



## Mission 6 - Healthcare

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## Mission's main objectives:

To increase effectiveness, efficiency and resilience of the Italian healthcare system



### Territorial prevention and assistance

Strengthen **prevention and territorial assistance** to ensure continuity of care, **multiprofessional and multidisciplinary approaches**, improving the **ability to integrate hospital services** and **local health** services, by enhancing the role of patient



### Consolidate the role of the community

Consolidate the role of the community, through the identification of a facility, the so-called **"Community Health House"**, to enhance the integration between hospital and territory



### Homecare

Enhance home care, especially for vulnerable people and chronic patients, through the development of **remote monitoring techniques**, for example **telemedicine and home automation**



### Equity of access to healthcare services

Overcoming the **fragmentation** and the **structural gap between the various regional health systems** by **ensuring homogeneity in the provision of ELAs** and **equity of access to care** by the whole population



### Health, environment and climate

Boosting the **ability, the effectiveness, resilience and impartiality** of the country in facing current and future health impacts, associated with **environmental and climate risks**, in a **"One-Health" vision**

## Mission's financing snapshot:

### M6 - Healthcare

	Resources (euro/mlt)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
M6C1 Proximity networks, facilities and telemedicine for territorial healthcare assistance	-	7.50	7.50	0.40	7.90
M6C2 Innovation, research and digitalization of national healthcare service	5.28	5.23	10.51	1.31	11.82
<b>TOTAL</b>	<b>5.28</b>	<b>12.37</b>	<b>18.01</b>	<b>1.71</b>	<b>19.72</b>

Note: (b) includes existing resources under national FSC, to be devoted to specific measures.

# 1 M6C1 - Proximity networks, facilities and telemedicine for territorial healthcare assistance

## 1. Description of the component

### Summary box

**Policy area:** Fostering economic and social cohesion in the EU and supporting green and digital transition

**Objectives:** The component aims to boost and align the Italian National Health Service with the communities needs for local care and assistance, also in light of the pandemic emergency, ultimately achieving higher levels of welfare for the citizens, regardless of where they live and their socio-economic conditions.

**Reform:** Proximity networks, facilities and telemedicine for territorial healthcare assistance: systemic and multilayer reform aimed at providing an effective equality in the access to medical services and overcome a sector-based approach to the concept of health, also considering environmental and climatic health determinants and their changes, in synergy with the economic and social development of the country.

**Investment:** Projects aim to enhance territorial healthcare assistance enhancing the role of the patient, integrating care services in a "one health" (holistic) approach focusing on strengthening local healthcare services: investments foreseen include the construction and modernization, both from a technological and an organizational side, of the Italian National Health Service (NHS). All investments are linked to the reform mentioned above.

**Estimated costs:**

EUR 7,500 million to be covered by RRF

## M6C1- Proximity networks, facilities and telemedicine for territorial healthcare assistance

	Risorse (euro/mla)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
<b>1. Proximity networks, facilities and telemedicine for territorial healthcare assistance</b>	-	<b>7.00</b>	<b>7.00</b>	-	<b>7.00</b>
- <i>Community Health House to improve territorial health assistance</i>	-	4.00	4.00	-	4.00
- <i>Homecare as first point of assistance for citizens</i>	-	1.00	1.00	-	1.00
- <i>Strengthening of intermediate healthcare and its facilities</i>	-	2.00	2.00	-	2.00
<b>2. Health, environment, and climate</b>	-	<b>0.50</b>	<b>0.50</b>	<b>0.40</b>	<b>0.90</b>
- <i>Ecologic approach to Public health</i>	-	0.50	0.50	0.40	0.90
<b>TOTAL</b>	-	<b>7.50</b>	<b>7.50</b>	<b>0.40</b>	<b>7.90</b>

## 2. Main challenges and objectives

### a) Main challenges

The Covid-19 pandemic has made clear the universal value of health and its true nature as fundamental public good. The **Italian National Health Service** (NHS) continues to be recognized throughout the world as one of the most efficient systems that, in guaranteeing health as a fundamental right, manages to achieve good results (higher life expectancy at birth and lower mortality values compared to OECD countries averages) and, at the same time, manages to limit health expenditure (3,649 US\$ per capita in 2019, versus 4,223 US\$ OECD countries average). These achievements are the result of a widely offered healthcare, especially through hospitals, high professional competence of health operators and valuable scientific and research outputs, provided by Scientific Hospitalization and Care Institutes “IRCCS” as well as by other NHS entities, such as, for example, University hospitals. During the pandemic emergency, universal health care systems have shown a better resilience capacity that has allowed countries to face the pandemic in a timely manner. The Italian have contributed to shape good practices, that have helped also other countries in facing the emergency.

Nonetheless, the Italian NHS has come to the test of Covid-19 showing elements of relative weakness compared to the main European partners, and the persistence of significant disparities between the Italian regions, which need to be addressed. The Covid-19 emergency has therefore strengthened the need to intervene and to renew some key elements of the Italian NHS, also in consideration of structural (i.e. demographic) and current (i.e. epidemiological) trends. In fact, considering the ongoing increase of the elderly population, the Italian NHS will face an increasing demand for health and more complex needs,

which require an effective response in terms of integrated services provided through the territorial assistance network.

Critical issues emerged can be summarized as follows: (i) an excessive gap between health levels provided by the Italian regions, especially in terms of prevention and territorial assistance and - within these Regions -, the inequality between urban areas and internal areas; (ii) a poor capacity in integrating hospital services, local health services and social services; (iii) a delay in the implementation of local health care services and prevention services, also with significant disparities among Regions, especially in relation to hospital-territory integration; (iv) a poor synergy in the definition of prevention and response strategies of the health service with respect to environmental and climate risks, according to the so-called “One-Health” approach.

In addition, the Covid-19 emergency has highlighted the crucial importance of having technological/digital solutions for public health, strong digital skills and adequate processes for care services. Digital health in the post-emergency phase shall provide an important contribution in the management of public care and assistance processes, e.g. in outpatient services, and in facilitating the communication between healthcare professionals and patients. An important acceleration of investments in digitization of the Italian NHS is therefore necessary, especially in the fields of: telemedicine, management of basic medicine activities, outpatient visits, pre-triage, pre-screening, monitoring of patients treated from home, tele-consultation and digital collaboration between hospitals and healthcare companies for the management of information or between emergency departments, intensive care and infectious diseases and local assistance; patient relationship management capable of informing citizens, especially the fragile categories, detecting their health conditions, communicating with them and managing the territorial and hospital emergency networks. To this end, developing and deploying innovative technologies such as Artificial intelligence, Internet of medicine and big data applications is crucial.

In line with this context, the component contributes to responding to two main challenges:

#### 1. Enhancement of health assistance and territorial healthcare network

- **WHAT:** Fragmentation and disparities of territorial healthcare across the regional systems lead to inhomogeneity in the provision of the so-called “essential levels of assistance” (LEAs), ultimately compromising quality and appropriateness of care services provided. Strengthening and reorganizing primary care, also by leveraging the experience of the pandemic, implies the need to overcome the fragmentation of healthcare responses through the effort to ensure continuity of care, multiprofessional and multidisciplinary approaches, integrated hospital-home pathways, improved clinical governance of care pathways and socio-health integration.
- **WHY:** The analysis of data and information on local healthcare assistance in Italy highlights a very uneven picture between Regions and some widespread structural weaknesses:

- lack of provision of integrated home care services, compared to other OECD countries guaranteeing accessibility to home care (4% elderly patients compared to the OECD average of 6%);
  - lack of homogeneity in terms of mortality among geographical areas (e.g. average death rate - deaths per 1,000 individuals per year - in Italy of 10.5, from P.A. Bolzano 8.3 to Liguria 14.3. The figure is obviously affected by the different demographic distribution of the elderly population among the regions);
  - territorial inequalities in terms of years in good health and quality of life especially in older age (average life expectancy 83 years, from Campania equal to 81.4 to Trento equal to 84);
  - lack of integration between hospital and healthcare territorial services and between health and social services.
- **RECOMMENDATION:** The challenge is also highlighted in the country-specific recommendations and aligns with the European objective to ensure economic, social and territorial cohesion related to - and valid beyond - the Covid-19 emergency (Art. 4(1) of the proposal for a Regulation COM (2020) 408 final). In order to pursue this aim, the component intends to: i) support the economic policy linked to investments in research and innovation and the quality of infrastructures, taking into account regional disparities; ii) improve the efficiency of public administration, in particular by investing in skills of public servants, accelerating digitalization and increasing the efficiency and quality of local public health services (Recommendation no. 3 of COM (2019) 512 final). The proposal also concerns the area of “Health and Prevention”, in line with the Sustainable Development Goals (SDGs), in particular Goal No. 3, of the 2030 Agenda and the public health measures provided for by the Treaties, in particular art. 168.

## 2. Health, environment, and climate: national reform plan and investments in public health for resilience and sustainable recovery

- **WHAT:** The need of preserving citizens’ health against environmental and climatic pollutants, as well as contrasting the impact of environmental changes, prompts to adopt the "One-Health" approach, which embraces both national health and environment and climate prevention systems. This strategy is innovative and fits into the institutional structure of the Italian NHS. It is also consistent with the development outlined for the Italian NHS with the aim to achieve international organizations’ targets. Implementing the holistic “One Health” approach allows for a stronger leadership in the healthcare sector promoting healthier, safer, and more accessible facilities.
- **WHY:** Data and information available show an urgent need to address the current fragmentation of interventions meant to guarantee a cohesive approach across the Healthcare, Environment and Climate sectors. Italy has faced many environmental crises and climatic emergencies over the years, often resulting in health emergen-

cies, highlighting critical serious issues in prevention actions. The socio-sanitary relevance of environmental determinants is exemplified by data on air pollution that place Italy among the most critical European areas (about 30 thousand deaths per year due to fine particulate matter, which represent 7% of all deaths - excluding accidents). It is widely recognized the role of environmental determinants as risk factors for pathologies that represent the majority of morbidity and mortality in European countries (tumors, metabolic syndrome, neurological and reproductive pathologies) and for rarer but of absolute importance pathologies such as congenital anomalies (5-6% of children in the first year of life in Italy). The poor capacity, dynamism and resilience of the Italian NHS in the proactive assessment of the impacts of environmental exposures and climate change on health - in a country located in the Mediterranean area that is among the most fragile with respect to climate change, seismic risks and hydro-geological instability - is related to a limited interdisciplinary and intersectoral culture - from governance, to management, to public health professionals, to risk assessment.

- **RECOMMENDATION:** A new institutional and systemic strategy and organization, functional to manage the health-environment-climate matter, is necessary to ensure the compliance of the Country towards international organizations' targets, and in particular: a) the Global Action Plan for the Prevention and Control of NCDs 2013-2020 by the WHO; b) the Sustainable Development Goals of the UN 2030 Agenda; c) the indications of the Sixth Ministerial Conference on Environment and Health of the Ministers of the WHO European Region in Ostrava in June 2017, aimed at ensuring "better health, a healthier environment and sustainable choices". At the same time, in line with the European recommendation on the Italian reform program [20.5.2020 COM (2020) 512 final] and with the other relaunch and resilience guidelines [including EU Public Health Policy - PE 652.027 - July 2020, Brussels, 27.5.2020 COM (2020) 456], it is necessary for the Country to strengthen the resilience of healthcare and environmental policies and institutions, enhancing their human, cultural and instrumental capital, guaranteeing the effectiveness of health promotion in synergy with other reform programs (first of all, the green and digital transition), taking into account the potential impacts of post-Covid-19 growth on the environment and health, also in light of the ongoing climate change.

## **b) Objectives**

In light of the above-mentioned challenges, this component aims to enhance health assistance and territorial health network, improving the quality and sustainability of home care, community-based care and long-term care aiming to ensure better assistance levels throughout the whole country. To this end, the component also aims at addressing the fragmentation and lack of homogeneity of healthcare services offered in the different Italian regions, in line with the 2019 and 2020 EC country-specific recommendations and the strategic objectives set at national level. Finally, this component aims at applying

holistic approaches in planning and managing social and health services and environment, climate and health prevention. More specifically:

- consolidate the role of the local healthcare District<sup>1</sup> in planning of actions, of primary and secondary prevention in the health and social field, as well as in rehabilitation through the preparation and governance of treatment paths;
- consolidate the role of the community, through the identification of a facility, the so-called “Community Health House”, making it a local reference point for social and health matters for individuals. This place shall guarantee care of chronic patients, which is one of the greatest challenges for health and social systems in an ageing population;
- implement processes for assessing the needs of the population by level of complexity through the strengthening of socio-health single access points (“punti unici di accesso” - PUA) and multidimensional assessment units (“unità di valutazione multidimensionale” - UVMD);
- enhance home care, especially for vulnerable and disabled people, through the development of remote monitoring techniques and home automation;
- enhance the health workers’ professional skills, also in the domain of new technologies;
- ensure the proactivity of healthcare services in the field of public hygiene as a means to guarantee the health of the population, by strengthening the planning, monitoring and coordination of interventions, as well as ensuring adequate technological supply;
- design and implement at national level a strategic investment plan aimed at creating a national system for the prevention of health with respect to environmental and climatic determinants according to the holistic "One-Health" approach;
- increase the provision of essential levels of assistance (“Livelli Essenziali di Assistenza”, LEA) by improving the results of the core and non-core indicators contained in the New Guarantee System (“Nuovo Sistema di Garanzia”) of the Italian Ministry of Health.

### c) National strategic context

The component-related set of investments falls within the Italian 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 Eu-

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<sup>1</sup> In Italy, the *Azienda Sanitaria Locale* (ASL) is the local health authority that has to plan and organize the health and medical assistance for the population that lives in its territorial area, supplying diagnosis and treatments by public and/or private providers. The ASLs are divided in *Distretti* (“Health” or “Social Health” Districts) that plan the territorial medical assistance, coordinating the general practitioners’ activities with the other health structures on their territory, and supplying some health services (mental health, drug addiction, service for people with disabilities and others). These Districts thus play a key role in establishing the range of services to be provided and in guiding the different players involved in disease prevention, health promotion, social and disability services.

ropean programming. These investments are also part of the Italian national strategic health plan which is going to be defined by the Italian Ministry of Health, in collaboration with other Italian public administrations. Furthermore, the component is consistent with the Italian national energy and climate plan, pursuant to Regulation (EU) 2018/1999, as well as with the territorial plans for a transition under the Just Transition Fund, with partnership agreements and operational programs based on EU funds, as well as with the contents of the White Paper on artificial intelligence - an European approach to excellence and trust from the European Commission (dated 19/02/2020). The program, with an interdisciplinary value, also has a role in contributing to achieve the objectives set out in the European Green Deal.

Furthermore, in May 2020, the Italian Government approved the Decree no. 34 (the so-called “Decreto Rilancio”, or “Relaunch Decree”), which introduced urgent measures to support families and businesses to recover from the economic consequences of the Covid-19 emergency, while confirming the effort to guarantee everyone’s health and safety.

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 a 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) Reform projects

**Reform 1.1:** Definition of organisational and technological standard for Territorial healthcare assistance and its facilities and Define a new institutional structure of Health-Environment-Climate prevention (under Health “Reform Proximity networks, facilities and telemedicine for territorial healthcare assistance”).

**Challenges and Objectives:** The reform, as a preparatory element for the interventions of the Component, intends to:

- Establish a new model of territorial healthcare assistance, which has to be close to citizens’ needs, granting the population with effective equity of access to healthcare and social services, through the definition of homogeneous qualitative and quantitative standards, the strengthening of the network of district services, as well as through the consolidation of the hospital and the emergency network integrated within it.

The reform pursues the redefinition of services to guarantee that healthcare territorial services could be increasingly close to the needs of people (including those who

live in rural or disadvantaged areas), capable of enhancing the peculiarities of the various communities (territorial, professional and scientific).

Through this reform and its related investments, the Italian NHS gives continuity and further enhances the actions and programs aimed at strengthening the coordination between the national and regional level able to ensure uniform “Essential levels of assistance” (LEA) throughout the national territory, contrasting regional variability and high mobility rates between the northern and southern regions. The Ministerial Decree 70/2015, which governs the reorganization of the hospital network, has launched a gradual modernization of the hospital system by improving the governance of the NHS in terms of the quality of assistance and the organization of health services, through the definition of qualitative, structural, technological and quantitative standards relating to hospital care and the emergency network.

In addition to contributing to the achievement of these objectives, the Reform will also make it possible to strengthen the territorial network and ensure greater proximity to the citizen, to better distribute care activities while avoiding overloading the hospital network. Ensuring greater integration between hospital and local facilities is indeed a crucial element to provide a better access to care and a uniform level of provision of the “Essential Levels of Assistance” (LEA) at national level.

Actions:

- definition of a new organizational model of Territorial healthcare assistance network, through the definition of a regulatory which identifies structural, technological and organizational standards;
- enhancement of health know-how through the professional skills updating of health staff, with respect to digital education and dissemination of organizational reform;
- Define a new institutional structure of Health-Environment-Climate prevention, according to the “One-Health” approach, in order to promote human health keeping in due consideration environmental and climatic health determinants and their changes, in synergy with economic and social development of the Country.

The reform is intended to define a new strategy as well as a new institutional and systemic organization, in synergy with economic development, necessary to allow the Country to meet international organizations’ targets; this will allow to promote interventions to ensure healthy, safe and accessible environments. In fact, changes in cultural, structural and technical-scientific at the level of governance and support of “territorial” medicine are needed, including aspects of regulation, research, control, consultancy and training. This to ensure: i) the enhancement of resources (infrastructural, structural, instrumental, human) essential to increase effectiveness of prevention, surveillance and response to health-environment-climate emergencies in the Country through science-based solutions; ii) the updating of actions for the prevention and response to communicable and non-communicable diseases according to WHO, international and European guidelines; iii) health promotion in synergy with environmental protection, intersectionality and inclusion of social and

economic dimensions to support sustainable development uniformly throughout the Country.

**Implementation:** This reform will be implemented through the following key activities: This reform will be implemented through the following key activities:

- establishment of a National Health-Environment-Climate Prevention System (SNPS) with a dedicated regulatory framework;
- creation of new specific health professional categories;
- proposal for revision of sector regulations and environmental legislation.

The reform also plans to improve the relationship between Healthcare and Scientific Research, as detailed in the Component Innovation, research and digitalization of national healthcare.

**Target population:** Text... .

**Timeline:** Text... .

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## 2) Investment Projects

**Investment 1.1:** Community Health House to improve territorial health assistance.

**Challenges:** Chronic diseases in 2019 affected almost 40% of the Italian population - i.e. 24 million people - of which 12.5 million have multi-chronicity, for a healthcare expenditure of nearly 67 billion euro. The, amount of chronically ill patients is also in progressive growth, with an impact on the future need to commit health, economic and social resources. Furthermore, according to data of the Italian National Institute of Statistics (Istat), there are 3.1 million people with disabilities in the Country, i.e. 5.2% of the Italian population. Of these, almost 1.5 million are over 75 years old (i.e. more than 20% of the population in that age group). In addition, Italy has the highest share of elder population compared to the EU average - approximately 23.2% of the population is over 65 years old and 3.6% over the age of 80 (Istat) - and life expectancy at birth is among the highest in the world<sup>2</sup>, which results into an overall old and ageing population and a long-term pressure on the NHS to be addressed.

The presence, in this context, of uncoordinated health and social assistance interventions in the territory, the slow increase of local healthcare facilities across the regions and/or the slow increase of the services offered in non-hospital facilities, are a cause of organizational

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<sup>2</sup> Statistics may differ depending on the organisation or institute collecting and analysing them. According to OECD, Italy ranks fourth, with an overall expectancy at birth of 83.4 years (OECD (2020), Life expectancy at birth (indicator). doi: 10.1787/27e0fc9d-en - accessed on 26 November 2020).

inefficiency and hampers the quality of the service provided and perceived by the citizens. This issue has been particularly highlighted by the Covid-19 emergency, and it is now clear that there is the need for geographically widespread facilities, in order to avoid excessive use of hospital care, especially for non-urgent treatments that cannot be postponed.

**Objectives:** The Community Health House is an organizational solution that has the function of primary care hub and follows a model of delivery and use of services by promoting the proximity of the facilities to the local community, being able to filter access to acute care facilities and to coordinate and integrate all care services for chronic patients already present in the area (e.g. a slight malaise or a small accident, the need for various tests such as non-communicable diseases, difficulty in managing a family situation and the need to find someone who takes care of the person, etc).

In particular, it is important to underline that it acts as a citizen's "single point of access" to health services and that, therefore, it develops and manages a single health database for each citizen, aiming at guaranteeing equal treatment in care and access to such facilities for all residents in the Country.

In the Community Health House, citizens can:

- consult a general practitioner and a nurse throughout the day;
- consult a health professional who welcomes citizen's requests, guides the citizen to services and takes care of activating proper health paths;
- solve adequately most of citizen's problems in a single location;
- manage chronic diseases through shared and supervised care pathways.

More specifically, the investment's objective is the following:

- **activation of 2,575 Community Health Houses** - in order to ensure equity of access, territorial proximity and quality of care to people regardless of age and their clinical picture (chronically ill patients, non-self-sufficient people needing long-term care, people with disability, mental distress, poverty), through the activation, development and aggregation of primary care services, and implementing assistance delivery centers (energy efficient) for a multi-professional response.

The investment aims at integrating social and health care services for a global care of the person in the Community Health Houses in order to improve care service of chronically ill patients and the most vulnerable population categories, such as people with disabilities. More extensive and inclusive home and community-based care and long-term care is key to provide support to people with disabilities and other disadvantaged groups, as also mentioned in the 2019 country-specific recommendations.

**Implementation:** The Italian Ministry of Health will be responsible for the planning, execution, management and monitoring of the component as a whole. In relation to the actions that present a concurrence of competences of other public administrations

(e.g. Regions), coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

**Stakeholder involvement:** Italian Ministry of Health and other Italian Ministries, Italian National Agency for Regional Health Services (Agenas), Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Italian Regions, local health units (Aziende Sanitarie Locali - ASL).

**Target population:** This investment targets the entire population.

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

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**Investment 1.2:** Homecare as first point of assistance for citizens.

**Challenges:** As mentioned in the 2019 country-specific recommendations, more home and community-based care and long-term care are crucial in providing support to people with disabilities and other disadvantaged groups. Strengthening home care is one of the main challenges of the Italian NHS. Indeed, as provided for in the Decree of the President of the Council of Ministers of 12 January 2017 and in 2016 National Chronicity Plan (Piano Nazionale della Cronicità, 2016), home must be the preferred care setting when health, housing and family conditions permit. As of today, integrated home care is mainly provided to people aged over 65 (83.7% of cases). With the Relaunch Decree n. 34, dated 19 May 2020, Italy has already intended to strengthen integrated home care, aiming to increase the current 4% of patients aged over 65 to be assisted from home up to 6.7%. This goal takes into consideration the OECD average value (6%) and some particularly virtuous examples in Europe, such as Sweden, at 10.9%, Germany, at 9.5% and Spain, at 7.1%. In addition, the aim is to mend the fragmentation and the lack of homogeneity of home services offered throughout the Country.

**Objectives:** The goal is to enhance the home healthcare offer by engaging 282,425 people. The investment aims to strengthen the resilience and the ability of the Italian NHS to manage processes related to integrated home care, going beyond the objectives set in the above-mentioned Relaunch.

To achieve this objective the investment is composed by following lines:

- implementation of 575 Coordination centers for homecare;
- provision of technologic devices to home care professionals;
- provision of telemedicine technologies to vulnerable patients, cared for home;
- enhance digital and technological solutions of the local healthcare unit (ASL) in

order to connect data and clinical information.

The Decree n. 34/2020, in line with the recommendations of the Council on PNR 2020 and with the 2019 country-specific recommendations, in the context of strengthening the NHS in relation to the Covid-19 emergency, provided for an increase in the staff necessary to ensure the provision of essential levels of assistance, especially in the area of the homecare. The adoption of advanced ICT tools and the development of an artificial intelligence model aim at streamlining the communication systems between the various parties involved, thus allowing simplification of existing information flows and providing a contribution to operators in the provision of care and assistance and to decision makers in the governance and planning of services. In particular, the investment aims to promote continued and continuous home care of the patient throughout the Country, implementing the services provided for all “vulnerable individuals”, pursuant to art. 1, paragraph 4, of the Decree n. 34/2020, with particular attention to the various aspects related to chronicity.

Thus, the intervention intends to strengthen this type of care and shall reorganize and re-engineer processes also through the development of innovative digital solutions to address artificial intelligence and telemedicine. The ability of connecting the patient’s residence with the healthcare environment can generate direct benefits for the patients and their families, who will be able to interact with healthcare professionals directly from their own homes, obtaining precise and targeted indications on care, thus contributing to the constant monitoring of their health.

***Implementation:*** The Italian Ministry of Health will be responsible for the planning, execution, management and monitoring of the component as a whole. In relation to the actions that present a concurrence of competences of other public administrations (e.g. Regions), coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

***Stakeholder involvement:*** Italian Ministry of Health and other Italian Ministries, Italian National Agency for Regional Health Services (Agenas), Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Italian Regions, local health units (Aziende Sanitarie Locali - ASL), businesses.

***Target population:*** This investment mainly targets the over-65 aged population segment, i.e. around 14 million people in the Country.

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

**Investment 1.3:** Strengthening of Intermediate healthcare and its facilities (Community hospital).

**Challenges:** The adverse effect of the lack of complete implementation and fragmentation of local health services, along with the consequent integration between territorial and hospital services, is one of the main challenges that the Italian NHS currently faces. In particular, the difficulties of citizens in finding answers to their health needs locally generate important inefficiencies every year with repercussions also on safety and quality of services provided. The not sufficient level of territorial healthcare facilities negatively impacts the quality perceived by citizens of the NHS, and it can generate stress and a sense of abandonment, especially in most vulnerable individuals and people living in disadvantaged areas.

**Objectives:** The general objective of the investment is to ensure the creation of 753 Community hospital. These facilities have a crucial function between patients, home and hospitalization. This intervention shall take place in the context of the general improvement of the primary care system in order to personalize local assistance, avoiding, if possible, the psychological distress of a hospitalization, especially for the most vulnerable individuals.

This temporary hospitalization is intended to reduce hospitalization for people with acute or chronic diseases, as it would be dedicated to people who need continuous nursing and medical assistance. Patients may come from home or other residential facilities, from the emergency room or discharged from acute care hospitals.

Furthermore, this will foster the pertinence of hospital services by providing an alternative to improper access to the emergency room, especially for those who need health surveillance, but with already defined diagnosis. Finally, this will facilitate discharge by providing the family and local services with the time necessary to adapt the home environments to the needs that may have emerged, safeguarding the social costs and the income capacity of families.

**Implementation:** The Italian Ministry of Health will be responsible for the planning, execution, management and monitoring of the component as a whole. In relation to the actions that present a concurrence of competences of other public administrations (e.g. Regions), coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

**Stakeholder involvement:** Italian Ministry of Health and other Italian Ministries, Italian National Agency for Regional Health Services (Agenas), Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Italian Regions, local health units (Aziende

Sanitarie Locali - ASL).

**Target population:** Entire population.

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

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**Investment 2.1:** Health, environment, and climate: national reform plan and investments in public health for resilience and sustainable recovery.

**Challenges:** During the Italian Presidency of 2017 G7-Health, the impacts of climate and environmental factors on health have been set as the health priority of this century. In Italy, the balance and the sustainability of the economic development of many sectors with respect to the environment and to health has been critical, as highlighted by recent data: many areas of the Country suffered a significant contamination, such as to require remediation interventions. In 58 of these contaminated areas, inhabited by about 6 million people (10% of the national population), the extent of the contamination required the rise of these areas to sites of national interest; out of these 58 National interest sites, 45 has shown a 9% increase in malignant tumors in the younger population and a mortality rate greater by 4-5% compared to those who live in no-risk areas, with an expected scenario of greater criticality in the future. Environmental crises with health impacts are exacerbated in contexts of severe and widespread earthquake, hydro-geological and climatic fragility extended to the entire National territory. As recently analysed in the WHO-UNCCC Climate and Health Country Profile, Italy shows large inefficiencies in policies and institutional actions at central and local level aiming at prevention and promotion of health.

**Objectives:** Boosting ability, effectiveness, resilience and impartiality of the Country in facing current and future health impacts, associated with environmental and climate risks, in a “One-Health” vision, through the implementation/adaptation of about 190 (> 50%) reference structures of the national network of the national health-environment-climate prevention system.

*One-Health* is a collaborative, multidisciplinary, intersectoral and coordinated approach to address potential or occurred risks that come from the interaction between the environment-pollution-human ecosystems.

**Implementation:** The Italian Ministry of Health will be responsible for the planning, execution, management and monitoring of the component as a whole. In relation to the actions that present a concurrence of competences of other public administrations (e.g. Regions), coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo) with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. This approach

will be able to save time and simplify procedures - including authorisation procedures - where accompanied by the activation of service conferences (“conferenze di servizi”).

**Stakeholder involvement:** Italian Ministry of Health and other Italian Ministries, Italian National Agency for Regional Health Services (Agenas), Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Italian Regions, local health units (Aziende Sanitarie Locali - ASL).

**Target population:** Entire population.

**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** by:

- improving of technological efficiency by enhancing all forms of innovation and optimization of production processes;
- providing a more efficient care service, which reduces the needs for travels to hospitals - which is cause to pollution generated by transport means - in favour of a local and home-driven approach;
- supporting energy efficiency renovation of the infrastructures and equipment;
- supporting risk prevention models and the management of both climate and non-climate related natural risks or risks linked to human activities, such as pandemic crisis.

### b) Digital Transition:

The Project generally contributes to the development of the **digital transition** by:

- strengthening of digital capabilities and implementing of advanced technologies in hospitals, consistent with the Integrated National Plan for Energy and Climate;
- fostering a deep technological evolution of communication and data transmission systems from territorial units to hospital or territorial competent structures with large benefits on the appropriateness of the health services provided;
- strengthening the digitization of care by promoting the diffusion of care devices in connection with each other, especially for professionals and disadvantaged people in the field of telemedicine;
- redefining operational methodologies within the Italian NHS using digital technologies and robotics strategic elements, ensuring monitoring and remote assistance, integrating research activities with care activities.

Specifically, the investments address the following elements:

- **Home as the place of first care:** it sustains the development of the digital transition by involving investments in the implementation of artificial intelligence systems that, through big data and machine learning, will provide support to operators, decision makers and will enable patients to receive the necessary treatments in a timely manner. With respect to the green transition, the project will allow to keep patients at home, limiting their transfers of those of their families. In addition, transfers of caregivers will also be limited to cases of necessity. Better home care optimizes the consumption of drugs and disposable medical devices, through increasingly personalized and flexible plans.

<b>TABLE 1 - Green and digital impact</b>					
	<b>Digital</b>		<b>Green</b>		
	<b>Intervention Field Tag</b>	<b>%</b>	<b>Intervention Field Tag</b>	<b>Climate</b>	<b>Environmental</b>
			<b>%</b>	<b>%</b>	<b>%</b>
<b>M6C1: Investment 1: Enhancement of health assistance and territorial healthcare network,</b>					
<i>1.1 - Community Health House to improve territorial health assistance</i>	<i>na</i>	<i>0%</i>	<i>na</i>	<i>0%</i>	<i>0%</i>
<i>1.2 - Homecare as first point of assistance for citizens</i>	<i>013 e-Health services and applications (including e-Care, Internet of Things for physical activity and ambient assisted</i>	<i>100%</i>	<i>na</i>	<i>0%</i>	<i>0%</i>
<i>1.3 - Strengthening of Intermediate healthcare and its facilities ("Community hospital")</i>	<i>na</i>	<i>0%</i>	<i>na</i>	<i>0%</i>	<i>0%</i>
<b>M6C1: Investment 2: Health, environment and Climate</b>					
<i>2.1 - Health, environment and climate: development of an ecological public health model</i>	<i>na</i>	<i>0%</i>	<i>na</i>	<i>0%</i>	<i>0%</i>

## 5. Milestones, targets and timeline

### 1) REFORM

**Reform 1:** Definition of organizational and technological standard for Territorial healthcare assistance and its facilities” and “Definition of a new institutional structure of Health-Environment-Climate prevention” (under Health “Reform Proximity networks, facilities and telemedicine for territorial healthcare assistance”):

- definition of a new organizational model of the local network through the identification of structural standards, technological and organizational;
- development of human capital through the professional development of direct digital education of health personnel and disclosure of organizational reform.

**Define a new institutional structure of Health-Environment-Climate prevention:**

- establishment of the National Prevention System Health-Environment-Climate (SNPS) and related regional articulations;
- establishment of new health professionals specifically dedicated to health-environment - climate issues and the definition of the relevant curriculum;
- proposed revision of industry standards and environmental legislation, including the Decree. April 3, 2006, n. 152 for alignment with the new management system.

### 2) INVESTMENT

**Investment 1.1:** Community Health House to improve territorial health assistance:

- survey and identification of the existing Community Houses to be restored, converted and built from scratch by Q1 2022;
- implementation of the interventions and activation of 2.575 Community Houses by Q2 2026.

**Investment 1.2:** Home-care as first point of assistance for citizens:

- designing of 1 digital model ADI following an analysis of national and international best practices on the application of Artificial Intelligence by Q2 2022;
- development of the digital model of ADI by Q4 2023;
- implementation of 575 infrastructures related to ADI by Q2 2024;
- model implementation identified for ADI's Health workers by Q2 2026;
- supply of telemedicine for ADI patients for ADI by Q2 2026.

**Investment 1.3:** Strengthening of Intermediate healthcare and its facilities (“Community hospital”):

- recognition and identification of existing structures to be restored, to be converted and to be realized ex novo by Q1 2022;
- realization and / or adaptation of structures as community hospitals by Q2 2026.

**Investment 2.1:** Health, environment, and climate: national reform plan and investments in public health for resilience and sustainable recovery:

- establishment / strengthening of centers of excellence at National level;
- creation / strengthening of local structures of SNPS-SNPA networks and of eventual other public research institutions by Q4 2022;
- establishment / strengthening of regional and local hubs with specific skills and responsibilities in health-environment-climate by Q4 2025;
- digitisation of the SNPA and SNPS networks, including the digitisation of networks of environmental and health monitoring data at the local level by Q4 2025;
- set up of a School of Specialization in Health-Environment and Climate at the Departments of Medicine prior agreement with Italian Ministry of University and Research by Q4 2025;
- establishment of the center for training and update in Health-Environment / Climate; distance learning courses by Q4 2025;
- three-year national and multidisciplinary research calls in health-environment-climate by Q4 2025;
- strengthening of regional health facilities, hospitals, IRCSS and other research organizations, for the development of integrated interventions in health promotion, active surveillance and health care and participative communication systems of the communities by Q2 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						
<b>COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance</b>												
<b>Investment 1.1 - Enhancement of health assistance and territorial healthcare network</b>												
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.										
Investment 1.2 - Homecare as first point of assistance for citizens		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 = (272,592 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 09.03.2016, n. 4/2016 / G of the Court of Auditors)  Technology Cost: Technology Fee for Community House € 272,592 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.  € 80,592.00 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 € 299 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. 4/2016 / G of the Court of Auditors 4. Art. 10 of the State-Regions of 28 February 2008 in 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 no. 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 Services - ID 1213 - Economic Offer - Part B Amount 4,000,000,000 €		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 30%. 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 90%. 2d By June 2026 it is expected to conclude the activation and adaptation of the 4820 Community Houses.										
Investment 1.2 - Homecare as first point of assistance for citizens		a1 - Designing the integrated home care (ADI) 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 (ADI) 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 = 33,647,856 € 339,887 € x 99 ASL (60,244.639/99)= 608,531 inhab national minimum standard) for 97 licenses / ASL = 2620,03226 € 25,160,148 € (license unit cost, CONSIP 2012) X 9,603 = 215 licenses 2,055,125 € + € 05,376 (unit cost of installation and start-up, CONSIP 2012) X 9,603 licenses = € 2,381,388 = 268,8172 € (unit cost of data migration, CONSIP 2012) X 9,603 = 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 (ADI)		Number of integrated home care (ADI) coordination centres	0	575	Q2 2024	Methodology Cost of ADI coordinating centers to be realized: € 194,000,000 = 575 X 1,600 central € (unit cost per sqm for construction, 03/09/2016 Deliberation, n. 4/2016 / G of the Corte dei Conti) X 200 sqm (DPR 14.01.1997) 575 centres: 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 5 bis 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. 4/2016 / 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 (ADI) model		Number of integrated home care (ADI) professionals equipped with relevant technologies	0	51,750	Q2 2026	Methodology Technology Cost: € 189,094,500 135,585,000 = € (license fee) + € 11,126,250 (cost for installation and start-up) + € 13,200,750 (cost for data migration) 28462500 + (for operator training costs ) 135,585,000 € = 2620,03226 € (united license fees, 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 € = 215,0376 (unit cost of installation and start-up, CONSIP 2012) X 51,750 licenses 13,200,750 € = 268,8172 € (unit cost data migration, CONSIP 2012) X 51,750 licenses 28,462,500 € = 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		
Investment 1.2 - Homecare as first point of assistance for citizens		b3 - provision of telemedicine technologies to patients cared for through integrated home care (ADI)		Number of patients cared for (PIC)	0	282,425	Q2 2026	Methodology Cost of Technology: € 2000 technical package cost per patient x 282,425 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. DGR Lombardia (TRD) 2. SIAO Flavia 2019 Amount		see column n.2		



## 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, e.g. tax expenditure)
				2021	2022	2023	2024	2025	2026	from other EU	from	Othe	
COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance													
Investment 1 - Enhancement of health assistance and territorial healthcare network													
Investment 1.2 - Homecare as first point of assistance for citizens	a2	2021-2023	34,455,500 €	477,300 €	10,416,200 €	23,562,000 €							
	b1	2022-2024	211,600,000 €		52,900,000 €	105,800,000 €	52,900,000 €						
	b2	2024-2026	189,094,500 €			75,637,800 €	75,637,800 €	37,818,900 €					
	b3	2024-2026	564,850,000 €			225,940,000 €	225,940,000 €	112,970,000 €					
Investment 1.1 - Community Health House to improve territorial health assistance	2	2023-2026	4,000,000,000 €	1,660,480 €	415,120 €	1,199,377,320 €	1,199,377,320 €	1,199,377,320 €	399,792,440 €				
Investment 1.3 - Strengthening of intermediate healthcare and its facilities ("Community hospital")	a2	2023-2026	2,000,000,000 €	628,000 €	157,000 €	599,764,500 €	599,764,500 €	599,764,500 €	199,921,500 €				
Investment 2 - Health, environment and Climate													
Investment 2.1 - Health, environment and climate: development of an ecological public health model	a1	2021-2025	450,498,950 €	41,586,274 €	115,688,359 €	138,481,496 €	113,156,548 €	41,586,274 €					
	b1	2021-2026	49,501,050 €	9,900,210 €	12,400,315 €	12,400,315 €	7,400,105 €	4,950,105 €	2,450,000 €				
<b>Total</b>		<b>2021-2026</b>	<b>7,500,000,000 €</b>	<b>54,252,264 €</b>	<b>191,976,994 €</b>	<b>2,079,385,631 €</b>	<b>2,274,176,273 €</b>	<b>2,147,255,999 €</b>	<b>752,952,840 €</b>				

## 2 M6C2 - Innovation, research and digitalisation of national healthcare service

### 1. Description of the component

#### Summary box

**Policy area:** (i) promote the economic, social and territorial cohesion of the Union; (ii) strengthen economic and social resilience; (iii) mitigate the social and economic impact of the crisis; (iv) support the digital transition.

**Objectives:** The component aims to ensure the necessary enabling and transversal conditions to ensure greater resilience of the healthcare service through: (i) the promotion and strengthening of the scientific research sector, giving priority to the creation of clinical-transnational networks of excellence and being oriented towards prevention; (ii) the strengthening of health information systems and digital tools at all levels of the national health care service; the enhancement of human resources, through the modernisation of training tools and contents and the development of professional skills; (iii) the development of a significant structural improvement in the safety of hospital structures and alignment with the current anti-seismic standards; (iv) replace obsolete healthcare technologies in hospitals, reaching higher standards of efficiency and effectiveness in the clinical path.

**Reforms:** Reorganize the network of Scientific Hospitalization and Care Institutes (IRCCS) to improve NHS quality and excellence: concerning an update of the national regulations by introducing the necessary rules to review the legal regime of the IRCCS and the research policies related to the Ministry of Health; to support research and strengthen the responsiveness of the NHS to health emergencies, the epidemiological transition and the health needs related to the demographic framework, as well as guaranteeing clear paths that regulate the relations between the national healthcare service and the University, in order to guarantee a greater integration in compliance with the competences of the Ministry of Education, University and Research, the Ministry of Health, Regions and Bodies of the NHS;

**Investments:** The planned investments concern the development, strengthening and modernization, both in technological, structural and infra-structural terms, of the national healthcare service and the Research sector. All investments are linked to the reform mentioned above;

**Estimated costs:**

EUR 10,510 million to be covered by RRF, of which 5,230 million in new projects

**M6C2 - Innovation, research and digitalization of national healthcare service**

	Risorse (euro/mld)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
<b>Technological and digital update</b>	<b>5.28</b>	<b>4.73</b>	<b>10.01</b>	-	<b>10.01</b>
- <i>Digital update of the hospital technology park</i>	1.41	2.00	3.41	-	3.41
- <i>Hospitals</i>	3.30	2.30	5.60	-	5.60
- <i>Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level</i>	0.57	0.43	1.00	-	1.00
<b>Scientific research, technological transfer and training</b>	-	<b>0.50</b>	<b>0.50</b>	<b>1.31</b>	<b>1.81</b>
- <i>Strengthening and enhancement of the NHS biomedical research</i>	-	0.20	0.20	-	0.20
- <i>Health innovation ecosystem</i>	-	0.10	0.10	-	0.10
- <i>Development of technical, digital and managerial skills of professionals in the healthcare system</i>	-	0.20	0.20	1.31	1.51
<b>TOTAL</b>	<b>5.28</b>	<b>5.23</b>	<b>10.51</b>	<b>1.31</b>	<b>11.82</b>

## 2. Main challenges and objectives

### a) Main challenges

The component “Innovation, research and digitalization of the national healthcare” stems out from the need to intervene in the process of transformation and renewal of the current Italian national health service, promoting the creation of a modern and digitally-oriented offer, able to enhance the quality of care and the response to the health needs of citizens.

The Covid-19 emergency has highlighted some structural weakness of the Italian healthcare system. The response of the healthcare system to the development of the pandemic has been hampered by deficiencies in the supply of adequate medical and health devices, the availability of staff, the provision of infrastructure and of technological and digital equipment.

The Italian Government focused its effort on overcoming the short-term COVID-19 emergency and, together with this, on ensuring a responsive health and care system, able to respond to the needs of the evolving society and overcome the challenges that prevent it from serving the population's needs most effectively and efficiently. To this aim, the national strategies and agenda are perfectly aligned with the priorities set by the EU in terms of digitalisation - in particular concerning the services provided by the public administration and the specific needs of the healthcare system - which require particular attention in ensuring that adequate supply of services is provided through efficient means. Leveraging the innovation and digitalisation of the health and care system - in particular in response to the challenges of the ageing population - and investing in enhancing the training and availability of health workers and medical infrastructure is indeed of primary importance.<sup>3,4</sup>

On the other hand, the Italian research sector need more funding in order to ensure more coordination and up-to-date improvement of the healthcare service offering. Biomedical research is particularly affected compared to other international practices. The development of transnational clinical networks of excellence would enable the sharing of the geographically-dispersed competences, creation of synergies and, ultimately ensure efficiency and effectiveness in developing the biomedical products supporting the health and care of the population.

Research is an essential item, as it ensures the improvement of the care of the sick, in addition to the development and evaluation of organisational-management methods to increase the efficiency of the NHS. The lessons learned during the Covid-19 emergency show that a new and suitable way to meet needs and contingencies must be identified to establish lasting, transparent and mutually profitable relations between Public action and the action of Private Operators. All this falls within the scope of a sector that has to be considered absolutely “strategic” and where the lead of the central administration is essential. The main challenge in this area concerns the ability to define a new sectoral planning policy approach to combine public interventions in relation to healthcare with the needs and potential of the supply chain as a whole, as well as support the private initiatives in a logic of sustainable and lasting partnerships. It is essential for the Country to equip itself with national research and innovation programs, containing development guidelines to direct the growth of the national ecosystem, and that these are supported by a strategic, unitary and integrated medium-long term vision.

The modernisation and digitisation process is one of the most relevant challenges of the National Health System and, for this reason it requires the continuous update of the

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<sup>3</sup> OECD (2019) *State of Health in the EU - Italy Country Health Profile 2019*. European Commission (2019) *Joint Report on Health Care and Long-Term Care Systems & Fiscal Sustainability*, Institutional Paper 105, June 2019 ISSN 2443-8014 (online); see also: *Country Document - 2019 update for Italy*.

<sup>4</sup> European Commission Recommendation for a Council recommendation on the 2020 National Reform Programme of Italy COM(2020) 512 final.

clinical and assistance skills of health and social-health personnel, balancing the need for highly specialized skills with the need for a high level of integration between operators in the general system of health services. In particular, in line with the need to upgrade and modernise the territorial network as well as the hospital one, it will be essential to focus on training of key figures such as the General Practitioner and the top hospital roles of the Health Authorities (general directors, chief medical officers, administrative director, districts director, head of departments, as well as the board of auditors and the supervisory body), in order to acquire the necessary managerial skills and competencies to face current and future health challenges in an integrated, sustainable, innovative, flexible and result-oriented perspective.

In addition to the development of technical-managerial skills, the scope of the training, will also be aimed at equipping healthcare professionals with knowledge and tools to ensure maximum safety for the patient along the clinical care path. In fact, as shown by a recent study published by the ECDC - European Center for Disease Prevention and Control - it emerges that Italy ranks among the last Countries in Europe for prevalence of healthcare-related infections (Ica).

For this reason, specific training interventions are provided to train health personnel in order to improve the management of hospital infections, reducing the high number of cases that occur annually. The challenges of the component also include the objective of modernising healthcare companies from a structural point of view, in order to ensure the highest standards of anti-seismic safety. The intervention is particularly important, also in light of Italy being one of the Countries with the greatest seismic risk due to its particular geographical position. The consequences of an earthquake also depend on the characteristics of resistance of buildings to the actions of a seismic shock. The more vulnerable a building is (by type, inadequate design, poor quality of materials and construction methods, poor maintenance), the greater the consequences. Interventions are therefore planned to make health facilities increasingly safe places and in line with the most recent anti-seismic standards.

Within the context mentioned above, the component contributes to responding to the following challenges:

- overcoming issues related to the limited resources allocated to research in the health sector and digital health;
- addressing the low level of interrelation between **research & AMP**;
- developing a stronger link between research centers and businesses, in an open innovation perspective;
- making healthcare facilities safer and in line with the current anti-seismic safety standards;
- overcoming the critical issues related to the limited and uneven dissemination of the electronic health record;
- resolving the issue related to of equipment ageing / low use of health technologies

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”

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**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..

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**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.

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**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.

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**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.

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**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.

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**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
				%	%
<b>M6C2: Investment 1: Technological and digital update</b>					
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%
<b>M6C2: Investment 2: Scientific research and technological transfer</b>					
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%
<b>M6C2: Investment 3: Technical, digital and managerial upskilling of NHS professionals</b>					
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						
<b>COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance</b>												
<b>Investment 1 - Enhancement of health assistance and territorial healthcare network</b>												
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%. 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 = (272,592 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 09.03.2016, n. 4/2016 / G of the Court of Auditors)  Technology Cost: Technology Fee for Community House € 272,592 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.  € 80,592.00 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 € 299 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. 4/2016 / G of the Court of Auditors 4. Art. 10 of the State-Regions of 28 February 2008 in 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 no. 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 Services - ID 1213 - Economic Offer - Part B Amount 4,000,000,000 €	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 30%. 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 90%. 2d By June 2026 it is expected to conclude the activation and adaptation of the 4820 Community Houses.										
Investment 1.2 - Homecare as first point of assistance for citizens		a1 - Designing the integrated home care (ADI) 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 (ADI) 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 = 33,647,856 € 339,887 € x 99 ASL (60,244.639/99)= 608,531 inhab national minimum standard) for 97 licenses / ASL = 2620,03226 € 25,160,148 € (license unit cost, CONSIP 2012) X 9,603 = 215 licenses 2,055,125 € + € 05,376 (unit cost of installation and start-up, CONSIP 2012) X 9,603 licenses = 2,381,388 = 268,8172 € (unit cost of data migration, CONSIP 2012) X 9,603 = 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 (ADI)		Number of integrated home care (ADI) coordination centres	0	575	Q2 2024	Methodology Cost of ADI coordinating centers to be realized: € 194,000,000 = 575 X 1,600 central € (unit cost per sqm for construction, 03/09/2016 Deliberation, n. 4/2016 / G of the Corte dei Conti) X 200 sqm (DPR 14.01.1997) 575 centres: 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 5 bis 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. 4/2016 / 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 (ADI) model		Number of integrated home care (ADI) professionals equipped with relevant technologies	0	51,750	Q2 2026	Methodology Technician Cost: € 189,094,500 135 585 000 = € (license fee) + € 11,126,250 (cost for installation and start-up) + € 13,200,750 (cost for data migration) 28462500 + (for operator training costs ) 135,585,000 € = 2620,03226 € (united license fees, 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 € = 215,0376 (unit cost of installation and start-up, CONSIP 2012) X 51,750 licenses 13,200,750 € = 268,8172 € (unit cost data migration, CONSIP 2012) X 51,750 licenses 28,462,500 € = 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 (ADI)		Number of patients cared for (PIC)	0	282,425	Q2 2026	Methodology Cost of Technology: € 2000 technical package cost per patient x 282,425 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. DGR Lombardia (TRD) 2. SIAO Flows 2019 Amount	see column n.2					

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						
<b>COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance</b>												
Investment 1.3 - Strengthening of intermediate healthcare and its facilities ("Community Hospital")		a1 Identification and analysis of existing structures to be restored, to be converted and to be realized ex novo	Action plan for 21 Regions	Issued	0	1	Q1 2022			see column n.2		
Investment 1.3 - Strengthening of intermediate healthcare and its facilities ("Community Hospital")		a2 Realization and / or adaptation of the structures as the community hospitals		Number of facilities	0	753	Q2 2026	Methodology Community Hospitals to be activated: 753 (60,244,639 Italian population ISTAT 01/01/2020 / 80,000 inhab. estimated) for a cost of 1,999,215,000 € of which (2,280,000 X 753) = € cost of structures (375,000 x 753) € cost of technology. Cost for structures per community hospital € 2,280,000 (1,140 square meters unitary surface * 2,000 €/sqm unit cost per square meter for construction, 03/09/2010 Deliberation, n. 42018 / G of the Court of Counts for reduced long-term care hospital on the basis of lesser gravity of the people housed) Community hospital Size: 1,140 sq m = 20 (estimated number of spaces bed) * 57 square meters (surface area per bed - DPR 14/01/1997) Technology cost per community hospital = € 375,000; technological component of approximately 15%; (Art.10 Entente State-Regions of 28 February 2008 on detailed rules and procedures for the activation of investment in 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 pieces of community hospital bed.  Data source: 1. Popolabre ISTAT 01/01/2020 2. Understanding of 28/02/2020 CSR requirements of Community Hospitals 3. Resolution 03/09/2018, n. 42018 / G of the Court of Auditors 4. DPR 14/01/1997 -Requirements structural, technological, and organizational requirements for the exercise of medical activities by public and private structures 5. (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 no. 502/1992, and subsequent amendments)	see column n.2			
												a2.1 By December 2023 is expected to reach a state of progress of work for the structural and technological aspects equal to about 30%; a2.3 It is expected, by the end of 2024, to achieve a state of progress of work equal to about 60%; a2.4 It is expected, by the end of 2025, to achieve a state of progress of work equal to about 80%; a2.5 By June 2026 it is expected to conclude the activation of 36147 beds.
Investment 2 - Health, environment and Climate	Investment 2.1 - Health, environment and climate: development of an ecological public health model	a1 Establishment / strengthening of centers of excellence at national level. Establishment / strengthening of regional and local hubs with specific skills and responsibilities in health-environment-climate.	SNPA-SNPS renewed structures; structures of national reference. Number of renewed SNPA network structures	0	100% of the SNPS structures identified at national level ± 50 % (around 190) of SNPS-SNPA structures renewed at multi-regional, regional, local level	Q4 2025	Methodology a) Development by SNPS-SNPA of the minimum requirements for capital goods (standard technologies), capital goods (high technology), intermediate consumption (capital purchased and services), income from work, to: - establishment / strengthening of centers of excellence at national level with processing functions with processing functions and integrated assessment of risk prevention guidelines, anchored to the evolution of scientific knowledge, including through coordination and implementation of advanced research projects; - establishment / strengthening in the regions, to support the local health authorities and Social Medicine, SNPS of network structures, through the introduction of professionals with specific health-environment-climate skills (through specific university training, professional continuous updates even with training through simulation); - infrastructure projects and renovation and expansion of resources and instrumental equipment of the structures of SNPA and SNPS; b) Adjustment of the SNPA and SNPS structures to the requirements of paragraph (a) through investments and acquisitions. estimated data: - Spending on capital goods (standard technologies): average between new construction and heavy restructuring Value, 1200 € for laboratories and 600 € for studies (values from parametric costs in the Order of Engineers in 2019, Grossrate and Price list Regional Veneto Region; Surfaces useful for laboratories estimated as a function of level: LC: 75-5000 m2, LF: 75-4000 m2, LM: 100-350 m2; LV: 50-3000 m2, LO: 10-150 m2); study: epidemiological, geologic-hydrogeological, toxicological and ecotoxicological, climate, security and environmental (toxicology of chemicals, risk analysis from ionizing and non-ionizing, etc.); 400-500 m2. - Spending on capital goods (high technology and expenditure on intermediate consumption (purchase capital goods and services): The costs of material resources (laboratories structures, analytical equipment, LC: examination of the standard costs of the SNPA facilities. Task: Director meeting 01/20; document estimation of the average costs of chemical analysis for sample /parameter. SNPA source, procurement data from "open procedure for the supply of scientific instruments and equipment for the field needed to ARPA Basilicata, SIMOC guaran. 6791404, 2019"; LR updated costs based on the acquisition of instruments Source: ISS (National Center for Radiation Protection and Computational Physics) and ARPA Lombardia (Directorate Laboratories Sector); LV: cost updated based on the acquisitions of equipment, source: ISS (Virology UHL, Department of Food Safety, Nutrition and Veterinary Public Health) and ISS (Virology UHL, Water Quality and Health Department); LI: data estimates for cytotoxicity, processing, toxicogenomics, etc. Topic: Center of Regional Environmental Toxicology ARPAE; LM: data for estimates: Open procedure for the supply of diagnostic systems and reagents and for the renovation of laboratories for the company. Politecnico University in Rome. Social Tender Specifications for the award of the supply in service of diagnostic systems for laboratory analysis of the ASL of Viterbo. 5 Facilities: 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 General Administration Department, the Staff and services MEF - ID 1213 - Economic offer - Part B, and estimates based on expert Judgment ISS. - Expenditure on labor income: Given the average gross cost for personal qualification (III Professional level (in ISS role, monthly basis), Director of Research: € 11,550, Senior Researcher € 6,660, Researcher: € 3,201 €). & Regulations for the provision of Decree No self-employment positions, 107/2013 of the Agency for Territorial Cohesion. - Training: Circular of the Ministry of Labor and Social Security No. 130 of October 25, 1995 / European Social Fund under the 2000-2006 National Operational Program "Scientific Research, Technological Development and Higher Education" & Estimate credits and hours training: ECM Commission on the basis of the CSR Agreement 02/02/2017 (ECM) . Amount: 407,882,738 €	Ministry of Health	see column n.2	Complexity of administrative procedures and transfer of funds to administrations and structures.	Check of documentation and audits (sample)	
												a2 Digitization of the SNPA and SNPS networks, including the digitization of networks of environmental and health monitoring data at the local level
Investment 2 - Health, environment and Climate	Investment 2.1 - Health, environment and climate: development of an ecological public health model	a3 Set up of a School of Specialization in Health-Environment and Climate at the Departments of Medicine prior agreement with Ministry of University and Research	School of specialization included in legislative measures. Lects disturbed	0	≥ 75% (4 curricula set up and financed)	Q4 2025	School of Specialization in Health-Environment and Climate at 5 Departments of Medicine prior agreement with Italian Ministry of University and Research: the financing of at least 8 seats for each investment/Department: 22,000.00 per seat per year. Financing of 3 cycles. Base: DPR 10/03/1982 n. 162; Law 19 November 1990 n. 341; Law 24/02/2010; DM 10/2/2011. Discipline teaching on the organization of the school of specialization in health-environment and climate within the university order agreement with Italian Ministry of Education. Amount: € 7,920,000	Ministry of Health	see column n.2	Complexity of administrative procedures and transfer of funds to administrations and structures.	Check of documentation and audits (sample)	
												a4 Establishment of the center for training and update in Health-Environment / Climate; distance learning courses
Investment 2 - Health, environment and Climate	Investment 2.1 - Health, environment and climate: development of an ecological public health model	a5 Three year national and multidisciplinary research calls in health-environment-climate	Research tenders issued	0	≥ 75% (11 projects)	Q4 2025	15 notices of 1,500,000 multidisciplinary three-year national health-environment-climate research planned and managed as part of the CCM on the project thematic objectives. Source: <a href="http://www.ccm-network.it/page/ju/7n-programmi">http://www.ccm-network.it/page/ju/7n-programmi</a> Amount: 21,000,000 €	Ministry of Health	see column n.2	Complexity of administrative procedures and transfer of funds to administrations and structures.	Check of documentation and audits (sample)	
												a6 Development of operational programs for the implementation of integrated models of intervention health-environment-climate in specific contaminated sites of national interest
Investment 2 - Health, environment and Climate	Investment 2.1 - Health, environment and climate: development of an ecological public health model	a7 Strengthening of regional health facilities, hospitals, IRCSs and other research organizations, for the development of integrated interventions in health promotion, active surveillance and health-care and participative communication systems of the communities (i.e. facilities whose	Number of structures falling within the renewed facilities under the program	0	OK: adequate number according to the project team	Q2 2026	Methodology Strengthening of territorial hospital and health facilities, IRCSs and other research organizations, for the development of integrated interventions in health promotion, active surveillance and health-care and community participatory communication systems. Health care and community participatory communication systems. For the estimation have been used data related to the area of Taranto, which is considered as a case study of best-practice for the design of the proposed national model, with the ongoing implementation of an Integrated Monitoring Plan activated by the Extraordinary Commissioner for the reclamation, in collaboration with the "Istituto Superiore di Sanità" (ISS) and a network of institutions engaged in prevention and surveillance in energy health-environment with a high degree of digitization. Amount: 24,500,000 €	Ministry of Health	see column n.2	Complexity of administrative procedures and transfer of funds to administrations and structures.	Check of documentation and audits (sample)	
												a8 Development of operational programs for the implementation of integrated models of intervention health-environment-climate in specific contaminated sites of national interest

## 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													
<b>Investment 1 - Technological and digital update</b>													
	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 €				
<b>Investment 2 - Scientific research and training</b>													
	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 €				
	<b>Tot</b>	2021-2026	<b>5,230,000,000 €</b>	<b>391,850,479 €</b>	<b>1,544,158,577 €</b>	<b>1,886,613,139 €</b>	<b>637,020,499 €</b>	<b>323,914,738 €</b>	<b>446,442,568 €</b>				

**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.