sustainable Mobility. In *International Transport Forum Discussion Paper*. Retrieved from: <https://repositorio-aberto.up.pt/bitstream/10216/119544/2/328468.pdf>

The European House - Ambrosetti, Intesa Sanpaolo & ANCI (2016) Le città metropolitane sono il catalizzatore dello sviluppo dei paesi nel mondo. In *Città metropolitane, il rilancio parte da qui*. Retrieved from: <http://www.anci.it/wp-content/uploads//2018/06/Contenuti/Allegati/Citta%20metropolitane%20catalizzatore%20di%20sviluppo.pdf>

Yuan, Z., Zheng, X., Zhang, L., & Zhao, G. (2017) Urban competitiveness measurement of Chinese cities based on a structural equation model. *Sustainability*, 9 (4), 666. <https://doi.org/10.3390/su9040666>

Zenker, S., Eggers, F., & Farsky, M. (2013) Putting a price tag on cities: Insights into the competitive environment of places. *Cities*, 30, 133-139. <https://doi.org/10.1016/j.cities.2012.02.002>

Image Sources

All the Figures have been elaborated by the authors.

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