Perspectives on the Development of Public Health System's Infrastructure in the Context of PNRR's Implementation

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Abstract

In Romania, infrastructure investments are vital for improving the state of the Romanian public health system, with a need for them to be massively directed towards the construction / modernization of hospital buildings, the development of the transport system, the taking over and the care system of critically ill patients, the national transfusion system, the laboratory network, etc., since they involve a considerable usage of financial resources, and given that Romania cannot fully cover them, the solution of resorting to European funds is highly recommended. In this context, PNRR (the National Recovery and Resilience Plan) is an obvious opportunity for the national authorities. This is the reason why we insist on this particular topic, providing this paper with a structure that includes, among others, institutional preparations for the implementation of PNRR in order to achieve the goals of health infrastructure development and expected results on the development of the public health system's infrastructure by implementing PNRR, etc.

Key words: medical infrastructure; public health; financial resources; hospital investments; the European Union
J.E.L. classification: H11; H51; H70; I15; I18; M48

1. Introduction

At present, most developing countries find it difficult to provide acceptable conditions for the health care of their own populations. Generally, as expected, the causes are economic / financial. That is, as there are not enough resources for financing the services, their allocation is not based on adequate optimizations in the system of the collected funds, in relation to the social needs, the services' distribution being organized poorly, etc., ultimately leading to limited access for certain segments of the population to information, prevention and healthcare (Stanciu, 2003). We need to speak about Romania, which with its "medical system which has been underfunded for several decades, and whose attempts at reform have not brought the long-awaited improvements of the medical act, with the system suffering, in recent years, from the massive reduction in the number of specialists, one of the main threats to public health being, in addition to the extremely difficult economic situation, the deplorable state of the public health sector" (Stanciu, 2013).

In fact, after Romania's accession to the European Union, a comprehensive analysis of the health system revealed the existence of multiple dysfunctions directly connected to the health state of the population. The respective system was then (2008) rated as "the most underperforming in Europe and characterized by lack of transparency as regards the allocation of funds and inefficiency as regards the use of resources" (Romanian Presidency, 2008). As a result, the health status was also precarious, with many local rural communities lacking medical services (i.e., in rural areas, the gross

mortality rate was double compared to the one recorded in urban areas). The phenomenon of population aging exacerbates this state, being well-known that there is a direct proportion between the number of illnesses and the advancing age. Added to these deficiencies was the fact that, frequently, the medical act performed was characterized by discontinuity and did not have the required quality, with the doctors intending to leave the country, not being adequately motivated by the payroll systems, etc. It is enlightening in this sense that, during the respective period, one in ten doctors trained in Romania was practicing in other countries.

2. Theoretical background

The large-scale study mentioned above (Romanian Presidency, 2008), after conducting a diagnosis of the analyzed system, identified the major areas that require massive interventions, including: (i) Organization and financing of the health system, (ii) Medicine Policy, (iii) Primary Care, (iv) Hospital Services and (v) Human Resources. Several recommendations have been made for each of these, all aimed at producing significant improvements to the public health system.

A particular emphasis was placed on increasing the capacity to attract external funds for investments in the infrastructure of this system. At the level of the Third Millennium, Romania still has hospitals „with buildings located at a distance from each other (…); old buildings are used (even over 100 years old) which do not allow the optimal integration of intra-hospital circuits and create difficulties in adopting new technologies due to the physical limitations of the buildings (…)" (MEIP, 2020).

It was evident, immediately after Romania's accession to the EU, that the success in increasing the capacity to attract external funds for significant investments in the infrastructure of the public health system depends on the "cooperation of the central and local authorities, including by creating new institutions to facilitate the access to such funds" (Romanian Presidency, 2008). It is necessary to act quickly and efficiently in this regard, all the more so as the deficit is substantial, beyond the physical infrastructure, at the level of information and communication systems, medical equipment and devices, etc.

Against this background, our approach sets out to expand on the issue of developing the public health system's infrastructure in the context of implementing the National Recovery and Resilience Plan (PNRR), when Romania would benefit from significant funds (29.2 billion euros) given by the European Union, in equal proportions (1/2) non-reimbursable/grants and loans.

3. Research methodology

The importance of the research topic chosen by the authors has been justified in the introductory section and unanimously acknowledged by reputable specialists, determining the investigative effort focused on significant works in the specialized literature - articles in periodicals, books or book chapters, etc.

Given the legal and economic complexity of the tackled issue, the authors also resort to an in-depth study of certain normative acts drafted by legislatures in the EU or Romania, as an EU member state, aimed at the development of public health system's infrastructure in the context of PNRR implementation.

Then, out of the desire to convey a pronounced topical character to our paper, through the data and information it contains, we have analyzed and refered to the recent reports issued by certain prestigious organizations / institutions. The sources of our documentation, considered by us as being current and credible, are listed in the bibliography at the end of the paper.

4. Findings

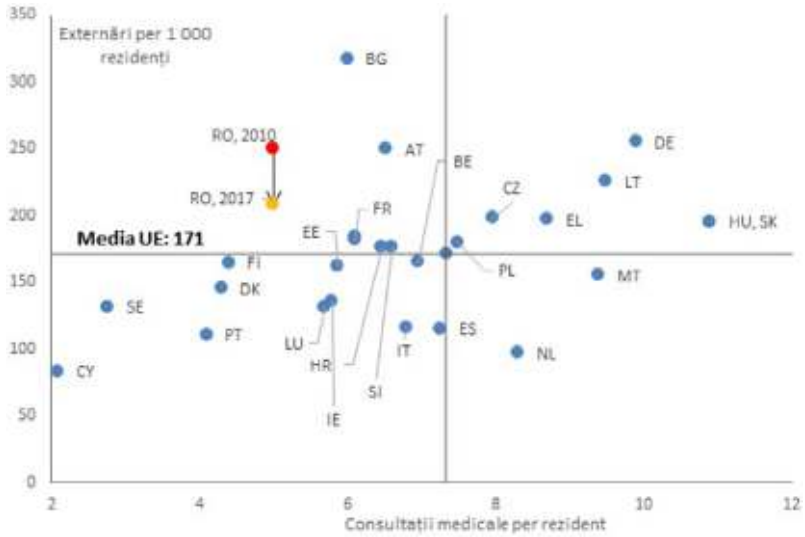
4.1. Landmarks of the Romanian public health system and the design of the "Health" Operational Program 2021-2027

Long before the opportunity to resort to PNRR, the Romanian health system had been characterized by a whole series/host of critical issues, which made us occupy one of the last places in the European Union, even though some indicators have improved in recent years.

Those critical issues referred to (EC, 2020): the temporization of capacity building reforms in primary care and development of community health care (no integrated community health care centers were created, the delayed construction of regional hospitals, etc.), the limited administrative capacity at the level of the Ministry of Health and local public health departments, deficient investment planning, underuse of the outpatient care system, cumbersome transfer of medical services provided in the hospital to the outpatient health system.

According to the same source, "The total health care costs are low and they primarily cover hospital services. Population aging and emigration are putting increasing pressure on the health care system" (Figure 1).

Figure no. 1. Use of outpatient health care vs. use of hospital health care



Source: Eurostat database, OCDE, apud. (EC, 2020).

Obviously, several works by Romanian specialists show that the (non) performance of the Romanian public health system is correlated with the allocated resources (Drugus et al., 2015; Tamba et al., 2016), which affect the results throughout the entire chain of medical activities, from the field of microbiology, laboratories (hematological diagnosis, microbiological, biochemical, anatomic-pathological, imaging), etc., and up to, for example, the field of advanced medical scientific research (Santini et al., 2021).

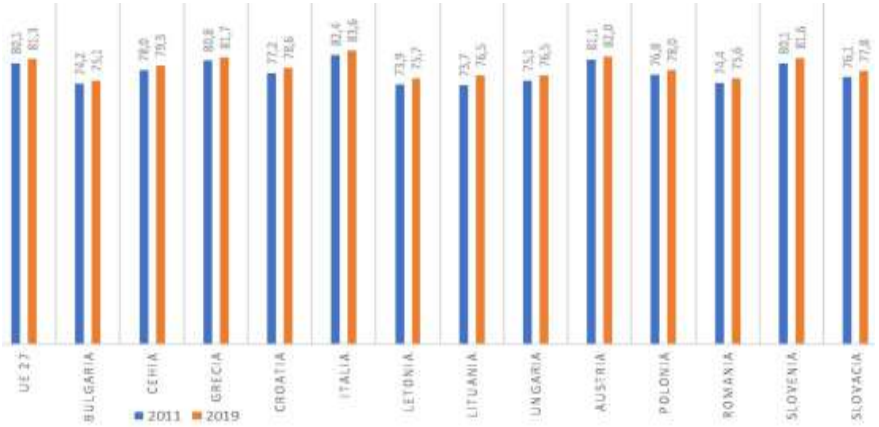
Specifically, in the pre-pandemic phase, health expenditure in Romania was the lowest in the EU, both per capita (1,029 euro, the EU average being 2,884 euro) and as a percentage of GDP (5% compared to 9.8% in the EU) (EC, 2020). In 2020, largely driven by the Covid-19 pandemic, total health care expenditure increased to 6% of GDP, of which about 80% came from public sources (Ministry of Health, 2022).

4.2. The state of the Romanian public health system in the pre-pandemic stage. Deficiencies in health infrastructure and service provision framework

Despite all the difficulties shown, the index of access to health care and of quality of services reached 78.3 in 2016 (compared to 66.8 in 2000), close to that of Hungary, but standing at 2/3, for example, compared to that of France.

Life expectancy in Romania, although increased by more than four years since 2000 (from 71.2 years to 75.6 years in 2019) (Ministry of Health, 2022), is among the lowest in the European Union; its growth rate has decreased, the rise recorded in the period 2011-2019 being of only one year (Figure 2).

Figure no. 2. Life expectancy at birth in EU countries (2011, 2019)



Source: Eurostat, apud. Ministry of Health (2022).

From the perspective of the accessibility to medical consultations, 46% of the population has access to a consultation (45% with the family doctor and 17% with the specialist) and 4% to a hospital stay, which situates Romania far below similar indicators from the EU (OCDE, 2019).

On the other hand, the mortality rate in the case of both preventable and treatable diseases, which can be influenced by treatment, is well above the EU's rates; at the level of 2018, the mortality rate per 100,000 inhabitants, by main illnesses, was determined by: diseases of the circulatory system (673.4 / 100,000 inhabitants), tumors (232.9 / 100,000 inhabitants), diseases of the respiratory system (77 / 100,000 inhabitants), diseases of the digestive tract (9.8 / 100,000 inhabitants), trauma / poisoning (44.8 / 100,000 inhabitants), endocrine diseases, nutrition, metabolism (13.4 / 100,000 inhabitants) (INSP – CNEPSS, 2019).

An issue to be considered by the Romanian decision-maker is that Romania spends very little on prevention (18 euros per person in 2017, or 1.7% of total health spending, compared to 3.1% in the EU), ignoring the fact that prevention and primary care have become a *strong* element in European policies, since "investments in these segments generate much greater savings for the other categories, mainly hospitals and hospital services" (Bechir, 2019). Failure to take into account this *strong* element determines, in fact, the existence of a large number of deaths that occurr prematurely in Romania.

With regard to Romania's health infrastructure and service provision framework, the lack of needed equipment is evident, the existing one is below the standards of EU countries, and its territorial distribution and its use in medical units are not correlated with the local profile of the health status and health needs of the population.

At the level of 2020, the entire Romanian public health system had 385 computed tomography devices (approx. 20 devices per 1,000,000 inhabitants) and 298 nuclear magnetic resonance devices (approx. 15 per 1,000,000 inhabitants). Just two years earlier (2018), the number of mammograms was 163, in the context in which nine county emergency clinical hospitals do not have such a device, and 28 such units have a single, more than 10 years old, mammograph (MEIP, 2020).

We also add here that the National Health Strategy for the 2014-2020 period was implemented to a small extent, very few of the objectives being implemented during the respective period, highlighting the fact that, only due to the severe manifestation of the Covid-19 pandemic, some favorable results were obtained regarding the part related to modern communication and information technology, e-health system and intersectoral collaboration (Marinescu, 2022).

4.3. Investment priorities that can be financed under the "Health" Operational Program 2021-2027

The analysis of the content of the Health Operational Program 2021-2027 shows that investments of several natures are a priority. That is, from those related to the infrastructure of regional hospitals (Cluj, Iași and Craiova - stage II), including that of hospitals with major territorial impact, to those on innovative approaches in medical research and digitization of the medical system, or the promotion of modern methods of investigation, intervention, treatment – the development of centers of excellence in innovative cell therapies in hematology and bone marrow transplantation, digestive diseases and liver transplant, urology and kidney/renal transplant (MEIP, 2020).

To the above-mentioned are also added investments in: (i) Primary, community and outpatient healthcare services: family physician office infrastructure, school and community healthcare services infrastructure; (ii) Rehabilitation, palliative and long-term care services; (iii) Increasing the efficiency of the medical sector through investments in infrastructure and services, by developing: the transport system, the taking over and the care units dedicated to critically ill patients, including children, etc.

The estimated budget of the program (Table 1) is approx. 4.7 billion euros, being based on ERDF/European Regional Development Fund, ESF/European Social Fund and the National Contribution (from the State Budget).

Table no. 1. Distribution of the budget of the Health Operational Program 2021-2027 by investment priorities, in correlation with the European funding sources (ERDF and ESF) (million euro)

Priority ranking	Name of priority	ERDF	ESF	Total
Priority No. 1	Investments for the construction of regional hospitals and hospital infrastructure	1,000	62	1,062
Priority No. 2	Primary and community health care services and services provided in	143	211	354
Priority No. 3	Adapted rehabilitation, palliative care and long - term care services	143	143	286
Priority No. 4	Increasing the efficiency of the medical sector through investments in infrastructure and services	757	1,214	1,971
Priority No. 5	Innovative approaches in medical research	454	-	454
Priority No. 6	Digitization of the medical system	260	-	260
Priority No. 7	Measures that support research, computerization in health and the use of investigation, intervention, treatment	100	244	344
Total	-	2,857	1,874	4,731

Source: Calculation based on the data contained in the "Health" Operational Program 2021-2027, https://mfe.gov.ro/wp-content/uploads/2020/07/5e0bdcbddccca4d66d74ba8c1cee1a68.pdf

It should be noted that the eligibility of expenditure is to be limited to the period January 1, 2021 - December 31, 2029, even if this Operational Program ("Health"), to which we are referring here, concerns the multiannual financial framework for the period 2021-2027.

5. Institutional preparations for the implementation of PNRR and some expectations regarding the development of the public health system's infrastructure

5.1. Introduction to PNRR

The European preparations regarding PNRR (CUE, 2021) aim at directing to the Romanian economy 14.248 billion euros in the form of grants (non-reimbursable amounts) and approx. 14.935 billion euros – in loans. Based on the "NextGenerationEU" tool, several reforms have been designed that would include a whole series of components (pillars), from environment, energy, digitalization, smart growth, social and territorial cohesion, to health and education. Discussions arise about the chances of achieving the PNRR's targets (Bostan, 2021), Professor Daniel Dăianu considering that "PNRR is a great chance for Romania, which can help (…) to: "a better funding of education and public health (...)" (Barbuta, 2021).

In trying to understand the expectations of the executive itself, who has the paternity of the PNRR, by carefully reading the text of the respective document (the form assumed by the Government), we notice that regarding the macroeconomic impact of attracting PNRR funds several calculations were done by simulating three hypothetical scenarios. Those scenarios are (CUE, 2021):

Scenario I. Full absorption of the grants and loans (A. Gradual use of grants in the 2021-2026 period; B. Use of 25% of loans in 2021-2024 and 75% in 2025-2026);

Scenario II. Full absorption of grants and partial absorption of loans (A. Gradual use of grants in the 2021-2026 period; B. Gradual use of approximately 33% of loans in the 2022-2026 period);

Scenario III. Full absorption of grants without accessing the loans.

Attention: In all three scenarios, a 3:1 ratio between capital and current expenditures was considered. The information in the PNRR text conveys the certainty that during its implementation, regardless of the scenario, all macroeconomic indicators would increase considerably (Table 2).

Table no. 2. The impact of PNRR implementation on real GDP compared to a "no/ without PNRR" scenario (% GDP)

Absorption scenarios	2021	2022	2023	2024	2025	2026	Cumulative impact 2021-2026
Scenario I: 100% grants and 100% loans	+0.1	+0.6	+1.1	+1.2	+1.4	+1.0	+5.4
Scenario II: 100% grants and 33% loans	+0.1	+0.6	+1.0	+0.9	+0.8	+0.9	+4.3
Scenario III: 100% grants și 0% loans	+0.1	+0.6	+0.9	+0.7	+0.6	+0.5	+3.4

Source: https://mfe.gov.ro/pnrr

The projected surplus of economic growth (2021-2026) involved reporting to what would happen (theoretical / the baseline scenario "without PNRR"), if PNRR were not accessed at all, but the other EU funds were.

According to the above-mentioned official document, in the most optimistic scenario (I. - degree of absorption 100% grants and loans), in the first two years of PNRR implementation (2021 and 2022), "the impact expressed in real GDP is less pronounced, as the distribution of funds is weaker and the most pronounced impact on economic growth (reflected in real GDP) is recorded in 2025 (+ 1.4%), as the allocation of funds gradually increases".

While in the middle scenario, economic growth would be 4.3% for the entire 2021-2026 period, bringing into question the third scenario, it is important that there would be "a GDP growth of 3.4% throughout the period considered, suggesting that even at a lower level, the economic impact of PNRR loans remains significant" (CUE, 2021).

Noteworthy is the fact that the forecast part in this matter, found in PNRR, matches the CNSP/National Strategy and Forecast Commission data, included in the Summer Forecast for the 2021-2025 period. It states that: "(...) assuming the absorption of 29 billion euros in the 2021-2026 period, shows a positive impact that generates an additional economic growth of about 0.9% on average throughout the period considered, compared to the baseline scenario, respectively without PNRR, but with other European funds: MFF (Multiannual Financial Framework) 2014-2021 + n3 and MFF 2021-2027" (CNSP, 2021).

5.2. PNRR - the "Health" component in investment terms (total budget of 2.45 billion euros)

The drafting of Pillar V of the PNRR, entitled "Health, as well as economic, social and institutional resilience (…)" starts from the fact that the health of the Romanian population is below the EU average, the preventable mortality rate is more than double the EU rate, healthcare costs are low and staff shortages considerable, all of which show that there are major difficulties in ensuring access to healthcare (about 11% of the population remains uninsured and has access to only a limited package of services). Reference is also made to the fact that community health care is far from satisfactory, and hospital units (based on an infrastructure designed over five decades ago) generally do not comply with safety and sanitary standards, and therefore multiple risks emerge.

With these justifications, the Component 12 "Health" of PNRR proposes three reforms regarding: (i) - Increased capacity for the management of public health funds; (ii) - Increased capacity to undertake investments in health infrastructure and (iii) - Increased capacity for health management and human resources in health.

The investments they entail - aimed at developing the pre-hospital and public hospital medical infrastructure - have a total budget of 2.45 billion euros, and the expected results are the construction of 200 community centers (built or renovated), with new amenities and adequate staff ("in order to reduce inequalities in terms of the access to health care by creating and implementing legal and financial mechanisms so as to encourage the involvement of health care and community care staff in the provision of medical services to the vulnerable population, including through telemedicine") and 3,000 (associations of) equipped / equipped and renovated primary care offices (CUE, 2021).

At the same time, the following will be achieved: 26 compartments / intensive care units for newborns, equipped, including with ambulance transport for newborns (regional centers), 30 outpatient / extended / equipped units, 25 public health units / public hospitals that benefit from a new infrastructure, 10 mobile medical units - for the areas with limited access to specialized health care services, etc. (CUE, 2021). The respective funds also aim at training / instructing 1,000 people in the field of health services management.

5.3. Preparing the institutional framework for the implementation of PNRR in order to achieve the targets related to the development of public health system's infrastructure

The preparation of the institutional framework for the implementation of PNRR entailed, among other things, the authorization of the Minister of Health to negotiate and sign the technical assistance contract between the Romanian Government represented by the Ministry of Health and the World Health Organization on the necessary technical support (advice / assistance) in order to implement the respective Plan (Romanian Government, 2022a).

Pillar V of the PNRR (CUE, 2021), entitled "Health, as well as economic, social and institutional resilience (…)", comprises a series of steps necessary to be completed during 2022 for the operationalization of the agency specialized in investments in the field of health, which involve its establishment and entry into operation in sem. I / 2022, appointment of the agency's management, recruiting personnel, etc.

This was the reason for the initiation by the Romanian Government of the Emergency Ordinance on the establishment, organization, and operation of the National Agency for Development of Health Infrastructure (ANDIS), subordinated to the Ministry of Health, fully funded from the state budget. In fact, in Romania there was no specialized entity with responsibilities exclusively in the field of health infrastructure, able to ensure the preparation and implementation of major investment objectives / projects in this field. Based on the explanatory memoranda to the GEO on the establishment, organization and operation of ANDIS (Romanian Government, 2022b), we will show that the special scope of these projects to be funded by PNRR and the positive effects of their implementation on health infrastructure and public access to medical services call for the existence of an entity with distinct legal personality, with the development of health infrastructure as its sole object of activity. The role of ANDIS is to develop health infrastructure, by preparing, implementing and completing the objectives of the mentioned type, its activity starting with 79 people.

Of particular importance in making the respective decision were the facts described in Quadrant 1, which call for the development of a modern healthcare infrastructure that meets current healthcare needs.

Quadrant 1. The state of the health infrastructure - precarious, outdated and insufficient (Romanian Government, 2022b)

Out of a total of 1,392 buildings of the health units with beds, 302 are operating without sanitary and fire safety authorizations, and 52 are only partially authorized. The high number of buildings with seismic risk in which Romanian hospitals operate is worrying, the risks regarding the damage to the public health structures being difficult to anticipate. According to the data provided by the General Inspectorate for Emergency Situations in 2018, l37 hospitals located in Bucharest and in 15 counties of the country operate in buildings with seismic risk, and 37 of them are in buildings with high seismic risk, RsI and RsII, which means a high risk of collapse in the event of a strong earthquake or where the probability of a collapse is low, but major structural damage is expected in the incidence of the design earthquake. The need for interventions so as to improve the quality and safety of health infrastructure is therefore acute, especially given that building users are largely people who cannot evacuate on their own in the event of an emergency.

The institutional framework for the implementation of PNRR in order to achieve the targets related to the development of public health system's infrastructure would also undergo other normative changes:

• The provisions of Government Decision no. 144/2010 on the organization and functioning of the Ministry of Health are to be correlated with legal norms related to the establishment and functioning of ANDIS;

• The Approval of a Government Decision on the organization and functioning of ANDIS, establishing the headquarters and the maximum number of positions;

• The Approval of a Government Decision on the methodological norms for the implementation of the GEO on the organization and functioning of ANDIS, which would establish a whole series of normative details, of great importance in the following period.

Among these, the detailed activities carried out by ANDIS in the exercise of its legal powers require such a regulation, the criteria details for the selection of objectives / projects involving significant investments – having as object the investment in the hospitals pertaining to the Ministry of Health's health network (entrusted to ANDIS) and the methodology for their implementation.

Obviously, just as important is the methodology for conducting the multi-criteria analysis for establishing objectives / projects involving significant investments, which are to be included in the multi-annual program of investment projects of significant importance for health infrastructure.

6. Conclusions

This approach presents the state of the Romanian public health system (in the pre-pandemic stage), with all its weaknesses, showing that the previous strategies and programs, in the manner in which they have been implemented, did not lead to the expected performance. There was only one exception - due to the severe manifestation of the Covid-19 pandemic, some favorable results were obtained regarding information technology and modern communication, the e-health system and intersectoral collaboration. In general, with regard to Romania's health infrastructure and service provision framework, the conclusion was that there is still a lack of necesarry equipments, the existing ones being below EU countries' standards, and the territorial distribution and their use in medical units are not correlated with the local health profile and the health needs of the population.

The perspectives regarding the development of public health system's infrastructure in the context of PNRR implementation display a certain optimism, as the "Health" Component in investment terms (total budget of 2.45 billion euros) provides multiple premises and chances in connection with the fulfillment of the objectives envisioned to be achieved: 200 community centers with new amenities and adequate staff, 3,000 equipped primary care offices / associations of offices, 26 equipped compartments / intensive care units for newborns, 30 equipped outpatient clinics, 25 public health units / public hospitals with new infrastructure, etc.

In our opinion, the program is achievable in a considerable proportion, especially given the creation within the Romanian institutional system of an entity with distinct legal personality, the National Agency for Development of Health Infrastructure (ANDIS), having as its sole object of activity the development of health infrastructure, through the preparation, implementation and completion of the objectives of the type mentioned above.

Along the same lines, other normative elements are being finalized aiming at the implementation of PNRR in order to achieve the targets related to the development of the health system's infrastructure: regulation of the detailed activities carried out by ANDIS in the exercise of its legal powers, detailing the criteria for selecting objectives / projects involving considerable investments, the methodology for conducting the multi-criteria analysis for establishing objectives / projects involving significant investments which are to be included in the multi-annual program of investment projects of significant importance for health infrastructure.

Regarding the limits of the research, we consider that these arise from the fact that the period in which the PNRR is to be implemented could be characterized by unknown / unforeseen factors, regardless of their nature. In fact, in the case of Romania's accessing of external funds, even when no significant critical factors were involved, in certain past periods, a very good absorption was still not achieved.

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