

## **Project, Program and Portfolio Management for the National Recovery and Resilience Plans in the European Union <sup>1</sup>**

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### **ABSTRACT**

The European Union (EU), in order to mitigate the economic and social impacts of the coronavirus pandemic and also to make European economies and societies more sustainable, resilient, and, in general, better prepared for the challenges and opportunities of the green and digital transitions, decided to allocate special additional funding called Recovery and Resilience Facility (RRF), which is a temporary instrument that makes available to the EU Nations about €750 billion in loans and grants. The Recovery and Resilience Facility is based on six "pillars"– i.e. green transition, digital transformation, economic cohesion, productivity and competitiveness, social and territorial cohesion, health, economic, social, and institutional resilience, and policies for the next generation – and is composed of 27 National Recovery and Resilience Plans (NRRPs), one for each EU Country, which all share the same three strategic axes – i.e., digitization and innovation, ecological transition, and social inclusion. Since RRF is performance-based, and relevant payments are unlocked only if the relevant reforms and investments are realized according to the schedule, each NRRP is a portfolio where effective project management is essential to target and achieve success. This paper will give an overview of the EU RRF, propose an innovative value-driven project management approach based on Key Performance Indicators (KPIs) to effectively manage the diverse NRRP projects, and focus on the case of the Italian NRRP.

### **EU RECOVERY AND RESILIENCE FACILITY AND RELEVANT NATIONAL RECOVERY AND RESILIENCE PLANS**

The European Union (EU) is a specific "*sui generis*" economic and political union, which at present is made up of 27 European countries (Member States). Still, several other countries are currently negotiating to join it. Its origin dates back to the end of the Second World War to promote economic cooperation and reduce commercial conflict among the six founding countries: Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany.

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Since its creation, several European States joined the Union, and its area of influence expanded from merely economic issues to others regarding health, climate, justice, and immigration. In general, the EU established a *single internal market* through a standardized system of laws that apply to all member states in those matters, and only those matters, where the states have agreed to act as one, while EU policies have the main goal to ensure the *free movement of people, goods, services, and capital* within it; and maintain standard policies on specific agreed issues. For instance, one significant advantage for European citizens is the abolition of controls at the borders, which means they can circulate freely across different countries and live, study and work in the country of their choice. In addition, a monetary union called the Eurozone, composed of 19 countries that use Euro currency, has been fully operational since 2002. From a political perspective, the EU is a specific entity with some characteristics of a federation and some of a confederation.

The EU operates by the basic principles of both *conferrals*, which states that EU actions are possible only within the limits that are conferred by the treaties between each country and the Union itself, and *subsidiarity*, which says that EU actions are possible only if the member states are not in the condition of achieving good results by acting alone.

The leading institutions that contribute to the EU's decisional process are the European Parliament (legislative), which represents the citizens, the European Council (providing directions), which is composed of the heads of state/government of each country, the Council of the European Union (legislative), which represents the governments of the Member States and the European Commission (executive), which represents the interests of the EU as a whole. In general, the EU's decisions are implemented via either EU *directives*, which generate the need for subsequent domestic legislation in the member states, or EU *regulations*, which are immediately applicable in all member states.

All the programs and projects funded by the EU budget fall under one of three types of implementation modes depending on the nature of the funding concerned (European Commission, 2022):

- **Direct management**, in which EU funding is managed directly by the European Commission. In direct management, the European Commission is directly responsible for all steps in a program's implementation, including launching the calls for proposals, evaluating submitted proposals, signing grant agreements, monitoring project implementation, assessing the results, and making payments: all these tasks are carried out by the Commission's departments, at its headquarters, in the EU delegations or through EU executive agencies, and there are no third parties. Programs implemented in direct management account for around 20% of the EU budget from 2021-to 2027.
- **Shared management**, in which the European Commission and national authorities jointly manage the funding. In shared management, the European Commission and national authorities in the Member States, such as ministries and

public institutions, are in charge of running a particular program. The Member States' administrations (at the national, regional, and local level) choose which projects to finance and take responsibility for day-to-day management, while the Commission, working with the Member States, makes sure that the projects are successfully accomplished, and the relevant money is well spent. Around 70% of EU programs are run this way.

- **Indirect management**, in which funding is managed by partner organizations or other authorities inside or outside the EU. Some funding programs are partly or fully implemented with the support of entities, e.g., national authorities or international organizations. For instance, most of the EU budget allocated to humanitarian aid and international development is implemented under indirect management.

Therefore, while the EU provides the funding for a specific program or project, it is not always directly involved in the day-to-day management. However, whereas the Member States are in charge of the implementation of the majority of the EU budget, the Commission has the ultimate responsibility for its execution. Consequently, the Commission carries out rigorous and effective controls on how the EU funds are spent. The procedure will vary depending on how the program is implemented. In general, to get funding for a project, the applicant needs to identify a relevant call for proposals/projects and carefully follow the specific guidelines on how to apply. Indeed, each call, which contains the program description, budget, procedures, deadlines for submitting individual proposals, and the essential requirements for participation, is unique. Precisely, therefore, a successful European-style project must meet the priorities of the funding program, comply with EU policy priorities (e.g., sustainable development, equal opportunities), and be innovative compared to other projects since the project will compete for funding with those submitted by other applicants for that call.

From the EU perspective, the cycle of operations needed to define, evaluate and manage projects is the Project Cycle Management (PCM) framework (Fig.1). This cycle has six phases – i.e., programming, identification, formulation, financing, implementation, and evaluation – and highlights three main principles (European Commission, 2004):

1. decision-making criteria and procedures are defined at each phase (including crucial information requirements and quality assessment criteria);
2. the phases in the cycle are progressive – each phase should be completed for the next to be tackled with success; and
3. new programming and project identification draw on monitoring and evaluation results as part of structured feedback and institutional learning process.

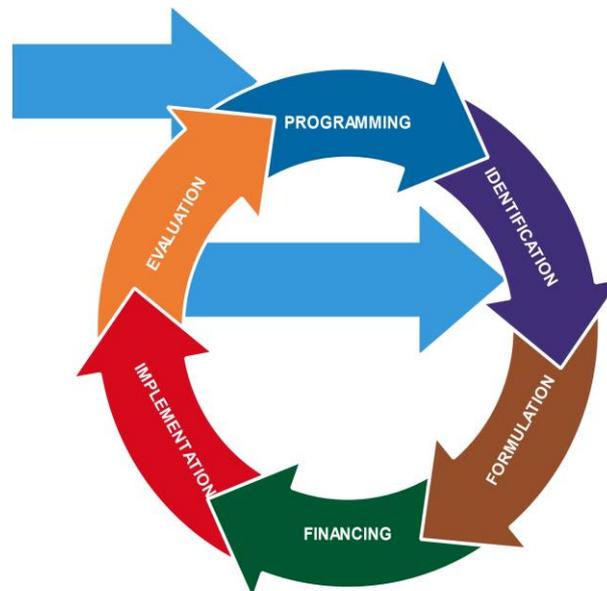


Figure 1: The Project Cycle Management (PCM)

Although PCM guidelines were originally developed to manage direct arrangements between the EU and the National Governments, they “provide a useful framework for those involved in designing and managing calls for proposals/financing facilities” (European Commission, 2004), which is by far the most important context to deal with. In this domain, most of the projects will be co-financed by the Commission and other partners: indeed, full coverage of expenditure rarely occurs, and funding is usually granted in percentages depending on the program (50 to 70-80%) – in cases where expenses are higher than budgeted, the EU does not provide an increase in funding; conversely, the EU contribution is decreased proportionally.

Therefore, the six phases are from now on referred to as the framework of designing and managing calls for proposals/financing facilities, in which the main actors may be considered the funding agencies (including, in some cases, the EC itself) – primarily in the programming, identification, financing and evaluation steps – and the implementing partners – especially in the formulation and in the implementation steps – (ISIPM, 2020). In this framework, the main outputs are, respectively, the multiannual/operational funding program in the programming phase, the call for proposal in the identification phase, the project proposal in the formulation phase, the list of the projects that have been admitted to funding in the financing phase, the released products and services in the implementation phase, and the project/program evaluation report in the evaluation phase. In the evaluation phase, which concludes the cycle, the project's outcomes are assessed to either proceed with the approved program or stimulate a new programming phase.

In the last years, the strategy of the EU aimed to make Europe greener, more digital, and more resilient. In particular, to recover from the negative impact of the Covid-19 pandemic

on the economy of the entire union, Next Generation Europe (NGEU) was established to mitigate the immediate economic and social damage and make European economies and societies more sustainable and resilient in the long run.

This 806.9 billion euros worth of recovery plan mainly focuses on four priorities: ecological transformation, digital transformation, macroeconomic stability, and equality. The National Recovery and Resilience Plan (NRRP) is the primary tool for implementing the NGEU, accounting for 90% of the funding. It consists of reforms and investments to be carried out from 2021 to 2026 by each Member State to mitigate the economic and social damages of the COVID-19 pandemic.

The resources are borrowed in the capital markets through bond issuance. They are distributed to each country according to variables such as population and loss of GNP (Gross Domestic Product) due to the pandemic either via non-repayable grants or via loans.

This amount of funding is made available for the Member States by implementing the RRP in two different phases. Up to 13% of these funds are disbursed in the approval phase as pre-financing. The rest will be disbursed sequentially in the implementation phase, after assessing the fulfillment of the agreed milestones and targets for each period.

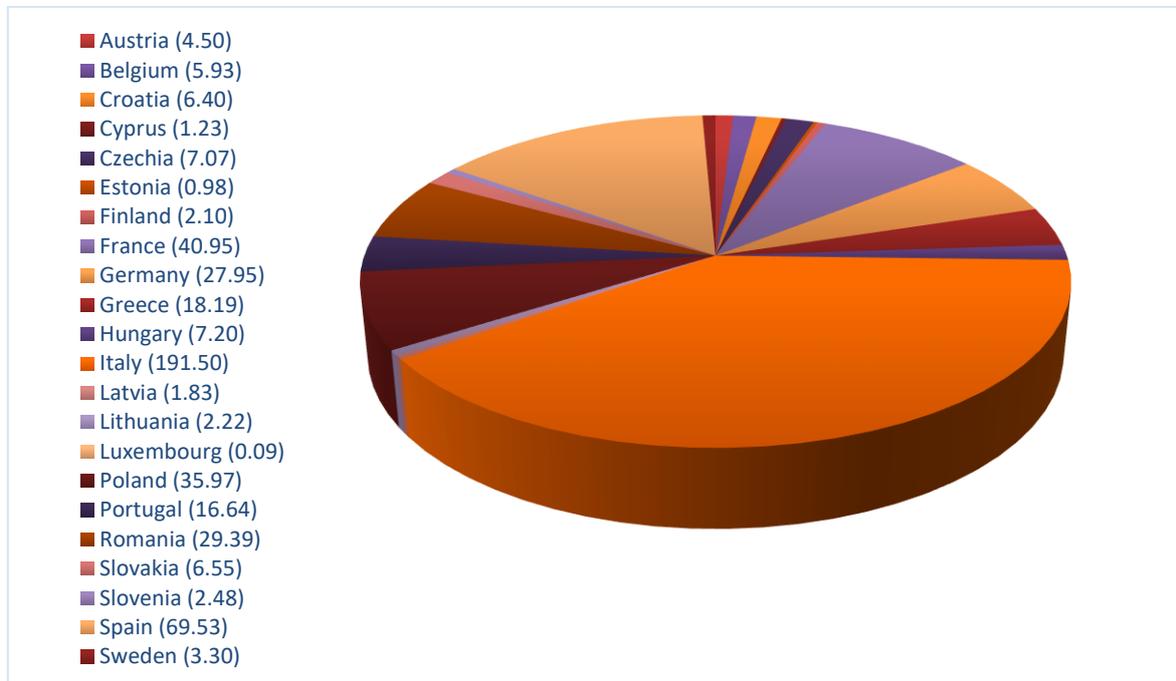
Both grants and loans provided by the European Union are advantageous for the Member States because the grants do not generate interest to pay back, while the loans being taken on by the EU will have lower interest rates than those available for most countries in the capitals market.

The overall budget for the NRRPs amounts to 750 billion euros, with Italy and Spain being the primary beneficiaries of this measure. In particular, Italy will receive from the EU a total of 191.5 billion euros, of which 122.6 billion in loans and 68.9 billion as non-repayable grants. It is to point out that, differently from other countries, Italy took full advantage of the loans, reaching the limit imposed by the EU of 6.8% of its Gross National Income (GNI).

To compare the national plans is challenging because they present data in very different structures. The number and definition of headline categories and summary information about sub-categories vary from Country to Country. Nevertheless, the biggest challenge of cross-country comparison is the definition of non-overlapping spending categories.

A particular investment could support various purposes defined by Article 3 of the RRF Regulation, such as green, social, and inclusive growth as policies for the next generation.

In the following pie chart, we report each country's total RRF amount absolute values in billion Euros. The highest amount is registered by Italy, with a total of 191.5 billion euros, followed by Spain (69.528), France (40.952), and Poland (35.97). Otherwise, the lowest amount is registered by Estonia (0.98) and Luxembourg (0.09).

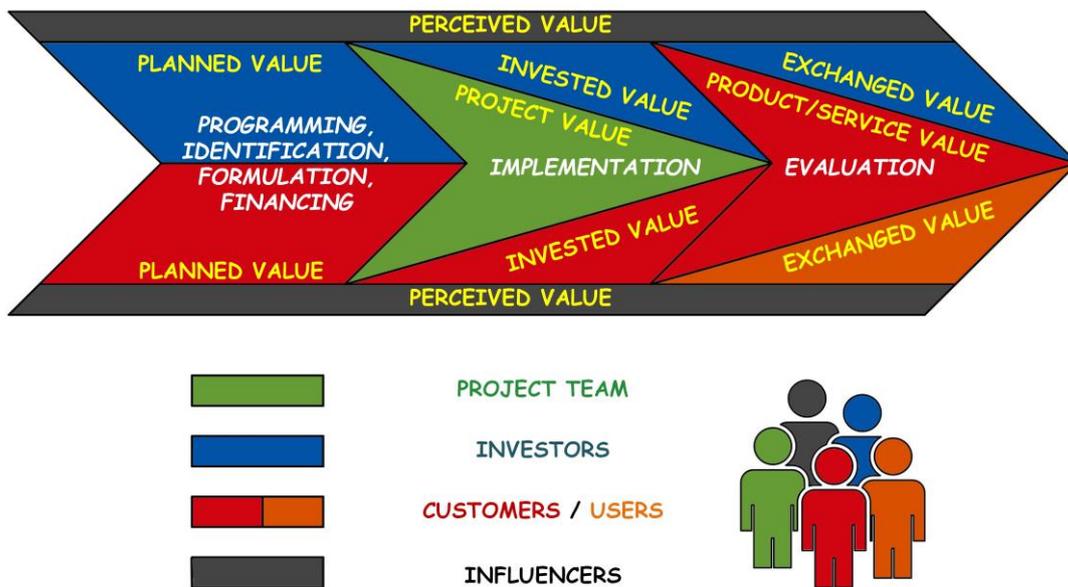


*Figure 1: Total RRF amount (Grants + Loans) absolute values in billion Euros  
(Source: Bruegel RRP dataset)*

## **THE COMPLEXITY OF NRRP PROJECTS AND A VALUE-DRIVEN PROJECT MANAGEMENT APPROACH BASED ON KPIs**

Each National Recovery and Resilience plan may be considered a portfolio because it is, actually, a collection of portfolio components grouped to facilitate their management to meet strategic objectives (International Organization for Standardization, 2020). These portfolio components generally include projects, programs – e.g., actions that integrate projects, which are managed in a coordinated way to realize additional benefits –, and portfolios – i.e., the three strategic axes shared at an European level are digitization and innovation, ecological transition, and social inclusion – or other related works. In several cases, the NRRP projects are based on assumptions – i.e., the reforms – that, although generally represented in the form of milestones, correspond to actual projects too and affect the risk domain heavily. Definitely, the NRRP projects may be considered highly complex and with greater acceptance of risks, not entirely understandable during project approval phases, more uncertain in their predictable outcomes, and often pressed for a speed-to-market somehow irrespective of the risks (Kerzner and Saladis, 2009). Therefore, managing properly the delivered value – that includes a combination of both the business and the social value – becomes essential to target their success.

In general, the whole investment value chain is a multiphase process in which we can identify three basic lifecycles, i.e., the initial investment lifecycle, the project lifecycle, and the product/service lifecycle (Fig. 2, where the six PCM phases are highlighted in white).



*Fig.2 – The Value Chain of the whole investment life cycle  
 (Elaboration from source: Pirozzi M., 2019, The Stakeholder Perspective, CRC Press)*

The initial investment lifecycle starts from strategies and finishes when the contract or similar has been signed. In contrast, the project lifecycle starts from the contract signature and finishes when the delivered value would be exchanged. The business/social value is generated in the product/service lifecycle, i.e., when the operations based on the project results will be managed. Therefore, the investment value is agreed upon before the start of the project, it will develop during the project life cycle, and it will generally cease as a capital investment at project completion, to continue as an operations and maintenance (O&M) investment in product/service/infrastructure life cycle. The project value will develop during the project life cycle to be delivered and exchanged at project completion. In contrast, the business and social value, in turn, will be originated, developed, and then exchanged in the product and/or service and infrastructure life cycle, i.e., when the project has already been completed.

Each of the four main stakeholder communities (Pirozzi, 2017 and Stretton, 2018) contributes to the value creation and development by its expectations: every value that is anyway generated and which flows through the project, just like the project results themselves, is nothing but the results of relations among stakeholders, who integrate available material and immaterial resources to release consistent deliverables. Although, unfortunately quite often, the attention in project management is more or less focused on project value as if it is purely generated by the project team, with a linearized approach that starts from "objective" project requirements and constraints to lead to "objective"

deliverables - maybe it is not a coincidence that almost 30% of the projects do not meet the initial business intents they were originated for! (Project Management Institute, 2021) - the actual situation is different: the process of value generation is not linear but complex, as everything in nature, and it involves, either directly or indirectly, all project stakeholders, who influence both value creation and value exchange by interacting via their relations.

Starting from the strategies phase, the different stakeholder communities are present at the same time. However, they may not initially interact: investors plan investments on projects that could be profitable, customers plan to invest in projects that could support their own business, influencers monitor the situation in accordance with their mission, and, in general, every stakeholder community plans to develop value in accordance with its strategy. Let us suppose that different investors and customers' expectations meet each other in a mutually convenient way. In that case, a contract or similar is signed, and a new project starts to live: although there is for sure, at least in this phase, an agreement about project scope, requirements, cost, time, and objectives, each community of stakeholders maintains rigidly its individuality (Pirozzi, 2019).

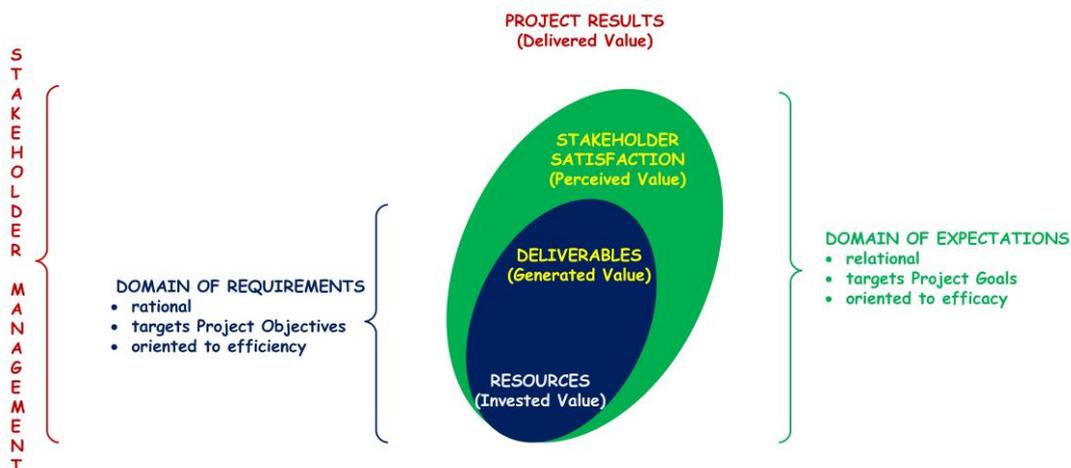
Indeed, while for the investors, the project is the mean that is supposed to satisfy their expectations in terms of profitability and/or of social services to be delivered, for the customers, the project is considered to fulfill their expectations in terms of support to their core business, which will be operating just in product and/or service and/or infrastructure lifecycle that will follow the project lifecycle.

In the project life cycle, investors and customers communities invest value in the form of resources, each for its part. The provider's community, especially the project team, transforms these resources into project value. Influencers' community gives its contribution to the picture based on its own perceived value by adding constraints and/or trying to influence the project value: in this way, there is a continuous flow and exchange of value up to the moment in which the project is completed and delivered value is definitively released, and transferred, to the customer community.

From now on, in the product/service/infrastructure life cycle, the customer community, while continuing to invest in the form of production and/or delivery and/or operations and maintenance resources, becomes the central actor in delivering value to the users in the form of products and/or services, and, at the same time, investors community is supposed to receive value back from its investments. In contrast, users' community exchange value in the form of resources versus products and/or services, and the influencer's community gives its contribution to the picture in this phase, too, still based on its own perceived value by adding constraints and/or trying to influence the product and/or service value. In other words, when passing from project life cycle to product/service/infrastructure life cycle, there is not only, as it was in the project lifecycle, an exchange of value, but, through and through, a transfer of value too: this transfer of value does not imply a transfer of property only, but it causes a transfer of role since the community of stakeholders that was a customer community in project lifecycle becomes a doers community in product/service/infrastructure life cycle, then starting to deliver

products and/or services to its users, and it is only beginning from this phase that we can measure effectively if original project goals and business intents are actually realized.

Ultimately, the stakeholder perspective is a definite driver for project success (Pirozzi, 2019), and, even if it includes the subjectivity of relations, it is more reliable than the traditional stand-alone project requirements perspective, which, in any case, is only apparently objective, because project requirements are a mediation of different subjective stakeholder expectations. Indeed, a project is successful when its results, in terms of delivered value, do not only achieve those project objectives that traditionally correspond to the fulfillment of project requirements but they are also perceived as achieving those project goals, which correspond to the satisfaction of stakeholder expectations: perception becomes a primary driver during project life-cycle because project's performances could be evidently measured only after project completion, i.e., during the following product/ service/ infrastructure life-cycle, and, then, the subjectivity of stakeholder relations takes, through and through, that central role, which is crucial for driving stakeholder satisfaction.



*Fig.2 – The Stakeholder Perspective*  
 (Source: Pirozzi M., 2019, *The Stakeholder Perspective*, CRC Press)

Depending on the complexity of the projects, the gap between the generated value in terms of deliverables and the perceived value (Pirozzi, 2021) in terms of satisfaction may become significant, and this happens especially in projects that are characterized by high levels of complexity and risk, as all the NRRP projects are. Indeed, for each project and/or project element, the outcome results from integrating the generated value due to the deliverables with the perceived value due to the stakeholder satisfaction (Caressa and Pirozzi, 2022).

In fact, in NRRP projects, as in all value-driven projects, success derives from the capability of satisfying stakeholders by both generating the required project value and delivering the expected perceived business and/or social value: «Success is not

necessarily achieved by completing the project within time, cost, and scope. Success is when the planned business value is achieved within the imposed constraints and assumptions» (Kerzner, 2009). However, managing value requires adequate metrics and measures (Kerzner, 2017); moreover, since the expectations of different stakeholder communities are diverse, the relevant measures and estimates must include a set of parameters that cover both project management, economic, and business and/or social needs (Pirozzi, 2018), and, then, cannot be limited to Earned Value, which is powerful and extraordinary, but is unavoidably based on requirements only, and not on expectations too.

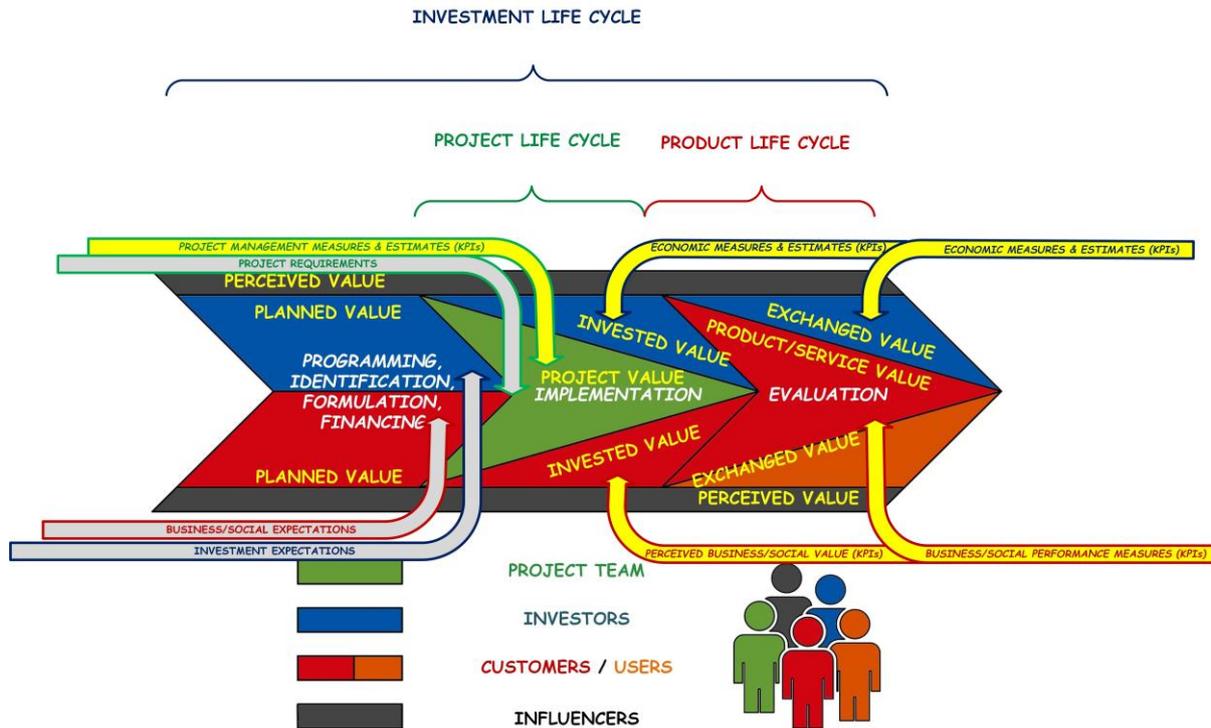
Definitively, during the project life cycle, we may need the support of other additional indicators that can represent both the project value and the business effectively and/or social value: proper Key Performance Indicators are, therefore, very useful and/or necessary, to target the success of complex projects. Indeed, although Key Performance Indicators are fundamental measures of released projects/products/services, KPI-based measures and estimations can also be extremely useful to get crucial progress indications about the generated value, and to monitor stakeholder expectations, during both investment, project, and product/service lifecycles (Fig.3).

Project Management KPIs are beneficial to enhance project control and maintain and/or modify the proper route towards deliveries that fulfill stakeholder requirements: they are very helpful in all projects. These KPIs include, for example (Kerzner, 2017), Earned Value, Cost Performance Indices (CPIs), Schedule Performance Indices (SPIs), percentages of completed work packages compared to those planned, percentages of work packages that are aligned with budget and/or schedule, percentages of critical work packages that are aligned with budget and/or schedule, percentages of essential packages of work that still have to be completed, and/or percentages of completed milestones, quantity and quality of resources that have been allocated compared to planned ones, turnover indices, numbers and percentages related to risks, revisions, requests for change, and changes.

Economic KPIs are especially useful to improve relations with top management and funders, and to maintain and/or modify the proper route towards satisfying their economic and financial expectations: their use can be very helpful in all projects, but it is essential in complex projects. In any case, since the domain of economic KPIs is very analytical and vast, it is preferable to narrow focus on some selected high-level indexes. Economic KPIs groups include, for example (Marr 2012), economic and financial indicators, marketing indicators, Customer Relationship Management indicators, Human Resource indicators, and Sustainability indicators.

Ultimately, Business and Social Value KPIs are especially useful to improve customer and user relations and maintain and/or modify the proper route towards satisfying their business expectations; their use is foundational in complex projects (Pirozzi, 2019). In NRRP projects, general KPIs may include:

- measures and percentages of stakeholder satisfaction (in terms of both requirements and expectations),
- measures and percentages of stakeholder positive engagement,
- measures of perceived value, such as perceived business value, social value, quality, reputation, business climate, innovation, and sustainability.



*Fig.3 – The Stakeholder Perspective*  
 (Elaboration from source: Pirozzi M., 2019, *The Stakeholder Perspective*, CRC Press)

In addition, since all EU Countries share both the same typologies of strategic goals and the three strategic axes – while the correspondent programs and projects, including actions and reforms, are indeed quite diverse - specific KPIs may include key measures, indices, and percentages relevant to:

- Impact factors/strategic goals: increases in the gross domestic product, number of jobs created, exports, imports, consumptions, and spillover effects.
- Green transition:
  - percentages of zero-emission vehicles out of all registered vehicles (number of electric charging stations)
  - kilometers of electrified trans-European railways
  - saved CO2 equivalents from low emission buildings and private homes and vehicles

- tons of recycling materials
- percentages of electricity from renewable sources or hydrogen or biofuel
- number of public transport tickets issued
- hectares of protected natural areas and forests
- water availability indices
- Digital transition:
  - coverage of gigabit networks
  - percentages of companies undergoing a digital transition
  - rates of digital services in the public administration
  - percentages of computers provided to secondary students
  - number of people with digital and STEM skills
  - 5G coverage
- Economic and social resilience:
  - percentages of early retirement workers and gender pension gap
  - unemployment rates
  - number of start-ups surviving after five years
  - number of places in medical and care facilities
  - percentages of adopted future-oriented technologies
  - number of articles and prototypes created from the European financing
  - rates of recycling and reuse of materials
  - transparency and anti-corruption indices
  - number of industry parks
  - medical care level indices

In addition, NRPP projects are characterized by a large variety of risks, which, e.g., include:

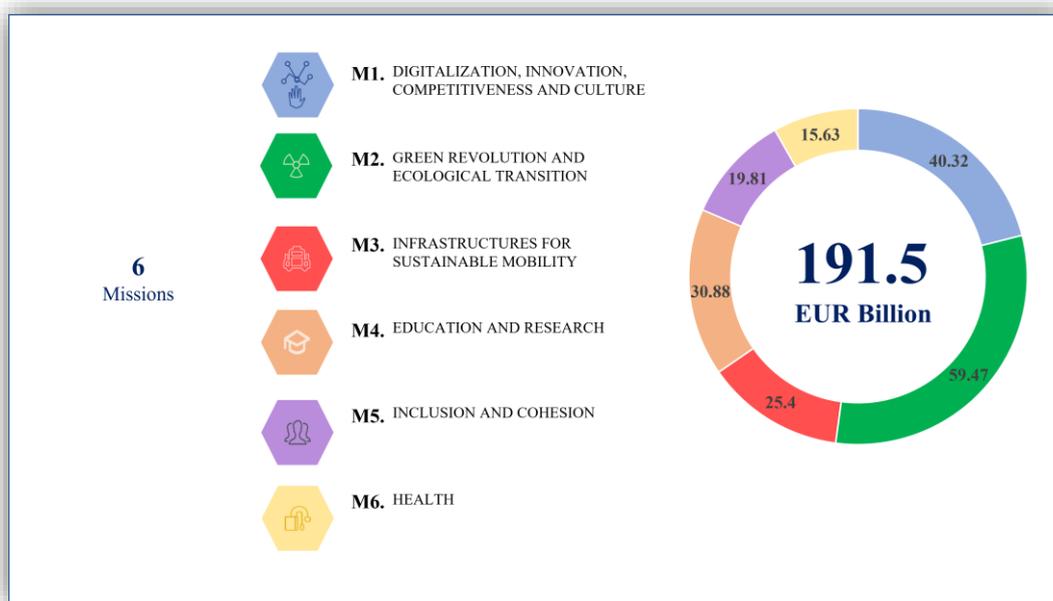
- Unemployment risk due to the Covid-19 emergency
- Risk of depopulation
- Climatic risk
- Risk of low quality of healthcare system

KPIs are also powerful support in risk management because, on one side, they can help to detect risk thresholds and/or alerts. At the same time, on the other side, they can contribute to determining the level of risk dynamically. An immediate example may be unemployment, as mentioned above, the risk that the NRRP is supposed to mitigate, which can be controlled through the unemployment rate. Also, the saved CO<sub>2</sub>-equivalent tons coming from alternative energy sources and higher efficiency of buildings may be used as a KPI for the climatic risk.

In all cases, Key Performance Indicators are necessary, powerful, and effective means to manage both generated and perceived value and, then, the delivered value: proper KPIs can be, therefore, selected, agreed upon, measured/estimated, shared with stakeholders via dashboards (Kerzner, 2015), and used to confirm/readdress, in terms of both deliverables and stakeholder satisfaction, the action of the project team during the entire project life cycle (Pirozzi, 2019). In such a way, effective stakeholder management, which uses proper KPIs and dashboards, can significantly increase the success rate of complex projects, as the NRRPs are, by supporting both the value creation and exchange and the project goals achievement.

### THE CASE OF ITALIAN NRRP

In January 2021, the Italian Government developed the Italian Recovery Plan (PNRR – National Recovery and Resilience Plan), which was updated on May 2021 (Prime Minister’s Office, 2021) and definitively approved by the Council of EU for an amount of 191.5 billion Euros on July 2022, based on the positive opinion of the EC.



*Figure 4 - Destination of RRF Resources to the six Missions of the Plan  
Source: Italia Domani (<https://italiadomani.gov.it/it/home.html>)*

In addition to PNRR EU funds, Italy allocated also 30.6 billion Euros of national funds. Italian PNRR is composed of six “missions”, as shown in Figure 4, which indicates also how the resources are distributed among the diverse missions of the PNRR. Indeed, the Italian National Recovery and Resilience Plan includes an investment package

encompassing six policy areas (missions) and sixteen actions. An ambitious reform plan supports it, with four significant reforms in public administration, justice, simplification of legislation, and competition. Each mission combines investments and sector-specific reforms to enhance the impact of each project on growth and potential output.

These reforms have been divided into three categories:

1. *Horizontal reforms* lead to better equity, efficiency, and competitiveness for the country. Among these, there are the reforms in public administration and the judicial reform.
2. *Enabling reforms* support the plan's implementation by reducing barriers to public and private investments. These reforms include a plan to simplify the regulations and bureaucracy and promote competition.
3. *Sectoral reforms* consist of legislative innovations for specific areas of intervention, such as the safety legislation for the use of hydrogen.

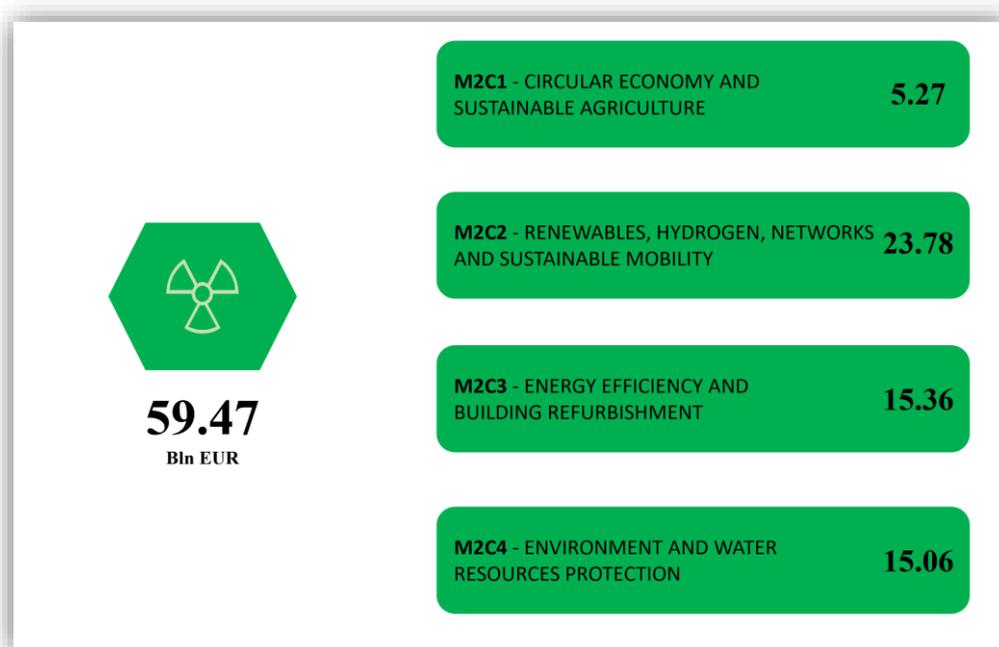


*Figure 5 – Mission 1: Digitalisation, Innovation, Competitiveness, and Culture*

In particular, Mission One (M1) deals with Digitalisation, Innovation, Competitiveness, and Culture commitments. The headline goal is promoting and supporting digital transformation and industrial innovation, and investing in tourism and culture, too. It consists of three components with a total amount of 40.32 billion Euros, as shown in Figure 5. M1 measure has three components: the first one aims to improve the efficiency and effectiveness of the public administration respectively by means of digitalization and development of administrative capacity, as well as the efficiency of justice, while the initiatives from the second component are meant to fill gaps in the digital transformation of companies and in the network connectivity, in order to improve the national socioeconomic resilience, and the third component is aimed at revitalizing both culture

and tourism, two sectors hit hard by the COVID-19 pandemic crisis, by means of better accessibility and higher energy efficiency of cultural sites.

The following figure reports Mission Two (M2)'s breakdown components, which deal with Green Revolution and Ecological Transition. The main goal is to improve sustainability by ensuring a fair and inclusive transition. It is structured in four components, including interventions for sustainable agriculture and circular economy, investment programs and research for energy sources, the development of the hydrogen supply chain, and sustainable mobility. Thus, it provides for actions to save energy consumption in public and private real estate and initiatives for reforestation and efficient water use for 59.47 billion Euros.

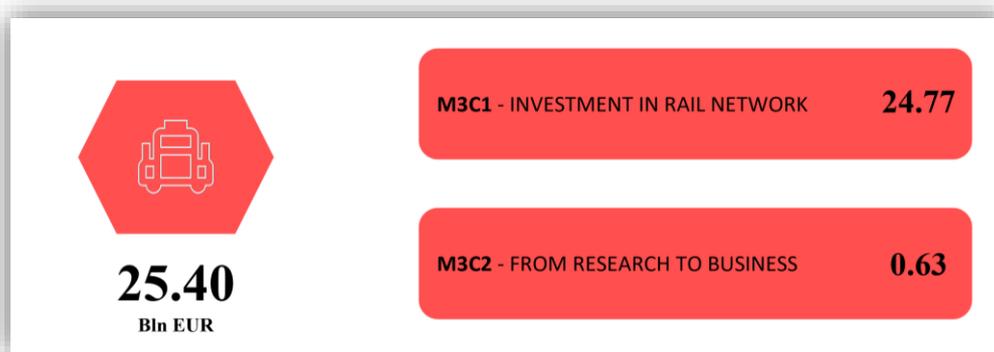


*Figure 6 – Mission 2: Green Revolution and Ecological Transition*

M2 mission has four components: first component covers investments and reforms related to waste management, circular economy, support for agrifood supply chains, and green transition, while second component focuses investments and reforms on the energy transition and sustainable mobility, third component focuses investments and reforms on the achievement of Italy's 2030 climate and energy targets, since the civilian sector is responsible for nearly half of Italy's total energy consumption, and fourth component deals with poor water management and hydrogeological risks in Italy as well as the protection of biodiversity.

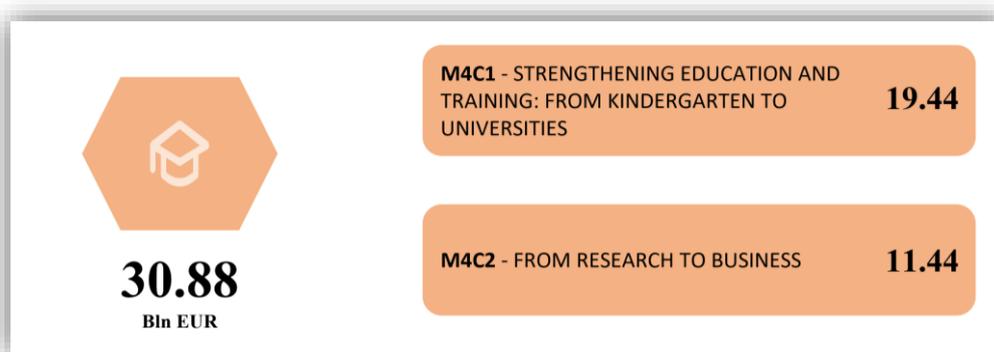
Mission Three (M3) deals with Infrastructures for Sustainable Mobility. The main goal is to develop a modern, digital and sustainable transport infrastructure connecting all Italian

Regions. It consists of two components and aims to strengthen and extend national high-speed rail and the regional rail network, focusing on southern Italy. The total amount of this mission is 25.40 billion Euros. M3 mission has two components: the first one focuses investments and reforms on the implementation of rail infrastructure and on better quality of road infrastructure, while the second one aims to make Italian ports more energetically efficient and more competitive by better integrating them in the logistic chain, as well as to digitalize the air traffic management system.



*Figure 7 – Mission 3: Infrastructures for Sustainable Mobility*

Mission Four (M4) deals with Education & Research. The main goal is to achieve a knowledge-based economy by strengthening the education & research ecosystem, digital and STEM skills, and technology transfer. It supports the right to education and research for a total amount of 30.88 billion Euros.

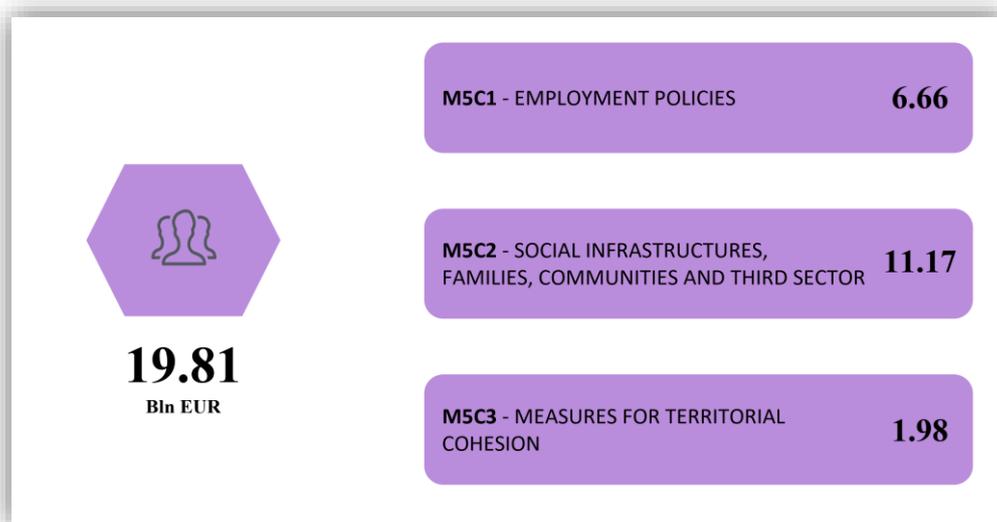


*Figure 8 – Mission 4: Education & Research*

It consists of two components to build the necessary skills by intervening in school and university courses: the first component aims to deal with criticalities of the education and research system, in order to improve the school results and employability of Italian

students, while the second component aims to support investment in R&D, promote innovation and diffusion of technology, and strengthen skills, fostering the transition to a knowledge-based economy.

Mission Five (M5) deals with Inclusion & Cohesion. The main goal is to facilitate participation in the labor market, strengthen active labor market policies and vocational training, supporting women's empowerment, and foster social inclusion. It consists of three components and intervenes to support situations of social and economic fragility, and, specifically, families (total amount is 19.81 billion Euros). In the first component, the actions introduce a comprehensive and integrated reform of active labor market policies (ALMPs) and professional training, the second component strengthens resilience by supporting the integration and inclusion of the most vulnerable members of society, taking into account individual, family and social dimensions, and the third component includes two areas of intervention, i.e. the plan for the resilience of inland, remote and mountainous areas and projects for the development of Southern Italy.



*Figure 9 – Mission 5: Inclusion & Cohesion*

Finally, Mission Six (M6) deals with Health. The main goal is to strengthen the territory's prevention and health services, modernize and digitize the healthcare system, and ensure fair care access. It consists of two components for a total amount of 15.63 billion Euros. The goal of the first component is to strengthen Italy's National Health Service (NHS), also enhancing protection from environmental and climate health risks and better responding to communities' needs for treatment and care at the local level, while the second component aims to ensure the necessary conditions for greater resilience of the

National Health Service through: a) replacement of obsolete health technologies in hospitals; b) development of significant structural improvement in the security of hospital buildings; c) improvement of information systems and digital health tools; d) promotion and strengthening of the scientific research sector; and e) strengthening of human resources.

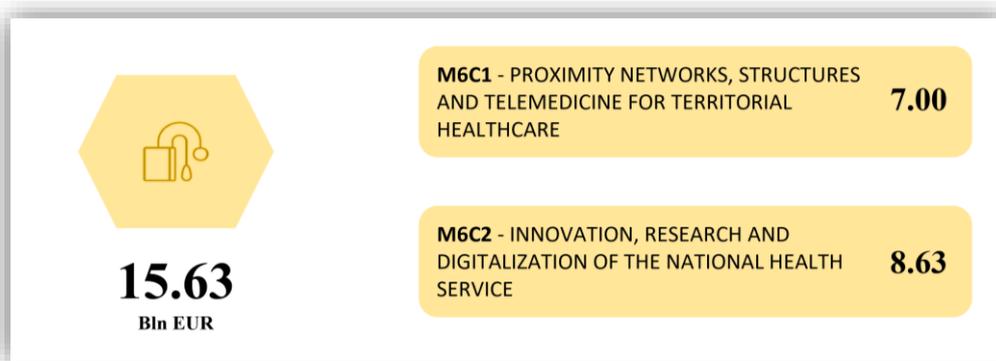


Figure 10 – Mission 6: Health

Figure 11 shows a possible Gantt of the Italian National Recovery and Resilience Plan (PNRR).



Figure 11 – A PNRR Gantt

On April 13, 2022, the European Commission paid Italy the first installment of 21 billion euros for the National Recovery and Resilience Plan, following the positive assessment of the payment request submitted by Rome at the end of December, which certified the achievement of the 51 objectives set in the NRPP for 2021. In recent days, also the objectives relevant to the first half of 2022 have been presented as fully on schedule.

Definitively, with the RRP and its reforms Italy is going to be a fairer, greener and more inclusive country, with a more competitive, dynamic and innovative economy.

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**Federico Minelle** graduated in Physics at “Sapienza” - Rome University, presenting a Master's degree thesis on Artificial Intelligence (AI) research, he immediately joined the Operations Research group in **Olivetti & Co**, Ivrea, Italy. Afterwards, for more than 40 years he consulted in Business Organization, Information Systems and Project Management.

Previously as a partner at *Accenture* and then as senior partner of Italian consultancy firm *PRS - Planning, Ricerche e Studi*, he managed and monitored significant projects in several industries, mainly in Engineering and Construction (e.g. manufacturing and nuclear power plants, transportation infrastructures) and in Government (ICT and process innovation).

He taught for more than 20 years *Business Information Systems* in the Computer Science Dept. of “Sapienza” - Rome University, where he currently teaches *Project Management & ICT* for the academic Master Degree in *ICT Governance and Audit*. At the same time, he taught similar topics to Government officers attending *SNA (National Public Administration School)* courses.

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Massimo Pirozzi has a wide experience in managing large and complex projects, programs, and portfolios in national and international contexts, and in managing business relations with public and private organizations, including multinational companies, small and medium-sized enterprises, research institutes, and non-profit organizations. He worked successfully in several sectors, including Defense, Security, Health, Education, Engineering, Logistics, Cultural Heritage, Transport, Gaming, Services to Citizens, Consulting, and Web. He was also, for many years, a Top Manager in ICT Industry, and an Adjunct Professor in Organizational Psychology. He is registered as an Expert both of the European Commission, and of Italian Public Administrations.

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