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# QUARTERLY COLUMNS SERIES ON CAPITAL MARKETS

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## Infrastructure, capital markets and opportunities for the real economy in the post-pandemic landscape

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### 1. Introduction

The current infrastructure gap in most developed and emerging economies can be quantified at about \$15 trillion by 2040 (Oxford Economics, 2017). However, this figure is likely to be heavily underestimated considering that it does not include investment needs for social infrastructure like hospitals, long-term care homes, social housing and other social facilities (Franklin Templeton, 2020). The Covid-19 pandemic has indeed demonstrated how much governments have underinvested in social infrastructure and how unprepared they were to tackle the dramatic effects of the spread of the virus.

A number of extraordinary investment programmes implemented by the governments of developed and emerging economies are intended to limit the disastrous effects on real economies caused by Covid-19.<sup>1</sup> These have also revived the longstanding debate on the ability of infrastructure investment to stimulate output and its effect on inflation. In fact, infrastructure investment is not like other forms of economic stimulus. It combines demand stimulus with long-term support for the production of goods. This begs the question: is it a stimulus to the economy in the short run? Does it improve production capacity and ultimately economic growth in the long run? The economic literature's basic findings on the topic suggest that the effect of public infrastructure spending on output and job creation is small in the short term, but it has large impacts in terms of long-term productivity and economic growth (e.g., Baxter and King, 1993, Fernald, 1999, Leduc and Wilson, 2013, and Glaeser and Poterba, 2021). For example, in the case of public spending on US highways, the change in output relative to the amount spent (the 'multiplier') is on average around two over a ten-year horizon.

However, it is clear that a full recovery, one that is able to reabsorb the economic damage inflicted by Covid-19, cannot rely on increased public spending and public debt alone. It is necessary to attract private capital coming from institutional long-term investors (life insurance companies, pension funds, foundations and non-profits). Private investors must become partners with the public sector in a virtuous collaboration, multiplying the resource pool that can be deployed to infrastructure investments. This opportunity to reinforce public-private partnerships in infrastructure investment is eased by the relevant pool of liquidity available in capital markets. As shown in Section 3, due to a long period of quantitative easing and financial repression, private investors have turned to infrastructure as a convenient alternative to traditional asset classes and as a 'safe harbour' able to provide a DIY effect: diversification, inflation protection and yield.<sup>2</sup>

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<sup>1</sup> It is outside the scope of this report to analyze in detail the key rescue measures implemented in major developed economies. Readers can refer to The Build Back Better Framework (<https://www.whitehouse.gov/build-back-better/>) and the Inflation Reduction Act (<https://www.congress.gov/bill/117th-congress/house-bill/5376/text>) for the USA; the Next Generation EU Program ([https://ec.europa.eu/info/strategy/recovery-plan-europe\\_en](https://ec.europa.eu/info/strategy/recovery-plan-europe_en)) and the Re-Power EU ([https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en)) for the European Union; and the Green Revolution UK (<https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>) and the National Infrastructure Strategy (<https://www.gov.uk/government/publications/national-infrastructure-strategy>) for the UK.

<sup>2</sup> According to regular surveys conducted by Prequin with investors and asset managers, the most common reasons why they invest in infrastructure include portfolio diversification for around 70% of respondents, low correlation with other asset classes (35%), reliable income streams (30%), relatively high risk-adjusted returns (28%), and protection against inflation (26%). On the properties of infrastructure that act as an inflation hedge, see Gatti et al (2022) and EDHECinfra (2021).

Yet, the private sector looks at infrastructure today as a segment subject to rapid evolution, very far from an outdated conception that confines this asset class to the limited perimeter of transportation, gas/power/water and telecommunication utilities.

In fact, more than other sectors, infrastructure is subject to long-term trends that are able to reshape the societies of tomorrow. And these same societies in turn will increasingly depend on what infrastructure will be able to deliver far into the future (Gamberale and Gatti, 2021a).

As shown in Section 2, it is possible to say that infrastructure will become a 'thematic' rather than 'sectorial' ambit, as we are used to considering it today. Four are the key 'themes' that private investors are looking at from a long-term perspective (Gatti and Chiarella, 2020).

The first is now well established: the *sustainability and environmental issue*. By nature, infrastructure is a sector with strong environmental impact. As we all know, the environment will have to be preserved by moving all production processes toward a drastic reduction in the use of raw materials, organic and inorganic, and shifting these processes to a virtuous recycling of materials, in line with the logic of the circular economy. Ambitious targets of decarbonisation set out by governments will boost investments in renewables and promote the optimal use of water and arable land (Gatti, Chiarella and Fiorillo, 2022). In addition, more investments in renewable energy will further boost the funds funnelled into smart grids, energy storage, smart and electric mobility and the space economy (first, as a step in the digital transition, second as an additional step in production transformation). Augmenting renewable energy will also limit dependency on traditional fossil sources, a key issue of the recent international geopolitical tensions.

The second thematic ambit of infrastructure is the *progressive dematerialisation of infrastructure*. Accustomed as we are to thinking about infrastructure as highly capital-intensive, physical assets, we will have to convince ourselves that infrastructure is becoming more 'immaterial/intangible' given its links to digitalisation, from data management and data storage to data protection.

The third investment theme is represented by *demographic evolution*. Modern societies are, on one hand, experiencing a trend of progressive ageing and, on the other, increasing polarization between younger and older segments of the population. This polarization has evident effects on the evolution of infrastructure. Younger people and millennials will reinforce the sensibility toward ESG and will accelerate the digital transformation of society (Bank of America, 2022). Older people – the silver society – will require greater investments in personal health and safety, redesigned urban spaces, and reimagined housing and transportation solutions. Incidentally, these demographic trends will force developed economies, particularly Italy, to fill in the gap of the active workforce with clear, well-designed immigration policies, avoiding past mistakes of 'all and forever' or 'no one and never'.

The fourth theme is *logistic supply chains*. We learned a sad lesson first from Covid-19 and more recently after the turmoil from the outbreak of the Ukraine-Russia conflict: excessively stretched procurement and distribution supply chains are put at risk in the face of unexpected, destructive events like pandemics or geopolitical clashes. Logistics become an essential infrastructure to guarantee stable, smooth production and to contain the painful effects of a global crisis, which are palpable and visible today.

Against this backdrop, the NRRP (National Recovery and Resilience Plan) set up by the Italian Government in 2021 (Equita, 2021a and Equita, 2021b) has defined the key guidelines for relaunching the Italian economy in a post-pandemic scenario. The Italian NRRP can count on a significant budget: including about €13.5 billion of the React-EU plan, available resources exceed €235 billion. Of this figure, €62 billion is available for the Ministry of Infrastructure and Sustainable Mobility alone, the lead actor in reducing the infrastructure gap in the country. While an analysis of the NRRP shows a number of positive aspects, it is also important to point out that some issues – the result of a historic heritage that Italy seems unable to shrug off – remain unresolved (Gamberale and Gatti, 2021b).

But now let's consider the positive aspects. The NRRP is articulated in 'thematic areas' which is a good approach considering the shift of infrastructure from a 'sectorial' to an 'ecosystem' concept, as we will describe in more detail in Section 4.1 (see Figure 9). Among them, the green revolution/ecologic

transition, the circular economy, digitalisation, sustainable mobility and, to some extent, the segment dedicated to 'inclusion and social cohesion' provide a solid framework for the objectives of the plan, expenditures targeted to goals rather than to sectors. This avoids a fragmented and uncoordinated approach to public spending. Furthermore, the thematic focus shows a clear vision of the evolution of infrastructure in the society of tomorrow, refraining from allocating resources to investments whose future is short term (so-called '*stranded assets*').

However, the NRRP lends itself to two key criticisms.

The first is that the post-pandemic scenario shows a €370-billion infrastructure gap for Italy over the next 18 years (see Section 2). Given the already high level of public debt, and even considering the possible revision of the EU Fiscal Compact rules, this gap simply cannot be filled by Keynesian-style public investments alone. The public sector must play a pivotal role in relaunching infrastructure spending. However, the big pool of financial resources – which is what makes the difference – is available from private, long-term investors. The NRRP seems to give limited attention to the need to attract private capital to leverage using virtuous forms of Public-Private Partnerships (PPPs).<sup>3</sup>

The second criticism springs directly from the previous one. A country that supports cooperation between the public and private sectors for the construction and operation of infrastructure must also be convinced that the PPP model can work only if minimum conditions are satisfied. In particular, public regulation and controls must be coordinated with the private financing, risk management and O&M (operations and maintenance) of infrastructure. The private sector invests only if it can rely on a clear, well-established regulatory framework, explicit in terms of the rules of the game, and with an authoritative public sector establishment able to balance the risk-return objectives of the private investors with its responsibilities in building and managing the project (Ernst & Young, 2021). The public sector, in turn, must provide a class of well-prepared public officials, able to play their role of attentive regulators and controllers of the private partner and the overall performance. Sadly, recent experiences of mismanagement of infrastructure in Italy require a changed attitude toward this aspect. What's more, concession agreements, regulations and controls must become more exact and disciplined. The NRRP, also in the chapter dedicated to reforms, does not dedicate much attention to this and is obviously not forward-looking.

In this Quarterly Column, we first look at the importance of infrastructure in the current macroeconomic scenario in Section 2. We give indications on the infrastructure gap and the megatrends impacting the infrastructure space. Section 3 provides the outlook for infrastructure investments in Europe and Italy, showing key evolutionary trends in the medium term. Also detailed is the current situation of infrastructure investments in Italy together with indications as to how private investors perceive the pros and cons of investing in the Italian market. Section 4 describes the Italian NRRP and its implications for the development of the Italian financial market. Section 5 concludes and offers policy recommendations.

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<sup>3</sup> An important shift in the attitude toward the need to incentivize PPPs is the recent announcement by ANAC (the Italian National Anti-Corruption Authority) in September 2022: the funds provided by the EU within the framework of the NRRP in the form of non-interest-bearing grants are excluded from the calculation of the limit of 49% of public resources granted to an infrastructure project.

## 2. The importance of infrastructure in the current macroeconomic scenario

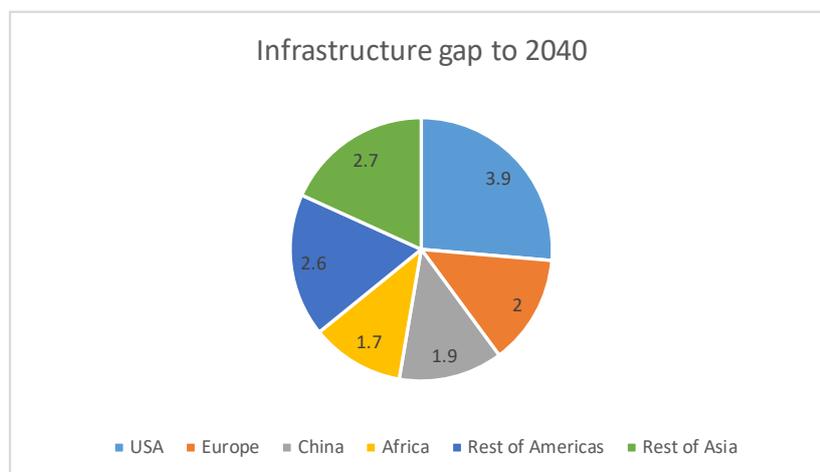
In this section, we provide an overview of the infrastructure gap to 2040 with a specific focus on Europe and Italy. This overview is useful to inform the discussion as far as the impact of key megatrends on the infrastructure space and the consequent emergence of ‘thematic investments’ in infrastructure for investors and asset managers.

### 2.1 What is the market telling us? Estimating the infrastructure gap

In 2017, Oxford Economics carried out a comprehensive analysis of current trends in infrastructure investments compared to the investments required to maintain a stable, long-term growth pattern to 2040. At a global level, the difference between the current investment trends in 2016 and the investment needs to 2040 quantified at 2015 constant prices and exchange rates (the ‘infrastructure gap’) is estimated to be about \$14.9 trillion. More than half of this figure is concentrated in the key economic macro regions of the US, Europe and China. See Figure 1.

It comes as no surprise, then, to see that in the past two years, a number of extraordinary public spending plans have been set up to fill in the gap. Infrastructure is a powerful macroeconomic multiplier, and a Keynesian-like spending policy should trigger a proliferation in GDP growth that can fix the economic effects caused by the pandemic first, and by the Russian-Ukraine war more recently. Moszoro (2021) estimates that 1% of global GDP in public investments can create more than 7 million jobs worldwide through direct employment effects alone.

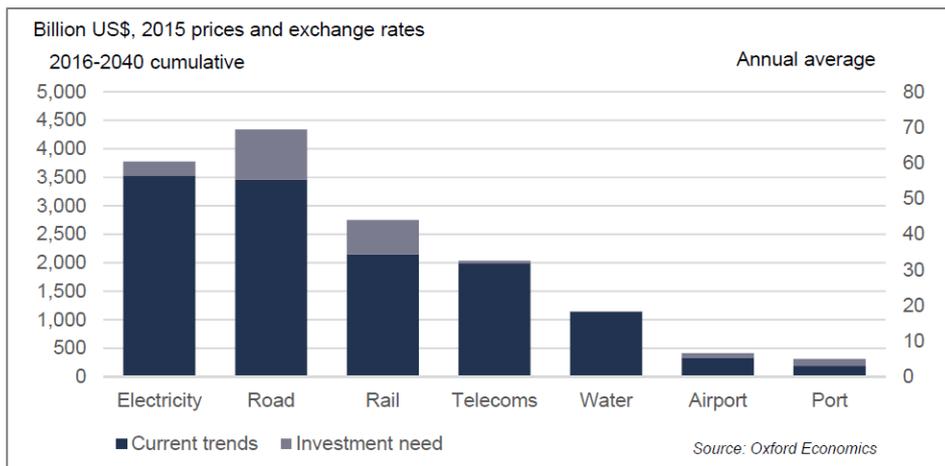
Figure 1 Infrastructure gap to 2040 (trillion US\$ in 2015, at constant prices and exchange rates)



Source: Oxford Economics

When considering the \$2 trillion infrastructure gap in Europe, the largest portion refers to transportation and electricity. Railways, roads, airports and ports all have gaps between investment needs and trend forecasts in excess of 20%, and it is very likely that the recent geopolitical tensions will further widen the gap for the electricity sector in Western Europe countries due to their need to reduce their dependency on Russian supplies. Instead, for water and telecommunication utilities the gap is smaller. See Figure 2.

Figure 2 Current trends and investment needs in European infrastructure 2016-2040 – breakdown by sector

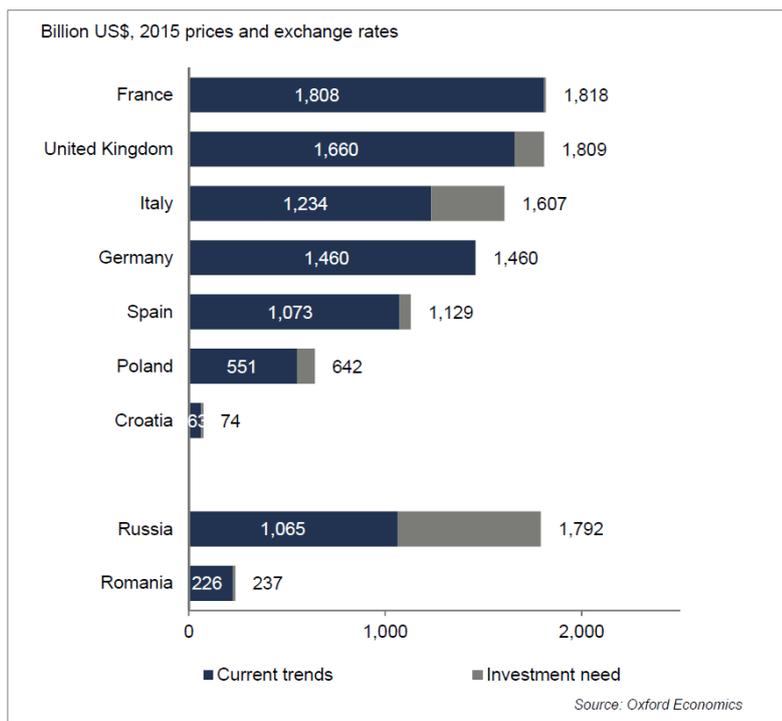


When examining the breakdown by country (Figure 3), the outlook is mixed. The countries of Europe that have high quality infrastructure already in place will need only minor additional investments compared to the trends that are currently underway. On the other hand, lower-income European countries at present have a weaker, less modern infrastructure base, so the difference between current trends and investment needs is bigger.

The first group includes countries such as France, Germany, and to a lesser extent, the UK and Italy. By looking at Figure 3, in fact, the gap between France and Germany is almost nil, while for Italy this distance is relatively large: the investment needs are 30% greater than would be delivered by current investment trends.

Lower-income countries, notably Russia, show instead a huge infrastructure gap concentrated in the roads and transportation sector. The situation is more manageable in other countries for which data are available like Poland, Romania and Croatia.

Figure 3 Current trends and investment needs in European infrastructure 2016-2040 – Breakdown by country



With specific reference to Italy, the 30% gap between current trends and investment needs is the largest among high-income European countries, possibly implying a relatively less efficient conversion of high levels of investments into infrastructure. This gap is mainly concentrated in transportation facilities, in particular ports, railways and airports, and in electricity. Instead, a smaller gap is estimated for roads, water and telecommunication utilities. However, the changed geopolitical landscape coupled with more stringent decarbonisation targets at the EU level will definitely amplify the gap for investments in electricity and gas production. As a result, to close this gap and meet its infrastructure needs, Italy is called to prioritize investments in electricity and railways and to direct more resources to ports and telecoms relative to other high-income European countries.

## 2.1 Megatrends impacting the infrastructure investment space

Against the backdrop of material infrastructure gaps, investors and asset managers have seen more investment opportunities. However, given that by nature these are long-term, capital-intensive projects, infrastructure is a segment of alternative investments that, more than others, is subject to the effect of megatrends. In fact, investing today in something that will lose value in the coming decades exposes investors to the risk of putting money into stranded assets.

It is useful then to look at the megatrends that are going to reshape the societies of the future, to try to understand which of them have a major impact on infrastructure investments.

According to Fiorillo et al. (forthcoming), megatrends can be defined as processes that form slowly and can be observed over a long period of time, affecting both the present and the future of societies over a period of seven to ten years or more. These include forces of social, economic, political, technological and environmental change that reshape the basic functioning of society as a whole and condition the developmental trajectories of humankind at global level. Based on the PESTLE methodology,<sup>4</sup> the authors consider not only the key driving forces of change but also their respective interactions. The result is shown in Figure 4 where 'driving forces' are identified in green. These are the forces that will influence an above-average number of other global phenomena.

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<sup>4</sup> PESTLE is the acronym for politics, economics, society, technology, law and environment, and refers to a theoretical framework that businesses can adopt to analyse the external factors that may affect the context in which they are operating or in which they plan to launch new operations and adapt their strategy accordingly.

Figure 4 Megatrends and driving forces selected through the PESTLE methodology

CATEGORY	MEGATREND	N° OF IMPACTED MEGATRENDS
SOCIETY	Ageing global population	5
	Population growth will slow and peak	6
	Middle-class expansion in developing countries and changing consumption patterns (i.e. consumerism)	7
	Urbanisation will continue	2
	Increasing migration	4
	Growing inequality within and across countries	3
ECONOMICS	Growing economies of emerging countries	7
	Economic connectedness across borders (i.e. globalisation)	6
TECHNOLOGY	Changing jobs connected to new technologies and data exploitation	2
	Hyperconnectivity in a world of digital natives	4
	Data will be king	8
	Technology for sustainability	2
	Technologies on the rise: automation, AI, cloud computing, biotechnologies	14
	Convergence of unrelated areas of scientific research and technological applications	3
LAW	Adapting rules to new technologies	3
	Adapting rules to ageing population issues	0
	Adapting rules to climate change and resource scarcity issues	3
	Consumer protection laws	2
	Intellectual property laws	2
POLITICS	Exacerbating international tensions and conflicts (e.g., connected to resource scarcity, climate change and new energy sources)	2
	New arenas of state competition	1
	Convergence around shared values may stall (human rights etc.), polarization leads to populism and protectionism	2
	Multilateralism is weakening in favour of ad hoc organisations	0
ENVIRONMENT	Climate change (e.g. higher temperatures, melting Arctic, extreme weather events, sea level rise, natural disasters)	14
	Mounting human pressure on the environment	4
	Resources and ecosystems services depletion	13

These driving forces are also at the basis of technological and socio-cultural trends that, according to Gatti and Chiarella (2020), can have the strongest potential impact on infrastructure investment and the most consequential implications for investors, asset managers and policymakers:

1. sustainability and the environment;
2. social inequality;
3. demographic change;
4. urbanisation;
5. digitalisation and shared economy.

*Sustainability and the environment* - Modern societies are raising their awareness of environmental, social and governance (ESG) issues. As a consequence, investors, policymakers and regulators are becoming more cautious about environmental challenges and see the need for a better relationship

between economic activity and environmental sustainability. Greater attention to ESG issues is being accompanied by fast technological progress, making clean and renewable energy a valid, cost-effective substitute for fossil fuels.

Di Castelnuovo and Biancardi (2020), in describing the key future trends in the energy infrastructure, indicate the rapid deployment and falling costs of clean energy technologies, the growing share of electrification in consumption, climate change awareness and the action of policymakers to decarbonize the economic system. They point to these factors as the drivers of the major ongoing transformation of the energy sector, in particular electricity.

This transition to renewable energy calls for redesigning the business model of utilities, and opens up new business opportunities for utilities and investors such as new solutions for storage and distribution (smart grids and batteries). Consistently, utilities are becoming less asset-intensive, and more service-intensive and are expanding into downstream businesses like EV charging networks and EV rentals.

Another sector with strong environmental implications is water and sanitation. Gatti (2023) reports that the ecological footprint of humankind is currently 1.7 times larger than our planet's biocapacity. In pragmatic terms, as we stand now, that means we need 1.7 Earths to sustain the global population. Agrifood systems account for 31% of the GHG (greenhouse gas emissions) deriving from human activities. What's more, agriculture occupies 40% of the world's land and accounts for 70% of water use. Water demand is expected to grow by 26% from 2020 to 2050, with a rise in supply shortages concentrated in specific parts of the globe. As far as this resource scarcity, investors seem aware of the issue. In fact, about 60% of them surveyed by Preqin (Preqin, 2021; Roland Berger, 2022) see water management and natural disasters/climate change as the most relevant questions for ESG investing.

As a result, building supply, treatment, storage and reuse systems to ensure a sustainable flow of safe water has become a significant opportunity for investors. A growing portion of investment options in the water sector is emerging in systems for capturing water, related technologies and systems for processing wastewater to varying levels of purity, and the infrastructure to deliver water to industrial, agricultural and residential customers. The focus on efficient use is a global trend involving utilities, infrastructure investors, and scientific researchers who are developing new treatment technology.

*Social inequality* – Recent geopolitical tensions have reset the results achieved in decades of economic globalization, generating a multi-polar world where in most cases the financial healthiness of the middle class has worsened and inequalities in terms of revenue distribution have proliferated (Credit Suisse, 2017). This expanding inequality has pushed growing portions of the population towards lower standards of living and has led to intensified feelings of anger and greater insecurity. With larger inequalities within countries, higher flows of immigrants and refugees, less security in big cities, fear of terrorism, and widespread disenchantment, we find that sympathy for populism is spreading especially among millennials and older people (Hofrichter, 2017).

Populism fosters protectionism that aims to support sectors with high domestic employment and to appease the middle class. Although this is positive for infrastructure because it is a key sector sustaining the national economy, there are however clear negative effects that populism generates for private infrastructure investments:

1. In many developed countries, disillusionment is on the rise towards infrastructure, privatized infrastructure in particular, and this creates unfavourable conditions for private capital investment in the asset class.
2. Stronger national identities reduce the attractiveness of cross-border infrastructure projects because trade barriers are being erected between states. Protectionism hampers the possibility of cross-border acquisitions from foreign investors in strategic sectors, infrastructure among them.
3. The nationalisation of a strategic sector like infrastructure is fueled by radical political movements which can jeopardise investments in infrastructure that are already in place. Populist parties can pressure governments to prevent the privatisation of infrastructure or excessive rents that private investors extract from concession agreements.

The implications for long-term investors are evident: as governments prioritise investments, some sectors will benefit more than others, very likely shifting the spotlight to national champions and brands, defence and security. Therefore, the intensification of these political pressures makes countries where populist movements are emerging less attractive for infrastructure investors.

*Demographic change* – The structural change of the world’s demography has mixed effects on infrastructure, as very different lifestyles and needs clash. The percentage of the young population is growing, but at the same time, the population as a whole is ageing.

On one hand are millennials, who are more attentive to ESG issues and more open to investing in alternatives (Bank of America, 2022). These eco-friendly, digital natives are more oriented toward using rather than owning durable goods, with a sharing economy rationale. On the other hand is the silver society, made up of seniors who are more affluent than young people, who spend more, especially on healthcare and assistance, and who have specific housing needs.

Millennials show a clearer distrust for the status quo. This sentiment is also driven by the fact that millennials will be poorer than the previous generation and will have less possibility to accumulate wealth during their lifetimes. So their sophistication and ambition are not matched by their security. Furthermore, millennials are digital natives. They have a strong inclination to search for information, and they spend more time being connected to information sources and social networks.

This lifestyle influences their consumption patterns: millennials prefer to use – rather than own – durable goods, embracing the sharing economy, as mentioned above. A sharing economy, in turn, is supported by connectivity. Speed and availability of an internet connection open new opportunities for infrastructure like fibre networks and telecom towers. Data treatment, data storage and data protection against cyberattacks are additional areas of business in which new opportunities for infrastructure investors are opening up.

On the other hand, looking at the silver society, the population is ageing. Fertility rates have been progressively dropping and they are already below the population replacement level of 2.1 in many countries. By 2050, the population segment aged 60+ will rise to 2.1 billion globally from 900 million in 2015. Differently from what happens already today, demographers estimate that 80% of all people 60+ will live in emerging markets by 2050.

The implications of the ageing population in terms of investment opportunities are obvious. Older people spend more on health and safety and require senior housing solutions and long-term care facilities. Furthermore, the public sector must think about urban redesign, with areas served by a more efficient and extensive network of public transportation and more assistance services for this portion of the population.

*Urbanisation* – The United Nations Population programme estimates that 60% of the global population will live in urban areas in 2030, up from 54% today. By 2030, with the exception of Cairo, Mexico City and Lagos, the ten largest cities in the world in terms of population will be located in Asia. Urbanisation trends open new investment opportunities in the infrastructure space.

The first is represented by logistics. New consumption habits combined with pressure on land prices, urban congestion and demand for rapid delivery of goods all make logistics and warehouses interesting investment segments. Furthermore, urbanisation poses challenges to transportation infrastructure that needs to adapt to higher passenger volumes, and physical constraints and reduce environmental impact (Baccelli, 2020). The development of green cities connected by low-impact highway and rail systems with car-sharing services and localised production will result in less traffic and fewer parking areas as well as less demand for cement and asphalt, all of which will reduce greenhouse gas emissions and air pollution.

*Digitalisation and the sharing economy* – The growing use and consumption of data imply that infrastructure is no longer a physical asset like in the past. Infrastructure is becoming more immaterial.

Indeed, managing infrastructure has less to do with physical goods, and more closely resembles managing intangible assets like data, information, and services.

A fundamental role is played by the diffusion of the web and web-connected devices. As a consequence, wireless traffic and the use of data flow are expected to expand significantly. The impact of these new consumer habits on the telecom infrastructure is thoroughly discussed by Sacco (2020), who shows how the telecommunication network is evolving in response to changing demand.

Digitalisation is also remapping the boundaries between sectors and the way firms operate in modern economies. They are shifting to digital business models that make things smarter by using connectivity (Internet of Things – IoT), analysing the collected data in a more sophisticated manner (big data), and managing and sharing data via the cloud (Internet of Services – IoS).

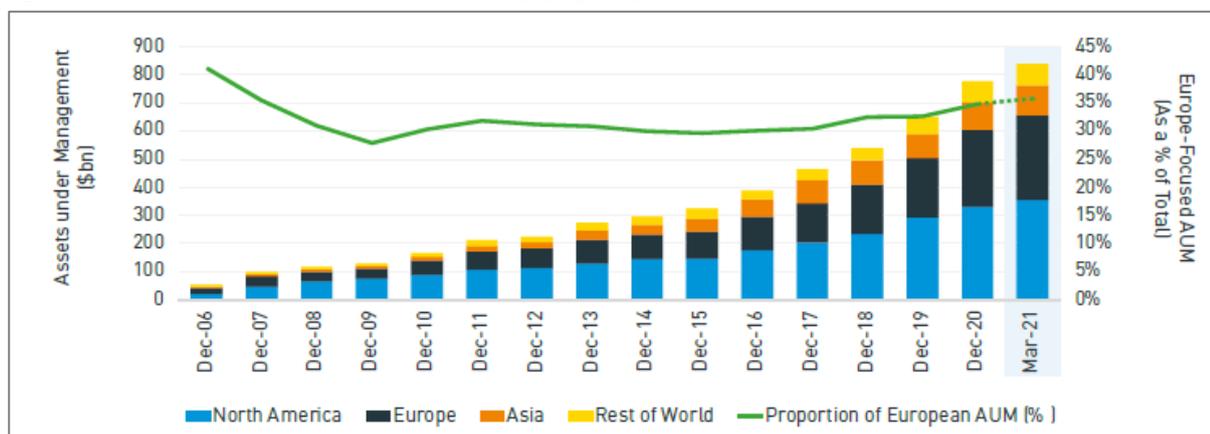
Alongside this transformation, data storage, and data protection are becoming additional key areas of development. Cybersecurity is expected to be among the most resilient areas of IT spending as the number of digital threats continues to rise (Willis Towers Watson, 2017).

### 3. The outlook for Infrastructure investments: a focus on Europe and Italy

According to Prequin, in March 2021 the AuM for unlisted infrastructure assets (equity and debt) totalled \$838 billion worldwide, the highest ever. Of this amount, more than one-third was represented by European AuM. To put these numbers in perspective, this value was \$213 billion only ten years ago. Today, European AuM is second only to North America (see Figure 5).

The impressive growth registered in the last ten years has been driven by a strong acceleration of Core+ and value-added/opportunistic investments.<sup>5</sup> This trend strengthened after 2015 in response to a drop in yields of most asset classes and to the need for investors to look for better returns for their portfolios, possible only when accepting the higher risk of the Core+ and value-added segments.

Figure 5 Unlisted Infrastructure AuM – breakdown by geography (2006- Q1 2021)



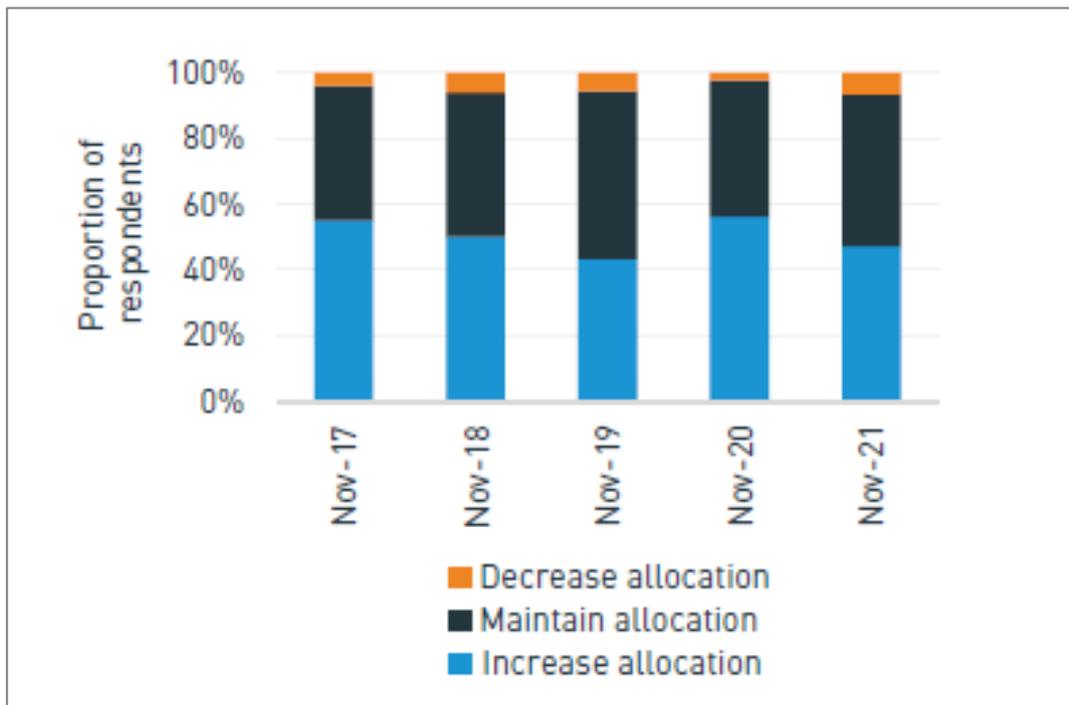
Source: Prequin (2022), Global Infrastructure Report

<sup>5</sup> Infrastructure strategies are typically distinguished by the characteristics of assets targeted, exposure to risk, and the type of return achieved. This leads to four main risk/return categories: core, core+, value-added, and opportunistic. Core involves mostly regulated assets and social infrastructure offering a stable income return. Core+ and value-added strategies are focused on assets that are only partially regulated, with increasing demand risk and potential for capital growth in addition to income return. Opportunistic includes unregulated assets with competition and demand risk that offer returns largely in the form of capital growth.

The growth trend of AuM confirms the resilience of this asset class even in periods characterised by volatility and extreme market uncertainty. Covid-19 first and geopolitical tensions more recently have only marginally affected the attitude of investors to allocate resources to this segment of alternative investments compared to other segments like private equity and venture capital.

Indeed, a look at the available data reveals that in June 2022 almost all investors surveyed by Preqin said that over the longer term, they are open to either maintaining or increasing allocations to infrastructure. This situation is in line with the pre-pandemic data of 2019 (see Figure 6).

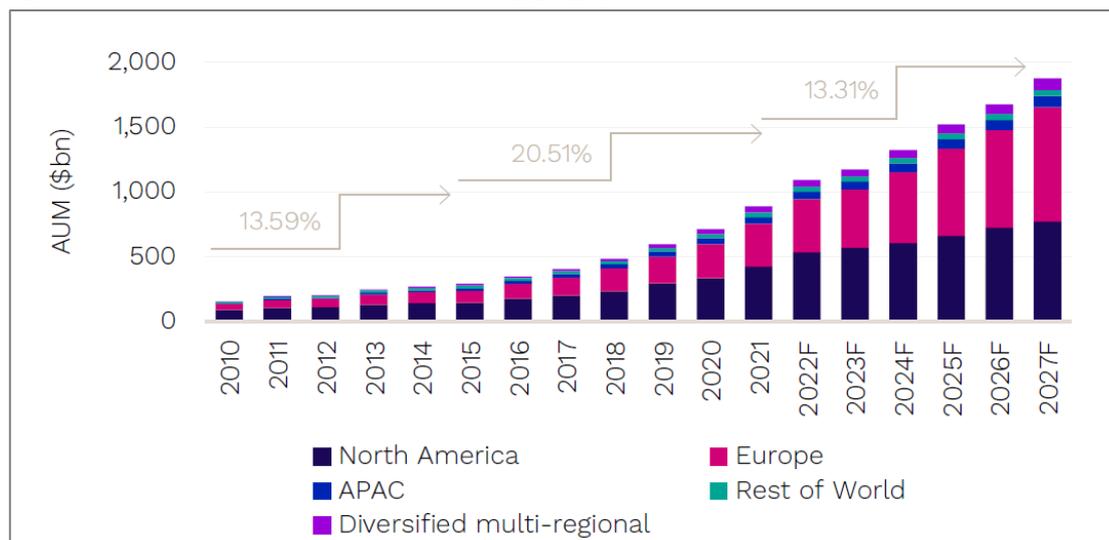
Figure 6 Intentions of infrastructure investors relating to long-term allocations to infrastructure (2017 – Q1 2022)



Source: Preqin Investor Outlook: Alternative Assets H1 2022

Not only has infrastructure proven to be a resilient asset class, but by looking at the expected growth for the coming five years (2022-2027), estimates provided by Preqin indicate that unlisted infrastructure AUM is forecast to reach \$1.9 trillion by 2027 with an annualised growth rate between 2021 and 2027 of about 13%. Interestingly, during the same period, Europe-focused infrastructure AuM is set to experience the highest growth rate among all geographic areas, with a CAGR of 17.8% between 2021 and 2027, surpassing North America by 2025. This trend will drive European infrastructure AuM to \$882 billion from \$331 billion in 2021 (see Figure 7). Of the total value of AuM, Core and Core+ investments will still retain the majority with about 70%. However, a slight uptick will also be registered by value-added/opportunistic strategies.

Figure 7 Infrastructure AuM to 2027 – Breakdown by geographic areas



Source: Preqin Special Report: *The Future of Alternatives in 2027*

A clear driver of the fast expected growth of AuM in Europe is the recent geopolitical turmoil that followed the outbreak of the Ukraine-Russia war and the consequent need for Europe to tackle the energy shortage that has ensued.

The need to achieve energy independence from Russian gas coupled with stringent decarbonisation targets imposed by the European Union on its member States is bound to accelerate the deployment of capital for renewable energy projects, together with the planning and permitting of new greenfield projects.

A second, more short-term driver of the growth of European Infrastructure AuM is the need to keep investing in gas and LNG (liquefied natural gas) despite the path to decarbonisation cited above. In fact, renewables are intermittent and to avoid longer-term energy constraints, investments in gas provide a stable source of power – albeit not fully compliant with ESG screening processes.

Investor concern over exposure to inflation is an additional salient factor. The inflation hedge provided by many infrastructure assets is often cited among the top reasons why investors allocate more and more shares of their capital to this asset class. Their point is that the revenue models of infrastructure assets allow them to obtain stable, real (i.e., inflation-adjusted) returns over time, as many infrastructure assets have built-in inflation protection, which is either direct (linked to tariffs) or indirect (through the relevant regulatory framework). Consistent with this view, there is a general consensus across the industry that based on historical data, infrastructure performs better than other asset classes when inflation is high or is rising (see for example Blackrock, 2021; IPE, 2021; Macquarie, 2021; or Cohen & Steers, 2021).

### 3.1 The Italian situation

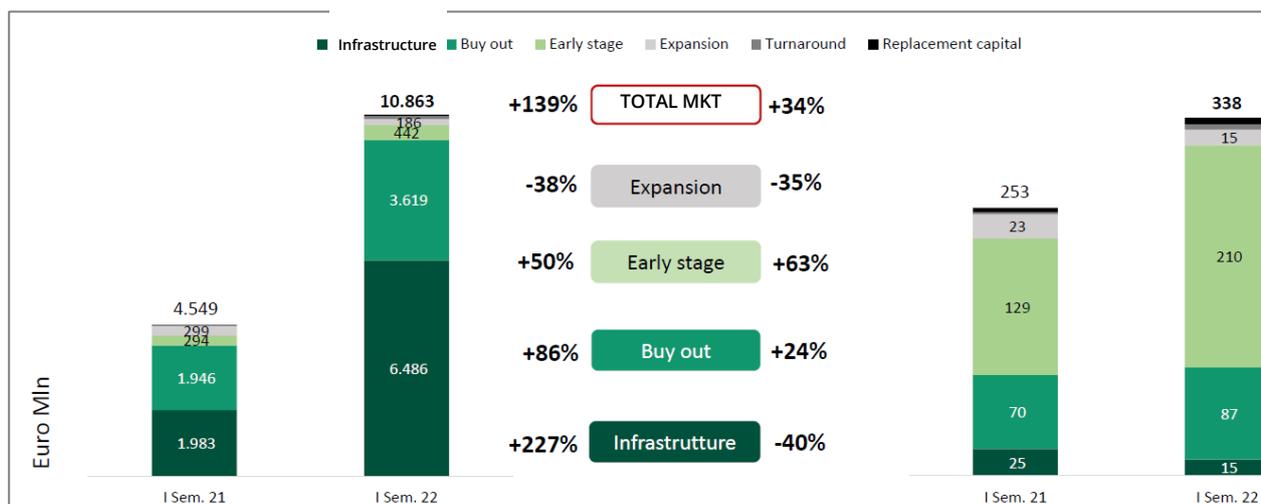
AIFI (2022), in its presentation of the first semester activity of private equity and venture capital in Italy, shows promising figures for the Italian infrastructure market. In the first semester of 2022, infrastructure recorded 15 transactions for a total value of about €6.5 billion.

In H1 2022, infrastructure is the most represented segment of the private equity market in terms of value (see Figure 8) and a comparison with the first half of 2021 indicates a concentration of this segment of the private equity space with higher values but lower number of deals (from 25 in H1 2021 to 15 in H1 2022).

Investments are distributed in all the key sectors, with the majority placed in energy, transportation, telecommunication, and social infrastructure. In 2021, investors showed a slight shift towards

telecommunication and social infrastructure (particularly hospitals and long-term care homes). However, after the Russia-Ukraine war, investors are indicating a larger commitment to energy projects in the years to come.

Figure 8 The Italian market for private equity (value amount left panel; number of deals right panel) in H1 2022 vs H1 2021



The big jump in value for the infrastructure segment between 2021 and 2022 is explained by two main reasons. The first is that in between 2021 and 2022, there has been an unusual concentration of megadeals involving brownfield investments:<sup>6</sup>

1. The consortium composed of CDP Equity, Blackstone Infrastructure and Macquarie Infrastructure and Real Assets (MIRA) completed the acquisition of 88.1% of ASPI-Autostrade per l'Italia from Holding Atlantia.
2. KKR bought a 37.5% share in Fibercop from Telecom Italia.
3. ENEL sold its equity stake in Open Fiber to Macquarie.

The second explanation for the upsurge in infrastructure deals in Italy is due to the post-pandemic emergency programmes set up by the European Union through the Next Generation EU plan and the implementation of the NRRP in Italy (see Section 4). As we said in the introduction, Italy is the country that received the largest portion of EU funds, about 28%. Indeed, infrastructure investors and asset managers surveyed in 2022 by Ernst & Young indicate the need to fill the Italian infrastructure gap as the most important motivation for them to invest in the country (EY Infrastructure Barometer, 2021).

Against this favourable backdrop, however, there are evident signs of weakness in the Italian market for long-term alternative investors. Regulatory uncertainty and poor macroeconomic performance are cited by 33% and 30% of investors responding to the Ernst & Young survey. Furthermore, available data show a marked preference among investors for brownfield assets: 62% of investors declare that they allocate less than 10% to the greenfield segment. This clearly demonstrates the limited interest of

<sup>6</sup> Brownfield investments typically involve an existing asset that requires improvements, repairs, or expansion. The infrastructure asset or structure is usually partially operational and may already be generating income. This is therefore typically lower risk than greenfield projects, which involve instead assets that need to be designed and constructed. In this latter case, investors fund the building of the infrastructure asset, as well as maintenance once it is operational. The costs involved in planning and development, coupled with uncertainty in demand, usage, and pricing, mean that these projects are typically higher risk. In addition, as the asset is not yet operational, there is no revenue generation in the early stages.

private capital in any involvement in the construction/refurbishment of new infrastructure; this figure is also at odds with the declared objectives of the NRRP to fill in the infrastructure gap with the use of Public-Private-Partnerships. A possible explanation for the lack of interest in greenfield investments is the burdensome administrative requirements and political and regulatory uncertainty, as cited by 36% and 35% of the surveyed investors in the Ernst & Young report. Added to this disappointment in the regulatory environment is the perception of the poor quality of Italian PPP tenders: in fact, 52% of investors consider the quality below EU average.

## 4. The National Recovery and Resilience Plan (NRRP): macroeconomic and financial implications for Italy

### 4.1 Introduction to NRRP: timing, results achieved and future milestones

Following the Covid-19 outbreak in February 2020, the EU agreed to set up a pandemic recovery plan with the intention to offset the negative implications for the European economy and to enhance the system's resiliency. This plan, named Next Generation EU (NGEU) amounts to ca. €750 billion. The main component of the NGEU is the Recovery and Resilience Facility (RRF), which has a duration of six years (from 2021 to 2026) and a total size of €672.5 billion euro – of which € 312.5 billion euro in the form of grants. The remaining €360 billion consists of low-interest loans financed through the first-ever EU bond issuance programme.<sup>7</sup>

The NRRP is part of the NGEU programme and was submitted by Italy on 30 April 2021 for a total amount of €191.5 billion. As shown in Figure 9, the Italian NRRP sets out an investment package encompassing six policy areas ('Missions') and 16 actions. Overall, it encompasses an ambitious reform agenda, with four major reforms in the fields of public administration, justice, simplification of legislation and competition. Each mission combines investments and sector-specific reforms, to enhance the comprehensive impact of each project.

Together with the React-EU fund<sup>8</sup> and the Complementary Fund,<sup>9</sup> Italy has total resources to be injected exceeding €235 billion.

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<sup>7</sup> Source: MEF ([The National Recovery and Resilience Plan \(NRRP\) - Ministry of Economy and Finance \(mef.gov.it\)](https://www.mef.gov.it)).

<sup>8</sup> The Recovery Assistance for Cohesion And the Territories of Europe (REACT-EU) is a top-up funding source to 2014-2020 European Regional Development Fund and European Social Fund allocations, that extends the crisis-response and crisis-repair measures delivered through the coronavirus response investment initiative (CRII) and the coronavirus response investment initiative plus (CRII+). It can be used until year-end 2023 as a 'bridge' to the long-term recovery plan. The programme supports investment projects that foster crisis-repair capacities and contribute to a green, digital and resilient recovery of the economy, including support for maintaining jobs, short-time work schemes and support for the self-employed.

<sup>9</sup> In addition, on 6 May 2021 the so-called Complementary Fund amounting to ca. €30.6 billion was set up with national resources to further strengthen NRRP and finance projects with expected completion after 2026. The Complementary Fund has the same governance structure and system of milestones and targets as per the NRRP.

Figure 9 Italian NRRP - Missions and Actions

Mission	Action	Reforms	NRRP Investment plan	Total Resources (billions of euro)			
				NRRP	React EU	Com. Fund	Total
<b>Mission 1:</b>  Digitalization, innovation, competitiveness, culture and tourism	M1C1 – Digitalization, innovation and security in the public administration	19	27 measures (€40.3bn)	9.72	-	1.40	11.12
	M1C2 – Digitalization, innovation and competitiveness in the production system			23.89	0.80	5.88	30.57
	M1C3 – Tourism and culture 4.0			6.68	-	1.45	8.13
<b>Mission 2:</b>  Green revolution and ecological transition	M2C1 – Circular economy and sustainable agriculture	14	45 measures (€59.5bn)	5.27	0.50	1.20	6.97
	M2C2 – Renewable energy, hydrogen, grid and sustainable mobility			23.78	0.18	1.40	25.36
	M2C3 – Energy efficiency and renovation of buildings			15.36	0.32	6.56	22.24
	M2C4 – Protection of land and water resources			15.05	0.31	-	15.36
<b>Mission 3:</b>  Infrastructure for sustainable mobility	M3C1 – Investments in the rail network	9	11 measures (€ 25.4bn)	24.77	-	3.20	27.97
	M3C2 – Intermodality and integrated logistics			0.63	-	2.86	3.49
<b>Mission 4:</b>  Education and research	M4C1 – Strengthening the provision of education services: from crèches to university	11	24 measures (€30.9bn)	19.44	1.45	-	20.89
	M4C2 – From research to business			11.44	0.48	1.00	12.92
<b>Mission 5:</b>  Inclusion and cohesion	M5C1 – Employment policies	5	17 measures (€19.9bn)	6.66	5.97	-	12.63
	M5C2 – Social infrastructure, households, the community and the third sector			11.22	1.28	0.34	12.84
	M5C3 – Special interventions for territorial cohesion			1.98	-	2.43	4.41
<b>Mission 6:</b>  Health	M6C1 – Local networks, facilities and telemedicine for local healthcare	2	8 measures (€15.6bn)	7.00	1.50	0.50	9.00
	M6C2 - Innovation, research and digitalisation of the national health service			8.63	0.21	2.39	11.23
<b>Total</b>				<b>191.5</b>	<b>13.0</b>	<b>30.6</b>	<b>235.1</b>

Source: MEF, Equita elaboration

On 13 July 2021 EU economic and finance ministers approved the Italian NRRP: Italy, subject to progress on the implementation of investments and reforms, will receive a total of €68.9 billion in the form of grants and €122.6 billion in loans, corresponding to approximately 9.5% of its GDP (or 11% considering the React EU fund and the Complementary Fund).

On 13 August 2021, the Commission disbursed a pre-financing of €24.9 billion (13% of the total amount), which enabled Italy to kick-start the implementation of the NRRP. Part of the pre-financing went to

projects already ongoing in 2020-2021 and consistent with RRF provisions.

In December 2021, the European Commission and Italy signed the operational arrangements for monitoring the NRRP, a pre-condition for Italy to submit payment requests. For both grants and loans, subsequent payments will be made in instalments, based on a decision by the European Commission that Italy has satisfactorily fulfilled relevant (i) milestones and (ii) targets. The pre-financing shall be cleared over time, proportionally deducted from subsequent payments. The final deadline for completing milestones and targets is 31 August 2026.

Apart from the 13% pre-financing disbursed in August 2021, all other NRRP payments will depend on progress in implementing the Italian plan. In total, ten instalments are planned for grants and ten for loans. The gradual clearing of the pre-financing is set to reduce the actual disbursements for each instalment by 13%. Each instalment is linked to achieving a number of (i) milestones (qualitative goals) and (ii) targets (quantitative goals). Based on the RRF Regulation, Italy must commit RRF resources by the end of 2023, while payments must be made at the latest by the end of 2026.

On 13 April 2022, Italy received the first payment, worth €21 billion (net of pre-financing) in grants and loans, based on the achievement of the related 49 milestones and two targets. This brought the resources received by the Member State to 24% of its NRRP, a result that is above the EU average, which at that time was 20%.

On 27 September 2022, the European Commission officially approved the payment of the second tranche, amounting to another €21 billion (net of pre-financing) in grants and loans, covering various reforms (e.g., in the areas of tax administration, education and territorial healthcare) and investments (e.g., in tourism and culture and the digitalisation of schools).

Figure 10 shows the current update on the NRRP calendar.

Figure 10 Calendar of NRRP deadlines and milestones

	Deadline	Reforms and objectives	Gross amount (billion euro)	Amount paid (billion euro) <sup>(a)</sup>	Payment date
Pre-financing				24.9	13.08.2021
1 <sup>st</sup> tranche	31.12.2021	51	24.1	21.0	13.04.2022
2 <sup>nd</sup> tranche	30.06.2022	45	24.1	21.0	<i>Approved (b)</i>
3 <sup>rd</sup> tranche	31.12.2022	55	21.8	19.0	
4 <sup>th</sup> tranche	30.06.2023	27	18.4	16.0	
5 <sup>th</sup> tranche	31.12.2023	69	20.7	18.0	
6 <sup>th</sup> tranche	30.06.2024	31	12.6	11.0	
7 <sup>th</sup> tranche	31.12.2024	58	21.3	18.5	
8 <sup>th</sup> tranche	30.06.2025	20	12.6	11.0	
9 <sup>th</sup> tranche	31.12.2025	51	14.9	13.0	
10 <sup>th</sup> tranche	30.06.2026	120	20.8	18.1	
<b>Total</b>		<b>527</b>	<b>191.5</b>	<b>191.5</b>	

(a) Net of pre-financing (b) Tranche approved to be paid

Source: MEF - Italia Domani, "Relazione sullo stato di attuazione del piano nazionale di ripresa e resilienza", 5 October 2022

## 4.2 NRRP and the global crisis: potential impacts on targets and macro-economic objectives

Overall, Italy will have to meet 213 milestones and 314 targets to implement its NRRP entirely. The former, which relate to qualitative achievements, are predominant in the first part of the plan (over 60% of total milestones are linked to the first three instalments) and Italy has planned a significant frontloading of reforms. Various milestones and targets may relate to a single investment or reform, corresponding to different steps in their implementation.

The deadline for submitting the next payment request is December 2022, when the Italian government is expected to have achieved 39 milestones and 16 targets. It should be highlighted that this third deadline will be the first with a substantial number of quantitative goals to be achieved (16 compared to two and one respectively for the first and second payment) and therefore it will send a strong signal of the country's ability to meet future payment criteria.

The recent rise in energy prices and raw/supply materials, which started in 2021, posed a serious threat to NRRP fund deployment: private players complained about this phenomenon, stating that the envisaged investment plans could not be started or moved forward without additional funds to cover the increase in prices. The Italian Government acknowledged these requests, modifying the NRRP investment plan accordingly with the Updated Document of Economy and Finance (*Nota di Aggiornamento al DEF* or NADEF) published on 28 September 2022 by the Italian Ministry of Economy and Finance.

The note shows, *inter alia*, a total level of invested funds anticipated by the end of 2022 equal to €20.5 billion vis-à-vis a previous projection of €33.7 billion, with a variation of minus €14.4 billion in 2022 which will mostly be recovered with investments in 2025 and 2026.

Figure 11 NADEF vs. DEF 2022

Data in billion euro	2020 – 2021	2022	2023	2024	2025	2026
<b>NADEF 2022</b>						
Total RRF	5.5	15.0	40.9	46.5	47.7	35.9
Annual variations (levels)	5.5	9.5	25.9	5.6	1.3	-11.8
<b>DEF 2022</b>						
Total RRF	4.3	29.4	43.3	47.4	41.7	25.5
Annual variations (levels)	4.3	25.1	13.9	4.1	-5.7	-16.2
<b>Δ NADEF - DEF</b>						
Total RRF	1.2	-14.4	-2.4	-0.9	6.1	10.4
Annual variations (levels)	1.2	-15.6	12.0	1.5	7.0	4.4

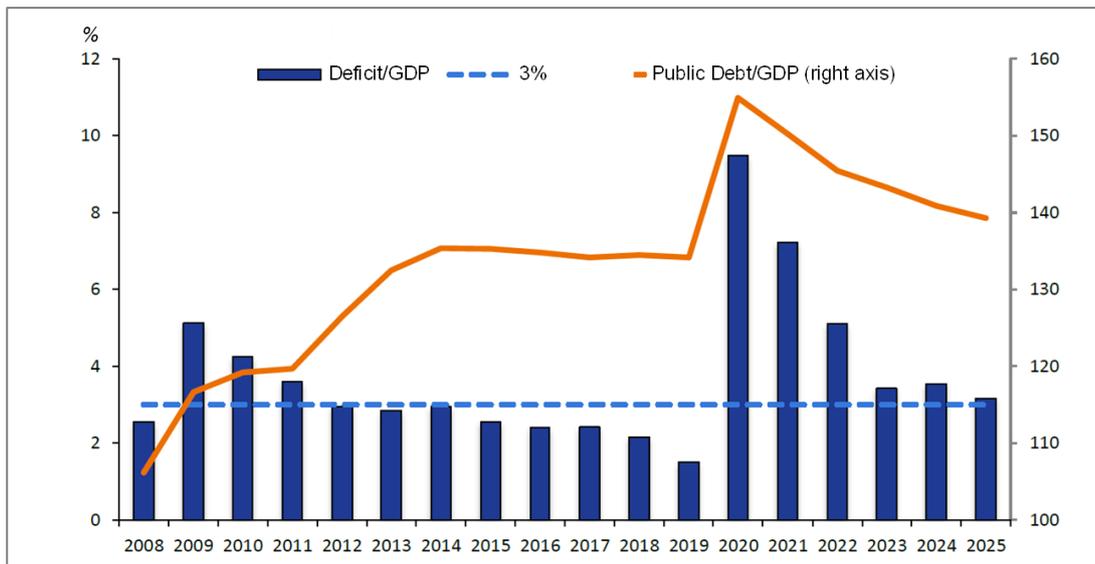
Source: MEF – NADEF 2022

As noted also by rating agencies, although the new right-wing government has inherited a stronger-than-expected fiscal starting point,<sup>10</sup> in a market environment of higher interest rates and weaker

<sup>10</sup>The deficit is on course to hit 5.1% of GDP, below the 5.6% target in April's 2022 budget, mainly due to exceptionally strong revenue growth (total revenue rose by 8.5% yoy in 2Q22, according to ISTAT (Italy's national statistics institute). On unchanged policies, the NADEF projects a 3.4% deficit in 2023 and public debt at 143.2% of GDP, both lower than the April targets, and a return to a primary surplus by 2023 rather than 2025. Source: Fitch Ratings

growth prospects, a fiscal manoeuvre announcing higher deficits could very likely trigger a significant adverse market reaction. As shown in Figure 12, in the last two years Italy exceeded the 3% threshold related to the Deficit/GDP ratio; therefore, boosting growth (including via effective deployment of NextGenerationEU funds) remains central to lasting debt reduction. For this reason, the government is expected to limit the fiscal manoeuvre with a 2023 budget law which will likely focus on the additional fiscal response to the energy crisis.

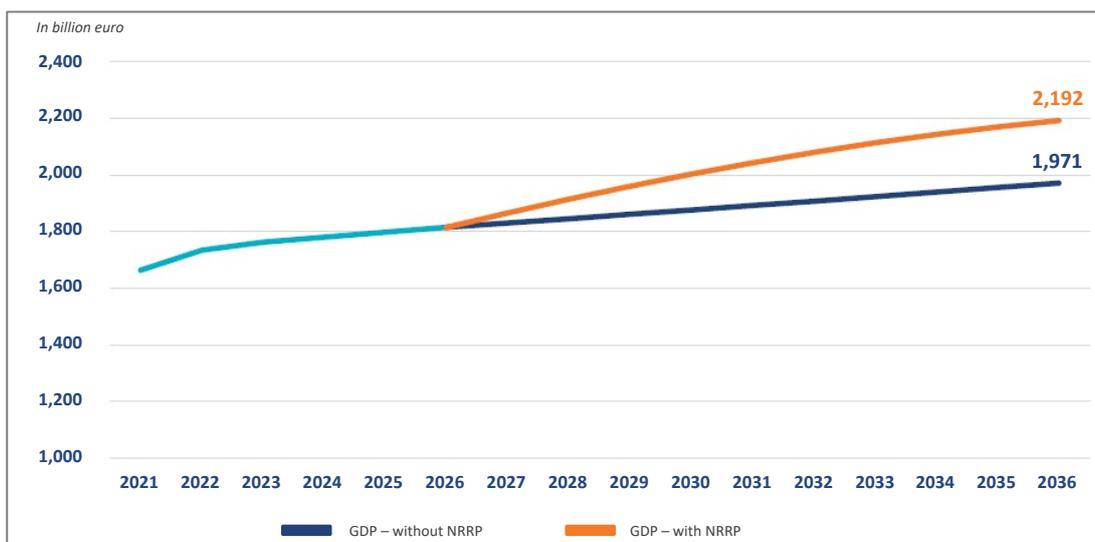
Figure 12 Italian net indebtedness and PA indebtedness as a percentage of GDP



Source: MEF – NADEF 2022

A recent study published by The European House – Ambrosetti provided an indicative estimate of the impacts of the deployment of NRRP sources, estimating a potential increase of the Italian GDP in 2026 exceeding 1.9% vs. a scenario without the recovery plan, for a total amount expected to reach €2,192 billion euro vs. 1,971 billion euro respectively (See Figure 13).

Figure 13 Expected GDP evolution with and without NRRP adoption



Source: The European House – Ambrosetti, “Osservatorio PNRR ad un anno dal varo”

This estimate is more conservative than the one provided by the Italian government, which projects that the impact on GDP of a correct implementation of the NRRP in 2026 (the last year of the plan) will be 3.6% higher than the base case scenario without the NRRP<sup>11</sup> (See Figure 14).

Figure 14 NRRP macroeconomic impacts (% delta vis-à-vis base case without NRRP)

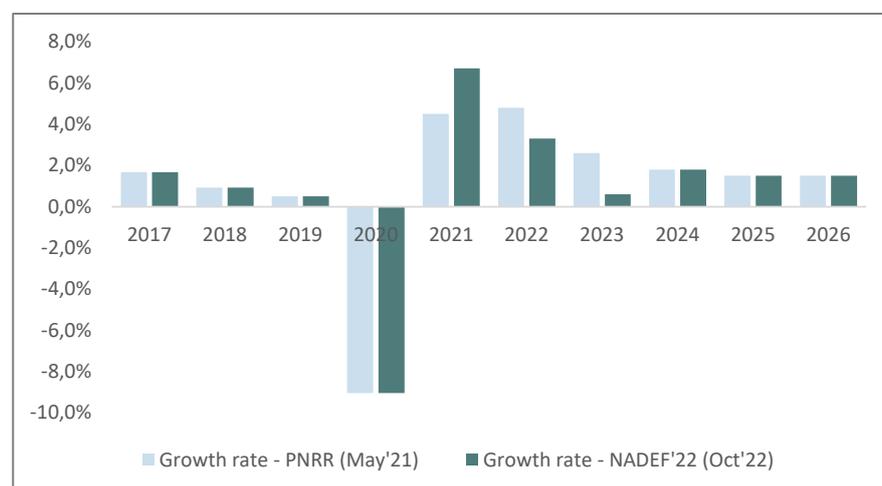
Macroeconomic variables	2021	2022	2023	2024	2025	2026
<b>Real GDP</b>	0.5	1.2	1.9	2.4	3.1	3.6
<b>Private Consumption</b>	-0.2	-0.6	-0.6	0.0	1.0	1.9
<b>Total Investments</b>	2.8	7.6	11.6	12.5	11.8	10.4
<b>Import</b>	0.2	1.0	1.9	2.7	3.4	4.0
<b>Export</b>	-0.2	-0.5	-0.2	0.6	1.6	2.7

Source: Italian Government

The altered macroeconomic environment which arose after the publication of the NRRP in mid-2021 prompted the Italian Ministry of Economy and Finance to update and lower the projections for real GDP growth. In particular, Italy recorded higher-than-expected real GDP growth in 2021 (6.7% vs 4.5%), and lower for 2022 (3.3% vs 4.8%, although during 2022 it was expected to reach 3.1%). Now the forecast for GDP growth is set at 0.6% instead of 4.8% in 2023. It should be noted that this revised figure for 2023, recently published through the NADEF, came after other intermediate revisions downwards of such estimates, hence the sizeable drop for next year.

In terms of GDP growth, the previously-mentioned postponement of NRRP investments will result in a higher annual variation of investments between 2022 and 2023 (€25.9 billion of the NADEF compared to the previous €13.9 billion): the Italian Ministry of Economy calculates that 0.3% of real GDP growth out of the expected 0.6% will be related to the NRRP (See Figure 15).

Figure 15 – Yearly variation of GDP growth (%): DEF vs. NADEF



<sup>11</sup> Source: Italian Government ([The National Recovery and Resilience Plan \(NRRP\).pdf](#))

The NADEF also confirms previous levels of real GDP growth rate for 2024 and 2025 at respectively 1.8% and 1.5%, thanks to (i) the abovementioned postponement to 2025/2026 of certain NRRP investments, and (ii) a macroeconomic scenario with lower energy prices. This anticipated growth will also have positive effects on the unemployment rate, which is expected to decrease from current levels (ca. 10%) towards the 7% area, in line with the EU average.

### 4.3 Financial market implications of the NRRP

The approval of the NRRP and the disbursement of funds is conditional on the execution of key reforms:

- i) the Public Administration reform**, to solve problems linked to the lack of generational replacement, low investment in human capital and low digitalisation;
- ii) the reform of the Judicial System**, aimed at reducing the excessive duration of court proceedings;
- iii) the Administrative and Regulatory Simplification reform**, intended to repeal or amend laws and regulations which have a negative impact on the day-to-day activity of citizens, businesses and public authorities;
- iv) Promotion of Competition**, to escalate market competition to foster investments and make companies more competitive.

With particular reference to competition, capital markets – in parallel with EU funds - are essential to finance the growth projects embedded in the NRRP. The new Capital Markets Union (CMU) Action Plan published in September 2020 identified the high administrative burden, and the high costs of listing and compliance with listing rules as some of the factors that discourage many companies from accessing public markets, especially SMEs.

The European Commission's Technical Stakeholder Group (TESG) on SMEs followed in May 2021 with the report, 'Empowering EU Capital Markets for SMEs – Making Listing Cool Again,' which acknowledged the particularly burdensome regulatory framework and the costs associated with listing for SMEs.

A virtuous cycle needs to be created on both the supply and demand sides, also because the number of capital raisings in Italy continues to fall. At present, access to the capital market in Italy is longer and more complex than in other European markets (e.g., more complicated documentation and procedures, obstacles that become more significant for SMEs), therefore discouraging capital raising. This means that permanent systemic interventions are needed to remove regulatory and organisational constraints on market access.<sup>12</sup>

NRRP resources are expected to positively impact listed companies active in 'core' sectors such as (a) TMT, (b) Energy and (c) Infrastructure.

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<sup>12</sup> On 21 September 2022 Consob approved some amendments to the Regulation of the Markets organised and managed by Borsa Italiana, with the aim of simplifying the listing process and making access to the market more efficient. In particular, the Memorandum on the Management Control System has been eliminated (replaced by a more streamlined statement issued by the Issuer) and various documents will no longer be subject to filing with the stock exchange (including: the Business Plan, the corporate governance report, the valuation document and the last three financial statements of the listed company). Furthermore, the Listing Agent will have to cover at least the role of Global Coordinator or Bookrunner in the placement syndicate and will no longer have to make a declaration regarding the Issuer's Management Control System and the forecast data contained in the Business Plan.

**a. TMT – Digitalisation and innovation theme (21% of total funds – up to €50 billion)**

One of the main objectives of the NRRP is to boost Italy's competitiveness and productivity, in particular by accelerating innovation and digitalisation. Italy today ranks 25<sup>th</sup> in the EU in terms of digital skills and penetration. By taking a cross-sectional top-down approach based on the impact analysis provided by the Italian NRRP, it is interesting to observe that these new funds will increase ICT spending in Italy by approximately €36 billion over the period 2021-2026, or €6 billion per year, on average (see Figure 16).

Figure 16 – Italy NRRP: % of spending in IT products and services 2021-2026

Mission	Mission 1 (Digital)	Mission 2 (Green)	Mission 3 (Infrastructure)	Mission 4 (Education)	(Social inclusion)	Mission 6 (Healthcare)	Total
<b>Total spending over 2021-26 (€ bn)</b>	49.9	69.9	31.5	33.8	29.8	20.2	235.1
<b>% of total spending in IT products and services</b>	26%	4%	23%	8%	0%	51%	
of which products	14%	4%	23%	8%	0%	45%	
of which services	12%	0%	0%	0%	0%	6%	
<b>Spending in IT products and services over 2021-26 (€ bn)</b>	12.7	2.8	7.1	2.6	0.0	10.4	35.6
of which products	6.9	2.8	7.1	2.6	0.0	9.1	28.5
of which services	5.8	0.0	0.0	0.0	0.0	1.3	7.1

Source: Italian NRRP; Equita SIM elaboration

In relation to Italy's GDP, this would mean that IT spending as a percentage of Italy's GDP will rise on average by 0.3% per year, thus only partially closing the gap with other major EU countries.

The expected upturn in digitalisation spending (4.0 Transition - 18.5 billion euro allocated) mostly among corporates and, to a lesser extent, in the public administration, will positively impact listed companies like Reply (top five player in the application-related IT service market, high exposure to new technologies, peculiar and scalable business model), SeSa (exposure to digitalisation incentives for SMEs through its SSI division of IT solutions and services like ERP software, process automation solutions, AI and big data analysis, cloud services, etc.).

FTTH and 5G coverage (the Ultrabroadband (UBB) project '*Italia a 1 Giga*' and Full 5G coverage - €4.8 billion and €1 billion respectively allocated) will impact companies like TIM (exposed to the NRRP in many ways, including the possibility to have a market share in the UBB connection of schools and hospitals - €800 million allocated), Prysmian (world leader in the power and telecom cable systems industry, and a leading player in the energy transmission and telecom segments) or Inwit and Raiway (where the goal of bringing the whole territory to a connection speed of 1Gbps by 2026 in technology neutrality should allow an acceleration of Fixed Wireless Access (FWA) demand for coverage in market failure areas).

Other sources dedicated to digitalisation, innovation and security of the Public Administration (€9.75 billion allocated) will impact companies like Nexi, Poste Italiane, Digital Value, Tinexta, and CY4Gate.

**b. Local utilities – Green revolution and ecological transition theme (31% of total funds – up to €70 billion)**

The resources allocated to Green and Energy Transition represent the bulk of the funds earmarked for economic recovery, with €70 billion of potential contributions or 31% of total resources. The application areas substantially follow the directives anticipated by the EU with the publication of the Green Deal, aimed at limiting global warming and promoting decarbonisation.

Funds will be dedicated to projects supporting:

- Circular economy and sustainable agriculture (€5.3 billion allocated), to increase the percentage of sorted waste collection, recycling/reuse and the spread of RES plants in agriculture;
- Renewable energy, hydrogen and sustainable mobility (€23.7 billion allocated), supporting the growth of renewables, electricity distribution networks, hydrogen plants and electric mobility;

- Energy efficiency and building renovation (€15.4 billion allocated), through renovation projects aimed at energy savings (Superbonus 110%) and district heating;
- Land and water protection (€15.1 billion allocated), through the reduction of water losses, energy efficiency in municipalities and the improvement of agricultural irrigation.

The companies that benefit most from the NRRP in the utilities sector are the listed local utilities (namely A2A, Iren, Hera, and Acea), mainly due to their exposure to waste and integrated water services.

Funds allocated to renewables totalling €4 billion to support the sector with projects for around 3-4 GW of new renewable capacity as well as with reforms aimed at simplifying the authorization procedures will impact companies like Erg, Falck, Alerion, Enel, A2A, Iren, and Acea.

Hydrogen (€3.2 billion of funds) will impact companies like Snam, Eni, Enel, Italgas, Saras and indirectly Maire Tecnimont and Saipem.

Grids (€4.1 billion) will impact Enel, Acea and Iren, A2A, Hera, and Terna to a lesser extent, to support the development of smart grids and the flexibility of 4,000km of the grid, with 115 new electricity substations for 4,000MW of renewable capacity.

Building refurbishment/energy efficiency, with €14 billion dedicated to the so-called 'ecobonus' for upgrading the energy efficiency of 100,000 buildings in the territories will impact companies like Iren, Hera, Acea, A2A, Enel, Snam and Italgas.

### c. Infrastructure – Infrastructural, public and private building investments theme (26% of total funds – up to € 61 billion)

In the country's recovery strategy, investments in infrastructure, and public and private buildings play a central role, attracting a significant part of the NRRP resources (see Figure 16):

Figure 16 – Italy NRRP infrastructural spending

Mission	Investment	NRRP (€ bn)	REACT-EU (€ bn)	Complementary Fund (€ bn)	Total
Mission 2	Energy efficiency and building renovation	15.4	0.3	6.7	22.4
	High speed/capacity railway network	24.8	0.0	1.8	26.6
Mission 3	Road maintenance 4.0	0.0	0.0	1.5	1.5
	Intermodality and integrated logistics	0.6	0.0	3.1	3.7
Mission 4	School building security and structural rehabilitation pla	3.9	0.1	0.0	4.0
Mission 6	Towards a safe and sustainable hospital	1.6	0.0	1.5	3.1
<b>Total</b>		<b>46.3</b>	<b>0.4</b>	<b>14.6</b>	<b>61.3</b>

Source: Italian NRRP; Equita SIM elaboration

Infrastructural investments are almost entirely focused on the development of both high-speed and regional railway networks, with the specific aim of making the country more connected and reducing road traffic of people and goods, with beneficial effects on CO2 emissions (in line with European targets). In the building sector, resources are allocated for the renovation of both public and private facilities (i.e., Ecobonus and Sismabonus).

Buzzi Unicem is among the main beneficiaries of the national plan as it is the second largest cement producer in Italy with a capacity of 10.8 million tons. Webuild is the main beneficiary of the investments in railway network renewal. This company is by far the largest Italian general contractor, with world-leading expertise in the construction of high-speed train infrastructures. With regard to Webuild's construction backlog, 37% is in Italy with the high-speed Milan – Genoa Railway project (€2.7 billion) and the high-speed Verona – Padua railway project (€4.2 billion) being the biggest contracts.

Complementing the NRRP, the Italian government approved the Simplification Decree Law which includes several internal reforms to the Procurement Code to simplify authorization procedures and

boost public and private investments in the construction sector.

The Simplification Decree Law also introduces a fast-track procedure for ten NRRP projects considered to have a significant national impact. This measure aims to further accelerate the schedule for awarding tenders and starting the works. In particular, for relevant projects, all the required assessments and authorizations (i.e., environmental impact assessment, services conference and public debate) are obtained directly within the economic feasibility project, as per provisions in said Decree Law.

The NRRP represents a unique opportunity for Italy to change its economic structure and boost the competitiveness of the country. Success depends on the government's ability to ensure that the incoming funds are used effectively to revive the Italian economy, but a major contribution will also come from Italian industry, which plays a pivotal role in supporting this vital plan.

## 5. Conclusions

The picture that emerges from the discussion in the previous sections suggests that the outlook for Italy's infrastructure has hardly ever been so propitious. On one hand, the case for investment has never been so strong. Deep social, economic and technological transformations are reshaping the way in which large segments of society work, live and do business, all compounding the country's need for new and improved infrastructure. On the other hand, the necessity to revive economic growth in the post-pandemic economy has resulted in generous stimulus packages like the NRRP, potentially directing an unprecedented amount of public spending to infrastructure. This we have seen is accompanied by a strong interest in the infrastructure asset class also among private investors, potentially amplifying the government's firepower and the infrastructure multiplier.

This represents a unique opportunity for Italy to close its longstanding gap between infrastructure needs and investments. If used effectively, the incoming funds from the NRRP, reinforced by the relevant pool of liquidity available in capital markets, truly have the potential not only to revive the Italian economy but also to reshape the country's economic structure and competitiveness.

This will reverberate on financial markets as well. Beyond the positive effects of economic growth, some sectors are expected to benefit from a direct stimulus from these policies, as infrastructure is called to be the cornerstone of the green revolution/ecologic transition, the shift to a more circular economy, digitalisation, sustainable mobility and, to some extent, an inclusive and cohesive society. Specifically, the most affected sectors, which are also the ones that should be watched more closely by investors and asset managers, include telecommunications, construction and procurement, transportation, energy and utilities.

Still, the road ahead is not free of obstacles.

While our analysis of the NRRP shows a number of positive aspects, we must say that some issues remain unresolved. First, to ensure that the full amount of funds in the NRRP is disbursed, Italy must approve an ambitious set of vital reforms on which there is no strong political consensus yet. Second, the efficient deployment of these resources is undermined by surging energy costs, raw material shortages and supply chain bottlenecks that are already delaying the execution of the investment programmes currently in place. Third, a clear strategy is lacking to attract the big pool of financial resources from private capital through virtuous forms of Public-Private Partnerships (PPPs); this threatens to hinder the full potential of the policy.

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