

in hospitals;

- overcoming the limited spread of telemedicine tools and activities;
- aligning training plans consistently with the health sector needs.

1. Technological and digital update

- WHAT: Digital update of the hospital technology park, both in terms of high-tech equipment (CT, Resonances) to replace the old ones, as well as interventions aimed at the digitalization of health facilities (both at the level of clinical assistance processes - operating theaters, diagnostics, ... - and at the level of technological infrastructure and IT assets). (ii) Strengthening, update and expansion of the Electronic Health Record at regional level and strengthening at the central level of the technological infrastructure and tools for data collection, processing, analysis and simulation (Ministry of Health), to support the development of advanced tools analysis of complex phenomena and scenario prediction; (iii) development of a significant structural improvement in the safety of hospital structures and alignment with the most modern anti-seismic standards.
- WHY: The national context relating to the digitalization of healthcare, as a transversal and central element to support the development of health care not only in hospitals but also in the local facilities, shows indeed critical numbers. Only 1.2% of public health expenditure is destined for digital 4.0 technologies. In absolute terms, spending on digital health in Italy settles at €22 per capita - compared to €70 in Denmark, the most virtuous country in Europe - and it has a growth rate of only 7% (in 2019); the DESI Index (Digital economy and society index) places Italy at the 25th place in Europe in 2020.

Italy needs interventions aimed at technological enhancement and innovation. It is necessary to invest more in technological and digital tools, streamlining processes and activities, but also intervening on the relationship between health care workers and patients and on the use of available data. ICT technologies and the availability of Big Data analysis tools allow to collect, trace and process an enormous amount of data relating to the entire health ecosystem, paving the way to targeted health policies, thanks to complex tools of analysis, simulation and prediction. ICT technologies also allow the personalization of care and increase patient engagement. This is why it is essential to promote the digitalization and interoperability of health data and the enhancement of health information systems to support both clinical activities and the governance of the health system. The diffusion of the Electronic Health Record (EHR) across the country is a key step to address this challenge. Having digital solutions capable of integrating care and assistance processes (outpatient and community medicine), as well as supporting proximity and communication with patients, becomes a fundamental competitive factor for the health sector in the post-emergency phase, in particular to be able to support the process of strengthening and homogenising local services throughout the national territory. Moreover, it is a priority to address the need of updating the technological equipment used in

hospitals, in terms of the provision of large health equipment dedicated to diagnosis and treatment, and in terms of assets, tools and digital technologies to support the collection and analysis of information and data throughout the hospital care process. The technological equipment is indeed old and inefficient compared to other countries. The actions addressing these challenges shall take into account the differences across the territory and aim to reach homogeneous levels of technological supplies across the Country.

At the governance level, the management of the ongoing crisis has made the need to be able to process large amounts of health and non-health data in real time even more clear. In this sense, it is of strategic importance for the Ministry of Health, to strengthen the development of information flows and related technological infrastructure in order to support the development of forecasting models for health care monitoring and planning of activities. This will not only allow to strengthen and make governance increasingly effective but also to have powerful calculation tools capable of identifying and anticipating phenomena that could “threaten” the sustainability of the NHS in the medium-long term.

Italy also needs interventions aimed at developing structural improvements. Among public buildings, hospitals play a strategic role in the event of a disaster, as they have a fundamental rescue function for the population, ensuring the effective continuation of the first emergency medical interventions launched in the field. The hospital, one of the most exposed and sensitive sites as it is crowded with thousands of people with very different reactive abilities, is therefore required not only to withstand the impact force of the earthquake without excessive damage, but also to continue to offer sufficient levels of health care.

- **RECOMMENDATION:** The component is developed in accordance with the Council Recommendations of 9 July 2019 (2019 / C 301/12) on the 2019 National Reform Program of Italy and, in particular, with recommendation no. 3 concerning investments in the quality of infrastructures, also in order to bridge regional disparities and improve the efficiency of Public Administration by investing specifically in the acceleration of digitalization processes. In line with point no. 1 of the Council Recommendations of 20 May 2020 (COM (2020) 512 final) on Italy’s 2020 National Reform Program, which foresees – in 2020 and 2021 – the adoption of measures aimed at “... strengthening the resilience and capacity of the health system with regard to health workers, essential medical products and infrastructures ...”, the component also focuses on infrastructure investments in the hospital sector in order to provide an adequate response to the critical issues identified in the Country Report related to Italy 2020 of 26 February 2020 (SWD (2020) 511 final).

2. Scientific research and technological transfer

- **WHAT:** (1) Enhancement and strengthening of the NHS biomedical research to make the sector more competitive at the international level, together with strengthening the NHS response capacities to health emergencies and epidemiological transi-

tion and healthcare needs linked to the demographic framework. (2) Development of an innovative health ecosystem for the creation of clinical-transnational networks of excellence capable of pooling existing skills in the Country and implementing synergic public-private interventions for innovation, development and qualified employment.

- **WHY:** The Life Sciences sector is one of the most dynamic in our Country, yet, without an investment policy in research and innovation it will gradually decline. 53% of the total investments of pharmaceutical companies in Italy are focused on R&D. Investments in the sector, equal to 1.6 billion euros in 2019 (up 4% annually since 2015) represent 4.3% of sector investments at European level and 10% of total investments in research and development of our Country. The incidence of R&D investments on added value reaches 17%, a value significantly higher than the one recorded by medium-high technology sectors (8%), the manufacturing sector (4%) and the total economy (1%). Nonetheless, R&D spending in Italy is equal to only 1.4% of GDP, a value below the EU-28 average (2%) and the average for OECD countries (2.4%). The innovation brought by the results of research in the Life Sciences must be supported as it has a potential revolutionary effect on all aspects of the daily life of human beings and represents a determining factor in the definition of scientific progress. Indeed, it is facing a change paradigm, increasingly linked to a logic of personalized medicine and the development of new generation therapies with the possibility of proposing better prevention activities, better diagnoses, more targeted therapies and reduced side effects. Indeed, the R&D activities of Life Sciences companies not only take the form of therapies that have positive effects for safeguarding the health of citizens and improving the living conditions of patients, but also constitute a strategic investment for the national economy. In this context, it is necessary to build an organized system and a coordinated network of Technology Transfer in the Life Sciences sector in Italy, built and managed by a public-private partnership, which captures the specificities of the health technology sector in the country and which contributes to the enhancement of research and the role played by the NHS in research. It is a question of networking existing realities, sharing common tools and platforms, as well as patient economic-financial investments that correspond to the technological, ethical and regulatory complexity of the sector.
- **RECOMMENDATION:** the update and strengthening of research and development within the NHS is a strategic item which can allow the NHS to provide an adequate response to the needs of citizens and ensure a point of reference for the industrial system for health innovation. In particular, the strengthening of the biomedical research system in Italy - through the strengthening of the response capacity of the centers of excellence in the sector of rare diseases - can foster the economic development of the Country by improving its competitive capacity based on the interaction between research and companies able to guarantee continuous and effective technology transfers.

3. Technical digital and managerial upskilling of NHS professionals

- **WHAT:** Ensuring a structured and sustainable training activity for healthcare professionals in order to face current and future challenges. Strengthen the training activity through the involvement of General Practitioners (GPs), increasing the scholarships for the specific training course in general medicine and the enhancement of technical and managerial skills for the top roles of health structures and for the remaining hospital staff.
- **WHY:** Scientific progress and technological innovation require that healthcare professionals are constantly updated and trained. According to Legislative Decree 502 of 30 December 1992, which established the obligation of continuous training for health professionals, such training should be “aimed at adapting professional knowledge throughout the entire professional life and improving skills and the clinical, technical and managerial skills of health workers, with the aim of guaranteeing the effectiveness, adequacy, safety and efficiency of the assistance provided by the National Health Service”. Furthermore, the pandemic crisis has also highlighted the difficulty of hospitals to hire adequately trained staff, especially with reference to digital and innovative issues.
- **RECOMMENDATION:** Point 16 of the Recommendation of the European Council of 20 May 2020 recommends to remove any obstacles to training, hiring and retention of health professionals and - together with this - to improve the coordination and governance of the NHS institutions, in order to foster coordination and collaborations.

b) Objectives

The overall aim is to increase the effectiveness and efficiency of the health and care system, taking into account challenges such as the ageing of the population and the limited investment in health infrastructure made in the past, which hinder the quality and efficiency of the Italian healthcare system. To reach this broader objective, this Component aims to enhance the innovation and digitalization in health facilities and support the research and the training of health professionals.

The digitalization of healthcare systems is a key part of the European Commission’s strategy to empower citizens and build a healthier society. Data is now recognised as a key enabler for the digital transformation in healthcare. In this framework, the European Commission (EC) set the priorities to digitally transform the health and care system into a Digital Single Market and to put EU citizens at the centre of the healthcare system. It emphasised that citizens’ need to be able to access and share their data anywhere in the EU, the promotion of research, disease prevention and personalised healthcare, and the importance of digital tools for person-centred care. In particular, the EC Communication on Digital Transformation of Health and Care in the Digital Single Market (COM(2018) 233 final) identifies three priorities:

- Citizens' secure access to their health data, also across borders - enabling citizens to access their health data across the EU.
- Personalised medicine through shared European data infrastructure - allowing researchers and other professionals to pool resources (data, expertise, computing processing and storage capacities) across the EU.
- Citizen empowerment with digital tools for user feedback and person-centred care - using digital tools to empower people to look after their health, stimulate prevention and enable feedback and interaction between users and healthcare providers.

In line with these priorities, the promotion of electronic health records based on a common European exchange format is also one of the objectives recently set by the EC in the strategy "Shaping Europe's Digital Future" (February 2020). Indeed, the adoption of electronic health records could also generate efficiencies, contributing to the attainment of fiscal sustainability goals for health and long-term care systems.

Therefore, the specific objectives of this component - to be achieved by July 2026 - are the following:

- Ensure the supply of updated health equipment technologies, replacing the existing ones, and promote the digitalization of health facilities in order to guarantee a prompt and adequate response to any epidemic or pandemic events. According to this, it is foreseen to purchase 2,648 new medical devices and improve the digitalisation of 177 *DEA - Dipartimenti Emergenziali Assistenziali* 1st level.
- Strengthen and expand the National Health Information System in terms of evolution and modernization of the infrastructure/systems for creation, collection and analysis of health and non-health data, increasing the number of types of digital documents digitized in the Electronic Health Record. This will entail strengthening and further developing the Electronic Health Record at a regional level to promote, according to European standards, document digitization, harmonization and data extraction, facilitate information sharing, and strengthening the IT systems security for consultation, enhance regional capacity for data collection, analysis and interoperability.
- Strengthen the Ministry of Health's IT infrastructure used for the collection, processing, validation and analysis of health data, as well as the implementation of new health information flows and the integration of existing flows.
- Support advanced innovation in the management of health data through AI, Big Data and Machine Learning and integrate information from administrative flows with clinical data collected to implement personalized and precision paths.
- Ensure a secure accessibility of health data in compliance with privacy legislation.
- Strengthening of forecasting, simulation and business intelligence tools and high-level skills within the Ministry of Health, in order to support the definition of planning and prevention policies.
- Address and overcome a specific gap between research and industry that could

hinder the attractiveness of the product/technology for investors and demonstrate the mitigation of risk for a potential investor / industry or licensee, if a patent exists.

- Develop, through the funding of research programs/projects focusing on specific pathologies of high biomedical complexity, targeted therapies capable of providing concrete answers to the health needs of citizens affected by rare diseases and rare tumours and strengthen the response capacity of the centers of excellence in Italy.
- Ensure a structured and sustainable continuous training for healthcare professionals to face current and future challenges, promote the development of adequate managerial skills for personnel with responsibility for coordination and governance of the NHS entities and dedicate moments of specific training for healthcare professionals in terms of safety of care pathways, in order to reduce cases of hospital infections among patients.

c) National strategic context

This component is in line with the national health strategies. Indeed, the set of investments falls within the national strategic context in the healthcare sector and within the budgetary policy objectives for 2021-2023 which take into account the National Recovery and Resilience Plan in line with European programming. These investments are part of the national strategic health plan which is going to be defined by the Italian Ministry of Health, in collaboration with other public administrations. Finally, the component is coherent with the national plan for energy and climate and its updates as well as with the contents of the European Commission “White Paper on artificial intelligence - a European approach to excellence and trust” (19/02/2020) and Italian Strategic Plan for AI (“Strategia nazionale per l’intelligenza artificiale”, 2020) recently published by Ministry of Economic Development highlighting great opportunities and use cases for AI in the healthcare sector. This component - which is characterized by an interdisciplinary value - has also the objective of guiding the policies set to achieve the objectives included in the European Green Deal, as an outcome of proximity assistance or digital access to health data by citizens and its exploitation for diagnosis and assistance.

In particular, the digitization initiatives envisaged by this component are part of the general framework of modernization of the PA-citizen relations envisaged by the Italian Digital Agenda (AGID), which embeds the indications of the European Digital Agenda for Europe - DAE - 2010) and sets - among its main objectives - the establishment of the electronic health record (FSE) intended as a single digital document of the patient’s socio-health data. Similarly, the priorities for the interventions related to digitalization in healthcare were outlined in the Digital Growth Strategy 2014-2020 (March 3, 2015) and then reaffirmed in the Pact for Digital health referred to in the State Regions Agreement of July 7. 2016, identifying in the Electronic Health Record (FSE) the tool through which citizens can trace and consult the entire history of their health care life, sharing it with health professionals to ensure a more effective and efficient service.

The component also includes an important intervention to enhance scientific research as an integral part of the activities of the National Health Service (NHS) as it is a fundamental item to ensure an effective, efficient and high quality health care to all citizens, responding to the real needs of assistance and care across the Country. The tools of this policy can be found in the National Health Research Program (PNRS) (pursuant to Article 12 bis, paragraph 3, Legislative Decree 229/1999) which defines, on a three-year basis, the corresponding research strategies and the allocation of resources, ensuring synergies between public and private research, as well as between national research and European and extra-European research, aggregating and enhancing in a single vision efforts and resources already present in the NHS and in the academic and scientific world, avoiding duplication and overlapping of activities. The lack of digital skills in all different areas (for which Italy - among all the European countries - shows more gaps), is one of the main issues limiting the social and economic development of the Country and its recovery from the current period of crisis. This shows why primary importance should be given to the issue of digital skills, and why it represents another important objective of the component in line with the needs of the Country. Indeed, the “Digital Republic” initiative was included in the Italian 2025 Strategy of the Italian Minister for Technological Innovation and Digitisation, presented on 17 December 2019, based on the overarching consideration that the digital transformation of the Country cannot ignore the contextual growth and diffusion of digital culture.

Concerning the overall economic feasibility of the component, it should be specified that investments-related costs estimated for the purpose of this document only refer to the quota for which the funding through RRF is requested. These lines of action are part of the wider national health programming, and could receive additional financial support by both the national budget and other European programs (e.g. ReactEU). For instance, personnel costs and other non-quantified expenditures will be included in the definition of the structural national health budget.

3. Description of the reforms and investments of the component

1) First project / project area name.

Reform 1.1: Reorganize the network of IRCCS to improve NHS quality and excellence -under Health Reform “Proximity networks, facilities and telemedicine for territorial healthcare assistance”.

Objectives: Regarding this Component, the reform aims to reorganize the *Scientific Institute for Research, Hospitalisation and Healthcare* (IRCCS) network to improve NHS excellence, revamping the relationship between Health and Research, revisiting the legal regime of the IRCCS and the research policies pertaining to the Ministry of Health. It will indeed support research and strengthen the NHS responsiveness to health emergencies, epidemiological transition and health needs related to the demographic framework. The

reform also aims at enforcing collaboration and technological transfer between research and life sciences industry.

Actions:

- reform of the IRCCS introduced by a specific regulatory / administrative act for the reorganization of the Institutes; identification of new financing methods.
- Strengthening of the collaboration between Ministry and Regions in order to align the objectives of the general direction and the objectives of the scientific direction, also assigning to them greater powers for intervention in relation to defining the legal structure and necessary funding.
- definition of a clear framework of actions and common governance tools to maintain consistency in policy guidelines.
- comparison with the trade unions in order to evaluate pros and cons of the new legislation and identify areas for improvement.
- overcoming the current regime of incompatibility of the Scientific Director (which entails the absolute impossibility of carrying out professional activities, even if in the interest of the Institute, including teaching activities and research activities themselves).
- development of research-industry partnership models.

Among the activities, the reform will also intervene in the area of Proximity networks, facilities and telemedicine for territorial healthcare assistance and in the definition of a new model of territorial healthcare assistance and a new institutional structure of Health-Environment-Climate prevention, as further detailed in the component “Proximity networks, facilities and telemedicine for territorial healthcare assistance”

Investment 1.1: Digital update of hospitals’ technological equipment.

Challenges: Italy needs interventions aimed at enhancing and innovating the technological and digital assets currently in use in hospitals, in order to guarantee a better response to the population health needs and improve each entity governance capacity also thanks to a digital and interoperable care path focused on the exchange of data and information. In addition, it is important that health professionals and patients trust digital health technologies, and that no one is excluded, especially given the growing role that technology will play in the future of healthcare.

Data published by the Ministry of Health show significant obsolescence and gap in the digital infrastructure and equipment availability to ensure that the health services are effectively provided nationwide.

- about 24% of CT (computed tomography) scans are over 10 years old;
- about 27% of NMRs (nuclear magnetic resonance) are over 10 years old;

- about 31% of angiographers are over 10 years old;
- about 74% of mammograms are over 10 years old;
- about 50% of pulmonary ventilators are over 10 years old.

In France, Denmark and Sweden, between 60 and 70% of the equipment is up to 5 years old, while in Italy the most recent equipment (considering those up to 5 years old, i.e. the most performing and hi-tech ones), is increasingly less. As underlined by the Ministry of Health, obsolescence compromises quality of performance, efficiency of use, avoid potential digital use and interaction, and it has a negative effect on healthcare service sustainability, which has to face high maintenance costs and increased inefficiencies (e.g. waiting time). The technological equipment inadequacy brings the Italian NHS to a challenge, which engages the Government in the constant search for a delicate balance between guaranteeing high quality healthcare based on innovation, the need to rationalize spending, while respecting the basic principle of fairness by guaranteeing equal patient access to treatment innovation over the whole territory.

Objectives: The improvement of the digitalization of healthcare facilities contributes to enhancing staff productivity, facilitating hospital operations, improving the process quality, ensuring patient safety and high-quality service delivery, by integrating cutting-edge technologies such as medical devices, smart information systems, facility control and automatic conveyor systems, location-based services, sensors and digital communication tools into health processes. The digital update will make it possible to replace healthcare equipment with the most technologically advanced versions, bringing benefits also at the level of clinical assistance processes - operating theatres, diagnostics, etc. As a next step, leaders across the health system will need to agree how innovation is funded, decide which technologies are most effective, and establish a robust IT infrastructure able to provide safe, secure and equitable access to both the technology and the data generated. Technological evolution will also equip companies and professionals with advanced analysis tools, able to collect data in real time, transform it into information and interpret it in order to carry out simulations. The investment aims to purchase and test 2,648 pieces of equipment to replace obsolete and out of order technologies (over 5 years old) and improve the digitalisation of 177 health facilities (including *DEA I livello - Dipartimenti Emergenziali Assistenziali I livello*).

More specifically, following an analysis of the technological equipment currently present at the DEA - Emergency and Acceptance Departments - of 1st and 2nd level and at the Emergency Department - the project aims to identify the need for equipment in replacement of obsolete or out-of-use technologies (over 5 years old): 305 CT with 128 slices, 167 NMR at 1.5 T, 83 Linear Accelerators, 863 Fixed X-ray Systems, 154 Angiography, 75 Gamma cameras, 44 Gamma cameras / CT scans, 295 Mammography, 662 Ultrasound).

In addition, the project foresees the improvement of digitalisation of 177 1st level DEA structures, which will be part of the digital system implementation process. Through the adoption of innovative and technologically advanced solutions and the upgrade of the

digital assets of public health facilities, it will be possible to improve the efficiency of care levels and adapt structures and organisational models to the best international safety standards, also through the implementation of digitalisation processes of care pathways.

For the purposes of estimating the needs, a premise is necessary in terms of configuration of the hospital system of the Italian NHS. The organisation of hospitals in Italy, in fact, is currently regulated by Ministerial Decree 70/2015 and is based on hierarchical levels of complexity of the hospital structures that provide services in continuous and day-cycle hospitalisation for acute cases, through a network model organised on context specificities. Hospitals have three levels of increasing complexity:

- basic hospital unit, with a catchment area between 80,000 and 150,000 inhabitants, which are structures with an Emergency Room with the presence of a limited number of specialties with a wide territorial diffusion: Internal Medicine, General Surgery, Orthopedics, Anaesthesia and support services in active guard network and / or in a 24-hour (h.24) ready availability regime of Radiology, Laboratory, Blood Bank. They must also be equipped with “Intensive Short Observation” beds;
- level I hospitals, with a catchment area between 150,000 and 300,000 inhabitants, which are structures with a 1st level DEA, equipped with the following specialties: Internal Medicine, General Surgery, Anaesthesia and Intensive Care, Orthopedics and Traumatology, Obstetrics and Gynecology (if required by number of births / year), Pediatrics, Cardiology with Cardiological Intensive Care Unit (UTIC), Neurology, Psychiatry, Oncology, Ophthalmology, Otorhinolaryngology, Urology, with an active and / or on-call medical service or in network for pathologies that foresee it. The Radiology Services, at least with Computed Axial Tomography (CT) and Ultrasound, Laboratory and Immunotransfusion Service must be present or available on the network h. 24. For complex pathologies, (such as trauma, cardiovascular ones, stroke), forms of consultation, image transfer and agreed protocols for patient transfer to level II Centers must be provided. The level I hospital must also be equipped with beds for “Short Intensive Observation” and beds for Sub-intensive Therapy (including multidisciplinary ones);
- level II hospitals, with a catchment area between 600,000 and 1,200,000 inhabitants, are structures equipped with 2nd level DEA. These aids are institutionally referable to hospitals, university hospitals, some Scientific Institute for Research, Hospitalization and Healthcare (IRCCS) and large-scale facilities of the Local Health Authority (ASL).

The evaluation of the digitalisation of hospitals, therefore, is based on the hypothesis of digitizing all the structures of the first level DEA (177), which are characterised by a high level of diffusion, a medium-high level of complexity and a homogeneous distribution on the national territory. The assessment of the current digitizing level, preliminary to the implementation of the intervention, will allow to refine this evaluation more precisely, according to the real needs of each Region.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other bodies concerned being the participating actors. This approach will ensure time-saving and simplification of procedures - including authorisation procedures - where accompanied by the activation of service conferences (“*Conferenze di Servizi*”).

Target population: Regions, local health units (Aziende Sanitarie Locali - ASL) and hospitals, which through digital and technologically advanced tools will be able to better govern the healthcare supply chain with benefits in terms of efficiency and effectiveness, and citizens, who will benefit from a prompt and quality response to healthcare needs.

Stakeholder involvement: Ministry of Health of Italy, Regions, local health units (Aziende Sanitarie Locali - ASL), hospitals and suppliers.

Timeline: For details, please refer to Paragraph 5 and Paragraph 6..

Investment 1.2: Towards a new safe and sustainable hospital.

Challenges: The entry into force of the Ordinance of the President of the Council of Ministers no. 3274 of 20 March 2003, “First elements regarding general criteria for the seismic classification of the national territory and technical regulations for construction in seismic areas” has revolutionised the pre-existing regulatory framework. In fact, the whole national territory is classified for seismic purposes and, according to this, structures must be designed and built in compliance with standards. The new item introduced by Ordinance n.3274/2003, is the obligation to carry out seismic vulnerability checks for buildings of strategic interest, therefore including health facilities and strategic works. Among public buildings, hospitals play a strategic role in the event of a disaster, as they have a fundamental rescue function for the population, ensuring the effective continuation of the first emergency medical interventions launched in the field. The hospital, one of the most exposed and sensitive sites as it is crowded with thousands of people with very different reactive abilities, is therefore required not only to withstand the impact force of the earthquake without excessive damage, but also to continue to offer sufficient levels of health care. This means that particular attention must be paid not only to load-bearing elements, but also to non-structural and plant elements, as well as to the distribution of functions and flows, to ensure that the environmental units and the equipment necessary for the management of maxi emergencies.

In light of what just said, the main challenge consists in completing interventions aimed at adapting hospital structures to the current anti-seismic regulations.

Objectives: The project aim is to outline a path for structural improvement in the field of hospital facilities safety, which plays a crucial role in emergency situations. More specifically, the aim is to align them to the anti-seismic regulations. To this end, the Ministry of Health identified in 2020 an overall need for 675 interventions distributed proportionally among the Regions according to the share of access to the National Health Fund. For the initiation of procedures and work sites in relation to the interventions identified, the development of a specific Action Plan is expected. The amount was divided considering the number of projects to be activated per single region. The breakdown over the years was made considering the distribution over time of the types of projects, and in particular: preliminary projects in 2021, feasibility studies concentrated in the period 2022 - 2023, the technical-economic feasibility projects in 2024, the final projects in 2025, executive projects in 2026, interventions without planning and seismic vulnerability checks in the period 2021-2026.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (*Contratto Istituzionale di Sviluppo*) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other bodies concerned being the participating actors. This approach will ensure time-saving and simplification of procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

In particular, the above-mentioned objectives shall be achieved through the development of an Action Plan for the initiation of procedures and work sites for anti-seismic interventions and the completion of 675 seismic adaptation and improvement interventions in hospitals. The project will allow for a significant structural improvement in the safety of hospital structures, improvement of the crucial and strategic role that structures play in emergency situations and alignment with the most modern anti-seismic regulations.

Target population: Regions, health facilities and workers of the health sector who will be able to carry out their duties in a safer way, improving the timeliness and quality of interventions; the patients, who will be able to benefit from safer health facilities.

Stakeholder involvement: Ministry of Health of Italy, Regions, local health units (Aziende Sanitarie Locali - ASL).

Timeline: For details, please refer to Paragraph 5 and Paragraph 6.

Investment 1.3: Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level.

Challenges: The health system in the EU is facing systemic development due to the evolution of the way the technological innovations enable healthcare services to be delivered to patients. A significant boost towards this aim is enabled by the effective exchange and use of data: the EHR (Electronic Health Record) is a key tool unlocking the potential of data analysis in the healthcare sector. However, the level of use and diffusion of the EHR among health professionals and citizens is highly heterogeneous at regional level. The monitoring carried out by the Agency for Digital Italy (AgID) shows a substantial deviation between the activation and actual use of the EHR by citizens. Indeed, with regards to citizens, in 10 out of 20 regions there is an activation level lower than 50%, and one slightly higher than 1% in 6 regions, while the use of the EHR is over 50% for only 4 regions. Also critical is the situation related to the activation and use of the EHR by doctors, which results in a level of activation similar to that of citizens (in 9 regions there is a rate of <50%) and a satisfactory level of use only for 3 regions

Objectives: The investment aims at strengthening the technological infrastructure of the Ministry of Health responsible for the collection, processing, validation and analysis of health data, as well as the implementation of new health information flows and the integration of existing flows. Create a national platform for the management of health registers and surveillance systems and develop a national platform for telemedicine solutions. This investment, therefore, aims at strengthening, evolving and expanding the Electronic Health Record – EHR - at regional level, as well as strengthening the technological infrastructure and the tools for data collection, processing, analysis and simulation at central level (Ministry of Health), to support the development of advanced analysis tools of complex phenomena and scenario prediction.

The EHR allows patients to have access to all their health documents and allows operators to increase the quality and timeliness of the care decisions to be taken. It is necessary that the EHR is adopted uniformly on the national territory and that it is improved in security, with the aim of making it complete from the point of view of information and usable for both citizens and operators.

The EHR, if managed and used in a complete and correct way, also favours the governance of regional and national health systems based on “real world” clinical data. The use and dissemination of the EHR is therefore essential for the digital transformation of health. It also allows the interoperability of health data which is one of the national and European objectives, the subject of specific interventions and projects on which Italy is also working within the eHealth network.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (*Contratto Istituzionale di Sviluppo*) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other

bodies concerned being the participating actors. This approach will ensure time-saving and simplification of procedures - including authorisation procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

In particular, the following macro-actions are envisaged:

- definition of operational plans of the regions to strengthen the EHR and of the health data exchange infrastructures;
- complete implementation of EHR services throughout the national territory;
- development of Regional Telemedicine Platforms in an open data prospective assistance services and customer services for the correct usability of the service by the citizens;
- conception and design of a powerful and complex tool for simulation and prediction of medium-long term scenarios of the NHS;
- design and deployment of new health information flows, gradually between the different regions;
- Strengthening the technological and application infrastructure of the Ministry of Health.

Target population: Regions, and healthcare workers who, through an improved EHR, will be able to take advantage of a set of data and information useful for the governance of activities in terms of planning and monitoring; citizens, who will be able to access information related to their care cycle in an innovative, secure and transparent way.

Stakeholder involvement: Ministry of Health and other Ministries, National Agency for Regional Health Services (Agenas), Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Regions, healthcare workers, software companies.

Timeline: For details, please refer to Paragraph 5 and Paragraph 6.

Investment 2.1: Strengthening and enhancement of the NHS biomedical research.

Challenges: The biomedical research system in Italy is underfunded, which makes it difficult to compete with other institutions internationally. This has a negative impact on the Country’s competitive capacity, considering that economic development is based on the interaction between research and businesses. The life sciences sector is one of the most dynamic in our country, but without an investment policy in research and innovation it is destined to gradually decline. In fact, today we record:

- a reduction in Research Funds for biomedical and health research;
- a lack of risk capital and specific skills to support technology transfer processes.

Adaptation and strengthening of research and development capacity within the NHS is envisaged to allow the NHS to provide adequate responses to the needs of citizens and

ensure a point of reference for the industrial system for health innovation. The research networks of the Scientific Institute for Research, Hospitalisation and Healthcare (IRCCS) can play a fundamental role in the cohesion of the Italian socio-economic ecosystem. Indeed, they represent an essential critical mass for clinical trials and research in rare diseases; they are places of election for the Health Technology Assessment policies of the NHS; thanks to digital technologies, they provide second opinions and remote assistance services, limiting inter-regional mobility and promoting the social inclusion of people with disabilities. In general, this will strengthen the national Health System. The project will develop in coherence and collaboration with the research ecosystem programs proposed by the Ministry of University and Research (MUR) and technology transfer programs proposed by the Ministry of Economic Development (MISE), also through joint initiatives.

Objectives: The project is aimed at carrying out two types of interventions:

Financing of PoC (Proof of Concept) projects, for a total of 100 million, which will help reduce the gap between research results and industrial application, support the development of technologies with a low degree of technological maturity, as well as fostering the transfer of technology towards the industry. In particular, this line of action aims to:

- build / improve a prototype and prepare for commercialisation;
- verify the commercial feasibility or carry out scale-up tests;
- show risks mitigation for a potential investor / industry or licensee, if a patent exists;
- address and overcome a specific gap identified by the industry and which hinders its attractiveness for investors;

The detailed investment program will be the result of discussions and contributions from relevant stakeholders in the sector.

Funding of research programs / projects in the field of rare diseases and rare cancers. These pathologies, of high biomedical complexity and often multi-organ expression, require the convergence of high clinical competence and advanced diagnostic and research activities and require technologies of excellence and the coordination of collaborative networks at national and European level. In order to strengthen the responsiveness of the centers of excellence in Italy, a research program with dedicated funding for a total of 100 million is expected to be launched in order to develop targeted therapies capable of providing concrete answers to the health needs of citizens suffering from rare diseases.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other bodies concerned being the participating actors. This approach will ensure time-saving

and simplification of procedures - including authorisation procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

The project is based on the assignment of vouchers for PoC projects - Proof of Concept and on the allocation of funding for research programs aimed at rare diseases and rare cancers.

Target population: Regions, University, Businesses and Scientific Institute for Research, Hospitalisation and Healthcare (IRCCS).

Stakeholder involvement: Ministry of Health and other Ministries, Scientific Institute for Research, Hospitalisation and Healthcare (IRCCS), universities and research centers and businesses.

Timeline: For details, please refer to Paragraph 5 and Paragraph 6.

Investment 2.2: Health innovation ecosystem.

Challenges: This investment addresses the following challenges:

- the need for innovative actions for the health research and innovation system in Italy, including in the sectoral planning policy approach;
- enhance the specificity and complexity of innovation in the life sciences in relation to intellectual property issues, the expansion of research times, regulatory complexity and ethical implications;
- the need to identify a new and suitable way to establish lasting, transparent and mutually profitable relations between the action of public and private organisations, within the perimeter of a strategic sector where the direction of the central public administration is crucial;

Objectives: The intervention aims to develop an ecosystem for innovation in the “Health” Area as identified by the National Research Program (PNR) and the National Intelligent Specialisation Strategy (SNSI).

In particular, the project aims to create an Innovative health ecosystem through the creation of clinical-transnational networks of excellence capable of pooling the skills which exist in the Country and creating public-private interventions that work in synergy to innovate, develop and create qualified employment.

Two macro - actions are envisaged, one relating to the creation of a network of technology transfer centers and the other relating to the strengthening and qualitative and quantitative development of the Lifescience Hubs by geographical area (North - Center - South).

The innovative element in the approach adopted lies in the structured “lead” function

of the Ministry in defining the intervention priorities on which to focus action. The project will develop in coherence and collaboration with the research ecosystem programs proposed by the Ministry of University and Research (MUR) and technology transfer programs proposed by the Ministry of Economic Development (MISE), also through joint initiatives.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other bodies concerned being the participating actors. This approach will ensure time-saving and simplification of procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

The intervention will be implemented through the creation of a coordinated network of centers for technology transfer and the definition of structured sharing paths for the scouting of research lines and their development in a perspective of industrialization and innovation of the health ecosystem.

The intervention also aims to achieve a qualitative and quantitative strengthening and development projects of the Life Sciences Hubs by geographical area (North - Center - South), in order to strengthen and develop the national network of specialized innovative infrastructures - Life Sciences HUB.

Target population: Entire NHS and business, including SMEs.

Stakeholder involvement: Ministry of Health and other Ministries, Scientific Institute for Research, Hospitalization and Healthcare (IRCCS), universities and public and private research centres, SMEs.

Timeline: For details, please refer to Paragraph 5 and Paragraph 6.

Investment 2.3: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

Challenges: Scientific progress and technological innovation require health professionals to be constantly updated and trained. According to Legislative decree 502 of 30 December 1992, which established the obligation of continuous education for health professionals, this training should be “aimed at adapting professional knowledge throughout the entire professional life and improving skills and the clinical, technical and managerial skills of health workers, with the aim of guaranteeing the effectiveness, appropriateness, safety and efficiency of the assistance provided by the National Health Service”. In addition,

the pandemic crisis has also highlighted the difficulty of hospitals to recruit adequately trained staff, especially with reference to digital and innovative issues.

Objectives: This investment aims to increase scholarships for the specific course in general medicine, guaranteeing the completion of 3 three-year training cycles; launch a training plan on safety in terms of hospital infections for all NHS medical and non-medical management profiles, nursing and technical staff; activate a training path for personnel with top roles within NHS Bodies in order to allow them to acquire the necessary managerial skills and abilities to face current and future health challenges in an integrated, sustainable, innovative, flexible and result-oriented perspective.

Implementation: The Ministry of Health will be responsible for the planning, execution, management and monitoring of the intervention as a whole. For actions and interventions that require the involvement of individual regional entities, coordinated and negotiated governance tools will be applied, such as, for example, the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Ministry of Health being the responsible and implementing Authority and the regional Administrations and other bodies concerned being the participating actors. This approach will ensure time-saving and simplification of procedures - including authorisation procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

Target population: Healthcare workers.

Stakeholder involvement: Ministry of Health and other Ministries, universities.

Timeline: For details, please refer to Paragraph 5 and Paragraph 6.

4. Green and digital dimensions of the component

a) Green Transition:

The component generally contributes to the development of the green transition with the:

Investment 1.1: Digital update of hospitals’ technological equipment

According to the Integrated National Plan for Energy and Climate, and to Regulation (UE) 2018/1999, the aim of the investment is to improve the technological efficiency focusing on all kinds of innovation and improvement of the production process. Facilities and properties renovation will meet innovative requirements in terms of energy efficiency and low environmental impact.

Investment 1.2: Towards a new safe and sustainable hospital

This investment is in line with the field of intervention 038 as it foresees to carry out structural interventions in hospital facilities in compliance with the anti-seismic regulations.

Investment 1.3: Strengthening, evolution and expansion of the Electronic Health Record (EHR) at regional level and strengthening of the technological infrastructure and of the tools for data collection, processing, analysis and simulation at central level.

In line with the European Green Deal, the investment will finance the green transition, in terms of energy and resources, with particular attention to environmental sustainability, efficiency, as well as technological innovation with a view to economic resilience. The spread of the EHR will allow the reduction of paper printing health documents by favouring access to health data in a completely digital way according to European standards.

b) Digital Transition:

The component contributes to the development of the digital transition by:

- strengthening digital capabilities and using advanced technologies in hospitals, in line with the Integrated National Plan for Energy and Climate;
- a deep technological evolution of the communication and data transmission systems from the territorial units to the hospital or territorial structures of competence with a positive impact on the quality of the health services provided;
- strengthening the digitalisation of assistance by promoting the widespread dissemination of connected assistance devices, especially for professionals and disadvantaged individuals in the field of telemedicine;
- redefinition of operating methodologies within the NHS through the use of digital technologies, ensuring remote monitoring and assistance and integrating research activities with assistance activities;
- development of Scientific Institute for Research, Hospitalization and Healthcare (IRCCS) networks based on virtual functional links between homogeneous centers of reference for genomic analysis and, in general, for all geomics sciences.

Investment 1.1: Digital update of hospitals' technological equipment.

The investment contributes to the creation of an infrastructure for the collection of data useful to be analyzed through artificial intelligence and machine learning processes. In this sense, it contributes to the strengthening of digital investments in the country, making the information infrastructure interconnectable and easily accessible.

Investment 1.3: Strengthening, evolution and expansion of the Electronic Health Record (EHR) at regional level and strengthening of the technological infrastructure and of the tools for data collection, processing, analysis and simulation at central level.

The presence of data in the EHR will also make it possible to create an “ecosystem of digital services” which contributes to the dematerialisation and physical disintermediation of several processes (exemption request, etc.).

TABLE 1: Green and digital impact

	Digital		Green		
	Tag	%	Tag	Climate	Environmental
				%	%
M6C2: Investment 1: Technological and digital update					
1.1 - Digital update of hospitals' technological equipment	093 Health equipment	100%	093 Health equipment	0%	0%
1.2 - Towards a new safe and sustainable hospital	na	0%	038 Risk prevention and management of non-climate related natural risks (i.e. earthquakes) and risks linked to human activities (e.g. technological accidents), including awareness raising, civil protection and disaster management systems, infrastructures and ecosystem based approaches	0%	100%
1.3 - Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at	095 Digitalisation in health care	100%	092 Health infrastructure	0%	0%
M6C2: Investment 2: Scientific research and technological transfer					
2.1 - Strengthening and enhancement of the NHS biomedical research	na	0%	na	0%	0%
2.2 - Innovative ecosystem of Health	na	0%	na	0%	0%
M6C2: Investment 3: Technical, digital and managerial upskilling of NHS professionals					
3.1 - Development of technical-professional, digital and managerial skills of professionals in healthcare system	na	0%	na	0%	0%

5. Milestones, targets and timeline

1) REFORMS.

Reform 1: Reorganise the network of IRCCS to improve NHS quality and excellence (under Health Reform “Proximity networks, facilities and telemedicine for territorial healthcare assistance”):

The reform implementation steps are listed below:

- strengthening collaboration between the Ministry of Health and the Regions: arrangements at least 13 (60%) of the regions;
- criteria and conditions to be defined for private IRCCS legal form;
- legal framework for public and private IRCCS – in order to define funding structure (Criteria and assumptions to define different requirements);
- criteria and models for the drafting of agreements for general management responsibilities / and scientific / research direction;
- status of NHS research personnel and scientific director - phase of confrontation with the unions to evaluate the pros and cons of the new legislation and to improvement of the legislation itself (defining criteria and preconditions);
- status of the National Health Service and scientific director of research staff (defining criteria and preconditions);
- criteria for the recognition and for the revocation status of IRCCS - complete the set of indicators needed for the detection of scientific and charitable activities of the Institutes (indicator set);
- definition Code of Conduct;
- technology transfer and relationships with businesses - industry research partnership models (definition of criteria and preconditions);
- definition of scientific cooperation policies, rationalization of the individual research institutes, collaboration with scientific and industrial partners;
- criteria for the assessment of the impact of research - systematic fund of research impact assessment activities funded (Evaluation Model);
- financing arrangements, budget is assigned by the Ministry of Research.

2) INVESTMENT.

Investment 1.1: Digital update of hospitals’ technological equipment:

- drafting of a report on the need assessment of large equipment, by Q2 2021;
- development of the Action Plan, by Q2 2021;
- definition of the tender procedure by Q2 2022;
- 2,648 large sanitary equipment Purchased and tested to replace obsolete or out of use technologies, by Q4 2023;
- 177 digitized medical facilities (DEA - Emergency and Admission Departments - Level I) by Q4 2023;

Investment 1.2: Towards a new safe and sustainable hospital:

- development of an action Plan by Q4 2021;
- 675 interventions to adapt to the anti-seismic legislation completed by Q4 2026.

Investment 1.3: Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level:

- strengthening and evolution of regional platforms for processing and archiving data from CDA2, by Q4 2026;
- support to the supplier entities in the production of data in CDA2 format, by Q4 2026;
- development of Regional Telemedicine Platforms (Phase 1) completed in 5 Regions by Q4 2022;
- development of Regional Telemedicine Platforms (Phase 2) completed in 7 Regions by Q4 2023;
- development of Regional Telemedicine Platforms (Phase 3) completed in 9 Regions by Q4 2024;
- implementation and testing in 2 pilot Regions of 4 new Flows at regional level (Phase 1) by Q4 2021;
- implementation of 4 new Information Flows at regional level (Phase 2): Implementation and testing in 10 Regions, by Q4 2022;
- implementation of 4 new Information Flows at regional level (Phase 3): Implementation and testing in 9 Regions, by Q4 2023;
- strengthening of the technological and application infrastructures of the Ministry of Health by Q4 2022, completing platform and portal Open Data;
- strengthening of the technological and application infrastructures of the Ministry of Health by Q4

- 2023, completing evolutionary maintenance interventions;
- strengthening of the technological and application infrastructures of the Ministry of Health by Q4 2026, completing Data Analytics Platform;
- construction of a powerful and complex tool for simulating and forecasting medium/long- term scenarios of the SSN (Model Phase 1) by Q4 2023 – Model plan;
- construction of a powerful and complex tool for simulating and forecasting medium/long- term scenarios of the SSN (Tool Phase 1) by Q4 2023 – Model design;
- construction of a powerful and complex tool for simulating and forecasting medium/long- term scenarios of the SSN (Model Phase 2) by Q4 2026 – Model implementation, validation and end;
- construction of a powerful and complex tool for simulating and forecasting medium/long- term scenarios of the SSN (Model Phase 3) by Q4 2026 – design implementation and Model maintenance;
- construction of a powerful and complex tool for simulating and forecasting medium/long- term scenarios of the NHS - Completion of the National Health Prevention Hub by Q4 2026

Investment 2.1: Strengthening and enhancement of the NHS biomedical research:

- definition of a two-year selective procedure for the assignment of vouchers for PoC (Proof of Concept) projects, by Q4 2021;
- definition of a two-year selective procedure for the assignment of vouchers for PoC (Proof of Concept) projects, by Q4 2023;
- assignment of vouchers for PoC (Proof of Concept) projects, for a total value of 50 million, by Q4 2025;
- assignment of vouchers for PoC (Proof of Concept) projects, for a total value of 50 million, by Q4 2025;
- definition of a public procedure for the assignment of research programs / projects about rare diseases and rare cancers by Q4 2021;
- definition of a public procedure for the assignment of research programs / projects about rare diseases and rare cancers by Q4 2023;
- assignment of funding for research programs / projects about rare diseases and rare cancers, for a total value of 50 million, by Q4 2025;
- assignment of funding for research programs / projects about rare diseases and rare cancers, for a total value of 50 million, by Q4 2025.

Investment 2.2: Health innovation ecosystem:

- Action Plan development for the creation of a coordinated network of technology transfer centers by Q4 2023;
- public tender procedure based on Action Plan development for the creation of a coordinated network of technology transfer centers by Q4 2023;
- implementation of 3 actions for technology transfer centers by Q4 2026;
- Action Plan elaboration for the strengthening and development of the Lifescience Hubs by Q4 2023;
- public tender procedure based on Action Plan elaboration for the strengthening and development of the Lifescience Hubs by Q4 2023;
- 3 projects by geographical area (North - Center - South) for the strengthening and development of the Lifescience Hubs by Q4 2026.

Investment 2.3: Development of technical-professional, digital and managerial skills of professionals in healthcare system:

- increase the scholarships for the specific training course in general medicine, guaranteeing the completion of three three-year training cycles, by Q2 2026;
- begin an extraordinary training plan for hospital healthcare personnel of the NHS based on hospital infections, by Q4 2026;
- implementation of 3 actions for technology transfer centers by Q4 2026;
- enable a training path for the top roles of the NHS bodies and its macro-organizational structures for the acquisition of the necessary managerial skills and capabilities to meet current and future healthcare challenges in an integrated perspective, sustainable, innovative, flexible and results-oriented, by Q4 2026.

5. Milestones, targets and timeline

Milestones and targets	Related reform or investment	Milestone or target name & number	Qualitative indicators (for milestones)	Quantitative indicators (for target)			Timeline for completion (indicate the quarter and the year)	Data source methodology	Responsibility for reporting and implementation	Description and clear definition of each milestone and target	Assumptions/risks	Verification mechanism
				Unit of measure	Baseline	Goal						
COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance												
Investment 1 - Enhancement of health assistance and territorial healthcare network												
Investment 1.1 - Community Health Houses to improve territorial health assistance												
		1 Recognition and identification of existing Community Houses to be renovated, converted and built.	Action plan for 21 Regions		0		Q1 2022					
		1a By December 2021, it is expected to reach a state of completion of approximately 80%. 1b It is expected to conclude the analysis by March 2022.										
		2 Realization of interventions and activation of the Community Houses		Number of Community Houses	0	2,575	Q2 2026	Methodology Community Houses to be activated: 2,575 (60.244.639 Italian population ISTAT 01/01/2020 / 23,400 inhab. national minimum standards) at a cost of 3.997.924.400 € of which (1.280.000 X 2,575) € cost of structures + 272.962 x 2,575) € cost of technology Cost of structures: Cost structures for Community House: € 1.280.000 In the absence of a dedicated information flow, it is estimated 100% of structures built ex novo with a floor area of 800 sqm - DPR 14.01.1997 1.280.000 € for Community House= 800 sqm (14.01.1997 DPR) X 1.600 € (unit cost per square meter for construction, Resolution 09.03.2018, n. 4/2018 / G of the Court of Auditors) Technology Cost: Technology Fee for Community House € 272.962 of which: 192.000,00 €: technological component equal to 15% (Section C.4 of the document entitled "Methods and procedures for the activation of investment programs in health care through the program agreements, referred to in Article 5 bis of Legislative Decree - December 30, 1992, n. 502 and subsequent amendments and program framework agreements art. 2 of law 662/1996 *approved in the State-Regions Conference of 28 February 2008) of the investment cost to activate the Community Houses. € 60.962,00 for interconnection with health professionals working in the area: € 60.260,00 purchase technical package (€ 2,620 X 23 TP) Base CONSIP 2012 X 11 TP for Community House + 1 TP per 10 MMG + 1 TP per 2 PLS as affiliation) 4945,00 € per unit cost of € 215 for installation and start-up of base CONSIP 2012 X 23 TP estimated 6187,00 € per unit cost of € 238 for migrating data based CONSIP 2012 X 23 TP estimated € 9.200,00 per unit cost of € 400 for training use of the estimated 23 TP Data source 1. Population ISTAT 01/01/2020 2. DPR 14.01.1997 3. Resolution 03/09/2018, n. 4/2018 / G of the Court of Auditors 4. Art. 10 Entente State-Regions of 28 February 2008 on detailed rules and procedures for the activation of investment programs in health care through the program agreements, of which article 5 bis of Legislative Decree n. 502/1992 and subsequent amendments 5. CONSIP - Race open procedure pursuant to Legislative Decree no. 163/2006, as amended, for the acquisition of software licenses and services for CRM solution, homes and Asset Management of the Department of General Administration, Personnel and Services of the Ministry of Economy and Finance - ID 1213 - Economic Offer - Part B Amount 4.000.000,00 €		see column n.2		
		2a By December 2023 it is expected to reach a state of progress of the work with regard to the structural aspects, technological, training and implementation of services equal to about 50%. 2b It is expected, by the end of 2024, to achieve a state of progress of work equal to about 60%. 2c It is expected, by the end of 2025, to achieve a state of progress of work equal to about 80%. 2d By June 2026 it is expected to conclude the activation and adaptation of the 4820 Community Houses.										
		a1 - Designing the integrated home care (AD) digital model following an analysis of national and international best practices on the application of Artificial Intelligence (1 for each local health unit, ASL)	Action plan	Issued	0	1	Q2 2022		Ministry of Health	see column n.2		
		a2 - Development of the integrated home care (AD) digital model		Interconnection of ASL (local health units)	0	99	Q4 2023	Methodology Realization in the local health units (ASL) of the tool to take charge of the patients = 33,847,856 € 339,867 € x 99 ASL (60.244.639/99= 608,511hab national minimum standard) for 97 licenses / ASL = 2620,03226 € 25,160,148 € (license unit cost, CONSIP 2012) X 9.603 = 215 licenses 2.065,126 € € 65,376 (unit cost of installation and start-up, CONSIP 2012) X 9.603 licenses € 2.281,382 = 268,8172 € (unit cost of data migration, CONSIP 2012) X 9,600 = 3,841,200 licenses € 400 € (unit cost of training SOURCE TO BE DEFINED) x 9,603 licenses Data source 1. CONSIP - Procurement in open procedure under law. 163/2006, as amended, for the acquisition of software licenses and services for CRM solution, homes and Asset Management Department of General Administration, Personnel and Services of the Ministry of Economy and Finance - ID 1213 - Economic Offer - Part B Amount € 34.455,500		see column n.2		
		b1 - Implementation of infrastructures related to integrated home care (AD)		Number of integrated home care (AD) coordination centres	0	575	Q2 2024	Methodology Cost of AD coordinating centers to be realized: € 184.000.000 = 575 X 1.600 central € (unit cost per sqm for construction, 03/09/2018 Deliberation, n. 4/2018 / G of the Corte dei Conti) X 200 sqm (DPR 14.01.1997) 575-centred: in the absence of a flow of information, it is conventionally considered one coordination center for about 60,244,639/575=105,000/inhab. for about each health District. Technology Cost: € 27.600,000 technological component equal to 15% (Section C.4 of the document entitled "Methods and procedures for the activation of investment programs in health care through the program agreements, provided for in Article 5a of Decree no. 30 Dec 1992, n. 502 and subsequent amendments and program framework agreements art. 2 of law 662/1996 *approved in the State-Regions Conference of 28 February 2008) of the investment cost to activate the Community Houses Data source 1. Resolution 03/09/2018, n. 4/2018 / G of the Court of Auditors 2. DPR 14.01.1997 4. Section C.4 of the document entitled "Methods and procedures for the activation of investment programs in health care through the program agreements, referred in Article 5 bis of Legislative Decree no. 30 December 1992, n. 502 and subsequent amendments and program framework agreements art. 2 of law 662/1996 *approved in the State-Regions Conference of 28 February 2008 Amount € 211.600,000		see column n.2		
		b2 - Implementation of the identified integrated home care (AD) model		Number of integrated home care (AD) professionals equipped with relevant technologies	0	51,750	Q2 2026	Methodology Technology Cost: € 189.094.400 135.585.000 = € (license fee) + € 11.126.250 (cost for installation and start-up) + € 13.920,750 (cost for data migration) 28462500 + (for operator training costs) 135.080.000 € = 2620,03226 (unit license fee, CONSIP 2012) X 51,750 licenses (51,750 home care workers considered one operator / 17 CIA patients with 1, 2, 3, 4) 11.126.250 € = 215,02576 € (unit cost of installation and start-up, CONSIP 2012) X 51,750 licenses 13.920.750 € = 268.8172 € (unit cost data migration, CONSIP 2012) X 51,750 licenses 28.462.625,000 € = 550 € (cost for operator training SOURCE TO BE DEFINED) x 51,750 workers Data source 1. CONSIP - Race open procedure under law. 163/2006 and subsequent amendments, for the acquisition of software licenses and services for CRM solution, homes and Asset Management Department of General Administration, Personnel and Services of the MEF - ID 1213 - Economic Offer - Part B Amount 189.094.500 €		see column n.2		
		b3 - provision of telemedicine technologies to patients cared for through integrated home care (AD)		Number of patients cared for (PIC)	0	282,426	Q2 2026	Methodology Cost of Technology: € 2000 technical package cost per patient x 282,426 patients PIC estimated as: 203,778 (70% of patients with CIA 2,3,4 current PIC) + 78,647 (70% of patients with 2,3,4 CIA that are expected to increase) Data source 1. DOR Lombardia (TBD) 2. SIAD Flows 2019 Amount		see column n.2		

Missions and targets	Missions or target name & number	Qualitative indicators (for milestones)	Quantitative indicators (for target)	Timeline for completion (indicate the year)	Data source methodology	Responsibility for reporting and implementation	Description and impact of each milestone and target	Assessment risk	Verification mechanism
<p>Component 1 - Primary healthcare facilities and laboratories for infectious diseases</p> <p>Strengthening of intermediate primary health care and its facilities (Community Hospital 1)</p>	<p>1) By December 2023, it is expected to complete the construction of 21 facilities to be restored, to be completed by December 2023. It is expected to complete the analysis of the facilities by March 2022.</p> <p>2) Realization and/or adaptation of the structures in the community hospitals</p> <p>3) By December 2023, it is expected to reach a state of progress of work equal to 80% by the end of 2024, to reach a state of progress of work equal to 100% by the end of 2025, to reach a state of progress of work equal to 100% by the end of 2026, to reach a state of progress of work equal to 100% by the end of 2027.</p>	<p>Factor plan for 21 Regions</p>	<p>Baseline: 0</p> <p>Target: 753</p>	<p>1 - Q1 2022</p> <p>2 - Q2 2026</p>	<p>Microscopy units, high technology (16, 16), 24, 459 Italian population (STAT 01/02/2020) (90,000 inhabitants) estimated for a cost of 1,589,215,036 € (when 2,286,000,730) + € cost of construction for community hospital € 2,286,000 (1,143 square meters surface) + 2,000 (open unit cost per square meter for construction) (03/02/2018) Delegation, n. 4/2019 / G of the structures for community hospital € 2,286,000 (753 € cost of technology)</p> <p>Community Hospital Size: 1,162 sq m = 20 (estimated number of hospital beds) * 57 square meters (surface area per bed) - DPR 14/01/1997</p> <p>Technology cost per community hospital = 4,575,000 (technological component of approximately 15% of Art. 10 Economic State Regions of 28 February 2008 on detailed rules and procedures for the activation of investment health programs through the Program Agreements, whose article 5 bis of Legislative Decree no. 502/1992, as amended) of the investment cost to switch the status of community hospital.</p> <p>1 - Population (ISTAT 01/02/2020)</p> <p>2 - Universities of 2002/2020 (CPIR requirements of Community Hospitals)</p> <p>3 - Requirements structural, technological, and organizational requirements for the services of medical activities by public and private structures</p> <p>4 - DPR 14/01/1997 Requirements structural, technological, and organizational requirements for the activation of investment programs in health care through the program agreements, of which article 5 bis of Legislative Decree n. 502/1992, and subsequent amendments.</p>	<p>Ministry of health</p>	<p>see column 1,2</p> <p>see column 1,2</p>	<p>Complexity of procedures and administrative and organizational structures.</p>	<p>Check of documentation (annexes)</p>
	<p>Component 2 - Health environment and climate</p> <p>Health environment and climate (Community Hospital 1)</p>	<p>1) Establishment, strengthening of centers of excellence at national level and local level with specific skills and competences in health environment.</p> <p>2) Digitization of the SNPA and SNPS networks, including the activation of monitoring data at the local level</p> <p>3) Set up of a School of Occupational Health and Safety for the Departments of Medicine, Public Health and Research</p> <p>4) Establishment of the center for training and research in health environment, including the activation of monitoring data at the local level</p> <p>5) Research activities in health environment</p> <p>6) Development of operational programs for the implementation of integrated models of health promotion, active surveillance and specific, contaminated sites of national interest</p>	<p>SNPA, SNPS renewed structures: 190 of SNPS renewed at multi-regional level</p>	<p>0 - 250% (around 190 structures)</p> <p>0 - 25% (4 structures) (around 190 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p>	<p>Q4 2025</p>	<p>Microscopy units, high technology (16, 16), 24, 459 Italian population (STAT 01/02/2020) (90,000 inhabitants) estimated for a cost of 1,589,215,036 € (when 2,286,000,730) + € cost of construction for community hospital € 2,286,000 (753 € cost of technology)</p> <p>Community Hospital Size: 1,162 sq m = 20 (estimated number of hospital beds) * 57 square meters (surface area per bed) - DPR 14/01/1997</p> <p>Technology cost per community hospital = 4,575,000 (technological component of approximately 15% of Art. 10 Economic State Regions of 28 February 2008 on detailed rules and procedures for the activation of investment health programs through the Program Agreements, whose article 5 bis of Legislative Decree no. 502/1992, as amended) of the investment cost to switch the status of community hospital.</p> <p>1 - Population (ISTAT 01/02/2020)</p> <p>2 - Universities of 2002/2020 (CPIR requirements of Community Hospitals)</p> <p>3 - Requirements structural, technological, and organizational requirements for the services of medical activities by public and private structures</p> <p>4 - DPR 14/01/1997 Requirements structural, technological, and organizational requirements for the activation of investment programs in health care through the program agreements, of which article 5 bis of Legislative Decree n. 502/1992, and subsequent amendments.</p>	<p>Ministry of health</p>	<p>see column 1,2</p> <p>see column 1,2</p>	<p>Complexity of procedures and administrative and organizational structures.</p>
<p>Component 3 - Health environment and climate</p> <p>Health environment and climate (Community Hospital 1)</p>	<p>1) Establishment, strengthening of centers of excellence at national level and local level with specific skills and competences in health environment.</p> <p>2) Digitization of the SNPA and SNPS networks, including the activation of monitoring data at the local level</p> <p>3) Set up of a School of Occupational Health and Safety for the Departments of Medicine, Public Health and Research</p> <p>4) Establishment of the center for training and research in health environment, including the activation of monitoring data at the local level</p> <p>5) Research activities in health environment</p> <p>6) Development of operational programs for the implementation of integrated models of health promotion, active surveillance and specific, contaminated sites of national interest</p>	<p>SNPA, SNPS renewed structures: 190 of SNPS renewed at multi-regional level</p>	<p>0 - 250% (around 190 structures)</p> <p>0 - 25% (4 structures) (around 190 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p>	<p>Q4 2025</p>	<p>Microscopy units, high technology (16, 16), 24, 459 Italian population (STAT 01/02/2020) (90,000 inhabitants) estimated for a cost of 1,589,215,036 € (when 2,286,000,730) + € cost of construction for community hospital € 2,286,000 (753 € cost of technology)</p> <p>Community Hospital Size: 1,162 sq m = 20 (estimated number of hospital beds) * 57 square meters (surface area per bed) - DPR 14/01/1997</p> <p>Technology cost per community hospital = 4,575,000 (technological component of approximately 15% of Art. 10 Economic State Regions of 28 February 2008 on detailed rules and procedures for the activation of investment health programs through the Program Agreements, whose article 5 bis of Legislative Decree no. 502/1992, as amended) of the investment cost to switch the status of community hospital.</p> <p>1 - Population (ISTAT 01/02/2020)</p> <p>2 - Universities of 2002/2020 (CPIR requirements of Community Hospitals)</p> <p>3 - Requirements structural, technological, and organizational requirements for the services of medical activities by public and private structures</p> <p>4 - DPR 14/01/1997 Requirements structural, technological, and organizational requirements for the activation of investment programs in health care through the program agreements, of which article 5 bis of Legislative Decree n. 502/1992, and subsequent amendments.</p>	<p>Ministry of health</p>	<p>see column 1,2</p> <p>see column 1,2</p>	<p>Complexity of procedures and administrative and organizational structures.</p>	<p>Check of documentation (annexes)</p>
	<p>1) Establishment, strengthening of centers of excellence at national level and local level with specific skills and competences in health environment.</p> <p>2) Digitization of the SNPA and SNPS networks, including the activation of monitoring data at the local level</p> <p>3) Set up of a School of Occupational Health and Safety for the Departments of Medicine, Public Health and Research</p> <p>4) Establishment of the center for training and research in health environment, including the activation of monitoring data at the local level</p> <p>5) Research activities in health environment</p> <p>6) Development of operational programs for the implementation of integrated models of health promotion, active surveillance and specific, contaminated sites of national interest</p>	<p>SNPA, SNPS renewed structures: 190 of SNPS renewed at multi-regional level</p>	<p>0 - 250% (around 190 structures)</p> <p>0 - 25% (4 structures) (around 190 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p> <p>0 - 25% (4 structures)</p> <p>0 - 25% (11 structures)</p>	<p>Q4 2025</p>	<p>Microscopy units, high technology (16, 16), 24, 459 Italian population (STAT 01/02/2020) (90,000 inhabitants) estimated for a cost of 1,589,215,036 € (when 2,286,000,730) + € cost of construction for community hospital € 2,286,000 (753 € cost of technology)</p> <p>Community Hospital Size: 1,162 sq m = 20 (estimated number of hospital beds) * 57 square meters (surface area per bed) - DPR 14/01/1997</p> <p>Technology cost per community hospital = 4,575,000 (technological component of approximately 15% of Art. 10 Economic State Regions of 28 February 2008 on detailed rules and procedures for the activation of investment health programs through the Program Agreements, whose article 5 bis of Legislative Decree no. 502/1992, as amended) of the investment cost to switch the status of community hospital.</p> <p>1 - Population (ISTAT 01/02/2020)</p> <p>2 - Universities of 2002/2020 (CPIR requirements of Community Hospitals)</p> <p>3 - Requirements structural, technological, and organizational requirements for the services of medical activities by public and private structures</p> <p>4 - DPR 14/01/1997 Requirements structural, technological, and organizational requirements for the activation of investment programs in health care through the program agreements, of which article 5 bis of Legislative Decree n. 502/1992, and subsequent amendments.</p>	<p>Ministry of health</p>	<p>see column 1,2</p> <p>see column 1,2</p>	<p>Complexity of procedures and administrative and organizational structures.</p>	<p>Check of documentation (annexes)</p>

6. Financing and costs

Estimated cost of the plan													
Component name	Investment/ Reform	Relevant time period	Total estimated costs for which funding from the RRF is requested *	If available: Total estimated cost by year (mn/bn national currency/EUR)						Funding from other sources (as requested by Art. 8 in the Regulation)			COFOG level 2 category / or type of revenue (if relevant,
				2021	2022	2023	2024	2025	2026	from other EU programmes	from the national	Other sources	
NEW ID													
Investment 1 - Technological and digital update													
	Investment 1.1 - Digital update of hospitals' technological equipment	2021-2023	2,000,000,000 €	100,486,625 €	842,393,750 €	1,057,119,625 €	- €	- €	- €				
	Investment 1.2 - Towards a new safe and sustainable hospital	2021-2026	2,300,000,000 €	215,576,560 €	552,809,146 €	552,809,148 €	499,650,615 €	228,820,814 €	250,333,717 €				
	Investment 1.3 - Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level	2021-2026	430,000,000 €	54,294,594 €	90,866,981 €	105,903,166 €	76,981,384 €	45,123,124 €	56,830,750 €				
	Investment 2 - Scientific research and training												
Investment 2 - Scientific research and training													
	Investment 2.1 - Strengthening and enhancement of the NHS biomedical research	2021-2026	200,000,000 €	- €	- €	100,000,000 €	- €	- €	100,000,000 €				
	Investment 2.2 - Innovative ecosystem of Health	2021-2026	100,000,000 €	11,050,000 €	17,600,000 €	17,850,000 €	17,900,000 €	17,925,000 €	17,675,000 €				
	Investment 2.3 - Development of technical-professional, digital and managerial skills of professionals in healthcare system	2021-2026	200,000,000 €	10,442,700 €	40,488,700 €	52,931,200 €	42,488,500 €	32,045,800 €	21,603,100 €				
	Tot	2021-2026	5,230,000,000 €	391,850,479 €	1,544,158,577 €	1,886,613,139 €	637,020,499 €	323,914,738 €	446,442,568 €				

Note: All milestones and targets are relative to the *new funds* - i.e. those 5,320 millions that will add to the funding that was already planned to be devoted to the objectives of this component in the current legislative framework.