CEEBA Health Policy Network
A collaboration with the
Partnership for Health System
Sustainability and Resilience

Human-centric digitalization of healthcare:

Building sustainability and resilience through innovation in the CEEBA region

A policy recommendations report by the
The Central, Eastern Europe and Baltics Health Policy Network (CEEBA-HPN)

Contents

About the CEEBA-HPN and the CEEBA-HPN Steering Committee

The Central, Eastern Europe and Baltics Health Policy Network (CEEBA-HPN) is a collaboration with the Partnership for Health System Sustainability and Resilience (PHSSR). It was established in 2022 with the aim to provide innovative, new options for policymakers in the CEEBA region to improve the resilience and suitability of healthcare for patients. The CEEBA region consists of 12 countries: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia and Slovenia. With that objective in mind, the CEEBA-HPN attempts to foster collaboration across stakeholders from different sectors, including the public sector, healthcare professionals and patient representatives. This collaboration is materialized via the facilitation of high-level dialogues and best practice sharing, focused on topics that are at the heart of strengthening health systems in the region.

The recommendations in the report are based on the methodology developed by the PHSSR. You may find more information on the PHSSR methodology in section III of this paper. The CEEBA-HPN Steering Committee consists of 9 members from different backgrounds and from across the CEEBA region.

Co-chairs

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- Prof. Iwona Kowalska-Bobko, Head of Health Policy and Management Department, Jagiellonian University Medical College, Poland and academic lead of PHSSR in Poland

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Members of the Steering Committee are invited to share their evidence-based observations and knowledge with a focus on policy change. The input of these experts has been captured in this report. The work of the CEEBA-HPN is supported by AstraZeneca, but the experts participate and provide their opinion on a fully independent voluntary basis.

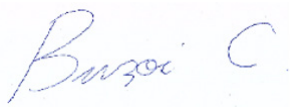
Foreword by the Co-chairs of the CEEBA-HPN

The CEEBA region (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia and Slovenia) has a very special role to play in the digital transformation of healthcare products and services, with its great potential to embrace new operational models and rethink prior approaches. This is part of the long journey towards achieving greater sustainability and resilience of the local healthcare systems, particularly in the face of external shocks.

The COVID-19 pandemic has brought forward numerous learnings, particularly in the area of healthcare digitalization. For the Central, Eastern Europe and Baltics region, there is an array of additional challenges, which need to be overcome on the way to creating a truly sustainable and resilient healthcare system, like ageing population, limited healthcare spending and 'brain drain' of healthcare staff pose hurdles as well. We are yet to see the full dimensions of the impact of the war in Ukraine. Therefore, we must learn from the experience of others in the region to find the best solutions and emerge stronger together.

Digital services and tools have proven to help in creating a strong healthcare system – able to withstand crisis situations. With the digital transformation of different sectors, including healthcare underway, we must grasp its full potential. The European Union has acknowledged this as well, by aiming for the setup of a European Health Data Space, and an array of other horizontal legislations impacting the healthcare sector, like the AI, Data Governance and Data Acts. Also at national level, we see strategies being presented, embracing the opportunities offered by Europe's recovery mechanism, and authorities being appointed to guide the way forward.

We are honoured to chair the Central, Eastern European and Baltics Health Policy Network Steering Committee, which has identified the challenges in the region to the use of digital services and products and identified recommendations to address these challenges. We believe that the recommendations will constitute useful handles for policymakers to create change for the benefit of the region, the healthcare system and most importantly – the people.



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Executive summary

The importance of **health system resilience and sustainability** has been laid bare by multiple challenges, not the least the COVID-19 pandemic. This is also the case for the Central, Eastern European and Baltics region. Aside from the pandemic, **countries in this region face multiple common pressures on their healthcare system such as an ageing population as well as a shortage of healthcare workers.** On top of that, **the war in Ukraine** led to major streams of refugees – among which many are patients requiring healthcare. In light of the above, the Central, Eastern European and Baltics Health Policy Network (CEEBA-HPN), through this report attempts to provide policymakers with **concrete handles for action inducing policy change,** based on the evaluation of the common challenges in the region, while zooming in on one particular focus area: ***human-centric digitalization of healthcare***. Digitalization has become more prominent due to the awareness of the potential of health data and digital services as well as products, but also as a need during the pandemic. Digitalisation holds **great promise to improve the quality of care, increase access to care and enhance the efficiency of the healthcare systems** at large. However, the implementation of this transformation has proven difficult, in particular in the Central, Eastern and Baltic parts of Europe, due to **barriers such as funding, governance and the need for healthcare workers to adapt their way of working.** This report aims to contribute to overcoming this issue by identifying the key barriers and providing tangible policy solutions and recommendations to overcome them. In order to identify policy recommendations, the CEEBA-HPN used a methodology established by the Partnership for Health System Sustainability and Resilience (PHSSR).

The methodology discerns between seven parameters: health system governance, health system funding, health and care workforce, medicines and technology implementation, health service delivery, population health, and environmental sustainability (the methodology has been outlined in section III of the current report).

An executive summary of the recommendations

(please, refer to section V of the report for the detailed recommendations):

01

Health system governance (steering & rule-making functions)

I. Put in place a **long-term, 5-to-10-year strategy for digitalization** in a multi-stakeholder approach, ensuring **co-design by patients, academia, industry and healthcare professionals.**

II. **Collect evidence** underpinning the effectiveness, accessibility, usability, traceability and added value of digital services and products, while ensuring **coordination among institutions.**

III. **Build on existing EU-level frameworks** such as the European Health Data Space and the Artificial Intelligence Act to enable a seamless link to good practices and access to additional funding earmarked for healthcare digitalization.

02

Health system funding
(generating, pooling & allocating financial resources into healthcare)

I. **Focus long-term on the holistic value** of strengthening ambulatory and primary care, building on the effects of investments that bring short-term returns such as current positive economic gains. and moving towards **improved integrated care,** which would facilitate patients' treatment across different healthcare sectors.

II. **Invest in digital infrastructure and digital health institutions,** accompanied by **an appropriate legislative framework,** and by **appropriate educational activities.**

III. **Set a clear strategy on reimbursement of digital services and products.**

03

Health and care workforce
(planning, training, recruitment & retention)

I. Set up a **national approach to long-term workforce planning.**

II. Integrate **digital skills training programmes in the regular curriculum and continuous professional education** for HCPs & set up programmes for long-term retention and motivation.

04

Medicines and technology implementation
(making use of medicines & technology)

I. Create **frameworks for public-private cross-sectoral collaboration to accelerate uptake of innovation** and encourage participation in the EU Innovative Health Initiative.

II. **Implement interoperable digital infrastructures** for deployment of electronic health records, as well as **the utilisation of existing infrastructures.**

III. Adopt **a systematic approach to evaluation of digital services and products** by assessing the impact of their deployment before scaling them up.

05

Health service delivery

(healthcare services organization and delivery – ambulatory (primary care), hospital (secondary care), health of the population as a whole)

I. Identify **policy modification needs for the delivery of care and implementing telemedicine policies,** informed by clinical evaluations as well as assessments on cost-effectiveness.

II. Adopt **quality standards** to incentivise the quality of ambulatory and primary care as well as opting for standard care instead of emergency care, by leveraging digital services and products supported by national insurers.

III. Elaborate **patients' and HCP' guidelines** for implementing digital services and products in major diseases and leverage these through patients' and professional medical associations.

06

Population health

(health of the population linked to the levels of need and demand that a health system must meet)

I. Address **socio-economic and health determinants,** population morbidities, prevention and prophylaxis, and promotion of healthy lifestyles **via general and personalized digital solutions,** including these in the countries' legal frameworks to enable their reimbursement.

II. Re-use **the data collected** in a wider setting for the benefit of citizens.

III. Improve **general health literacy** and responsibility for one's own health to reduce health inequalities.

07

Environmental sustainability (preventing and minimising carbon footprint and impact on climate as an element of overall healthcare system sustainability)

I. **Monitor and reduce** the healthcare systems' environmental impact through digitalization.

II. Put in place **a strategy or incentives** within existing strategies to reduce environmental impact of the health system.

I.

Introduction

The challenges in the region

Health system resilience and sustainability are topics which have increased in terms of prominence on the agenda of policymakers. This process has been accelerated by the ongoing COVID-19 pandemic, which reached the CEEBA region in the first months of 2020. The difference in the extent to which the countries were affected, reflects the distinctions between the nations. However, there are certain **commonalities in terms of the challenges they face** – not the least is the recovery from the pandemic by the healthcare systems. An added difficulty is the limited spending on healthcare as well as the growing pressure from an ageing population, while patients are often less in control of their own conditions. While these challenges add stress to healthcare facilities, a consequent problem is a shortage in terms of workforce, both on the side of recruitment as well as retention. On top of that, there are not always cross-sectoral cooperation mechanisms in place to identify solutions to overcome such hurdles.

A final common challenge that the area is facing, stems from geo-political forces. The war in Ukraine has resulted in a large number of people forced to flee the country, this includes many chronically ill or disabled patients, elderly, or patients whose treatment schedule has been abruptly disrupted. Another consequence is the redirecting of healthcare budget towards the defence sector. While the CEEBA region has taken care of refugees, it must be underlined that the need for care of many is great – adding another layer of stress on the healthcare systems. Therefore, investing in healthcare and its digitalization should be considered a priority as this will ultimately minimize the burden of healthcare costs in the long run.

A need for policy action

In light of the above, it is clear that policy action enhancing the resilience and sustainability of the healthcare systems is needed. The CEEBA-HPN **has the aim to contribute to the identification of policy actions, focusing on one particular opportunity in that regard: the digitalisation of healthcare.** This can be considered from three different angles: systemic, outpatient and in-patient digitalisation. Although not all services can be digitalised, digital technologies can play an important role in enhancing the sustainability of healthcare systems[1]. For this reason, this paper focuses on the area of 'human-centric digitalization of healthcare'. Digitalization refers to the integration of medical knowledge with IT applications or IT technologies, with the aim of improving the medical care and supervision of patients[2] as opposed to "digitization", which refers to the pure analogue-to-digital conversion of existing data and documents[3] . Human-centric means that the digitalization process is focused on the needs of people – patients and citizens alike. A great example of this is the setup of a user-friendly, accessible electronic health record system to improve the provision of care for patients.

[1]Global strategy on digital health 2020-2025. Geneva: World Health Organization; 2021.

[2]The Digitalisation of Healthcare - HealthManagement.org

[3]Brennen, J.S. and Kreiss, D. (2016). Digitalization. In The International Encyclopedia of Communication Theory and Philosophy (eds K.B. Jensen, E.W. Rothenbuhler, J.D. Pooley and R.T. Craig). https://doi.org/10.1002/9781118766804.wbiect111

The EU tries to grasp the potential of healthcare digitalization, by way of presenting a European Data Strategy in 2020 as part of the European Commission's priorities. In the strategy, the Commission outlines the idea to set up multiple sectoral 'data spaces' in which data can flow freely between stakeholders, of which one will be dedicated to health. The proposal to set up such a European Health Data Space, was presented in May 2022. The data space has the aim to empower people to access and control their own electronic health data, as well as to provide a set-up for the use of health data for research, innovation and regulatory activities (the so-called secondary use of data). It third pillar focuses on a single market for telemedicine services and products. The initiative can be viewed as a map for the digital transformation of the healthcare system, both for EU countries as well as those looking to join the Union.

Although the process of healthcare digitalization was already initiated priorly, **the pandemic significantly accelerated the process** in order to facilitate the continuation of outpatient care without the necessity of in-person meetings. Efforts to grasp the learnings from the COVID-19 pandemic as well as the potential of digital health have been made at the level of individual countries, but also at the EU (the EU4Health programme) and WHO-level (i.e. the Flagship programme 'Empowerment through Digital Health'). The pandemic also showcased the issues of access to care which communities' rural areas face – for which telemedicine could provide a solution[4]. In Eastern Europe, there is some progress towards the use of electronic health, but overall, the region has some steps to make in comparison to the European countries in the West[5].

The structure of the report is as follows: First, the report will reflect on the European context as well as the state of healthcare digitalization in the CEEBA region. Afterwards, the methodology of the PHSSR, which is also applied in the CEEBA-HPN initiative, will be further explained. In Chapter IV we will reflect on the different challenges and opportunities to the human-centric digitalization of healthcare in the CEEBA region and shed light on several good practice examples from the countries. Finally, the report will set out different recommendations for policy action which have the aim to contribute to change.

[4]OECD (2021), Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/83025c02-en

[5]Ćwiklicki, M., Schiavone, F., Klich, J. et al. Antecedents of use of e-health services in Central Eastern Europe: a qualitative comparative analysis. BMC Health Serv Res 20, 171 (2020). https://doi.org/10.1186/s12913-020-5034-9

II.

Setting the scene:

EU & European context for the CEEBA region

There are variating levels of healthcare digitalization when looking at the individual countries on the European continent. Even though this is the case, as mentioned priorly, **digitalization of the healthcare sector** is a priority throughout the region. In this section, we reflect on the state of play of healthcare digitalization in the CEEBA region, as well as existing recommendations developed by relevant authorities.

Current status of strategic digital technology integration for healthcare in the CEEBA region

The pandemic has accelerated the digitalization of healthcare in the CEEBA region. In multiple countries such as Bulgaria, Estonia, and Czechia, efforts were made to make better use of the potential of digital services and products to improve the health system, for example, through teleconsultations[6]. In Lithuania, the e-health system development was accelerated, and data collection solutions implemented. For Romania, the pandemic laid bare the need to set up electronic information systems as well as remote care solutions, which could be valuable to enhance future access to healthcare in certain areas. In Poland, the digital health tools available resulted in the possibility to maintain primary care services. In Slovakia the pandemic caused ePrescriptions to rise to 95% of all prescriptions[7]. Although healthcare spending has increased on many occasions during the pandemic, **the limited budget for healthcare sometimes proves problematic to support implementation.**

Existing recommendations for health systems reform targeting digital technologies integration for health in the CEEBA region

This report with recommendations aims to build on the work of other authorities and their vision on how to improve health systems through digital health tools. The European Observatory on Health Systems and Policies, in its report on the use of digital tools[8], notes **active strategies and more policy efforts coupled with strategic investments are needed** to enhance the uptake of digital services and products, building on the momentum from the COVID-19 pandemic. These strategies and policies should also be aimed at the local level and underpinned by a better understanding of patient preferences.

The European Union Expert Panel on effective ways of investing in health, in its opinion[9] regarding the impact of the digital transformation of health services, agrees with the European Observatory regarding the need for strategies and involvement at the local level. Additionally, they underline the **need for robust evaluation of digital services** (and publishing information on a European platform), as well as **investments in systematic monitoring of the health system performance.**

The report aims to go beyond the existing recommendations adhering to the well-established and evidence-based PHSSR methodology for sustainable and resilient health systems, as well as use first-hand insights from experts from the region.

[6] Companion Report - State of Health in the EU (europa.eu)

[7] Association of network pharmacies in Slovakia (2022). Available online at: https://mediweb.hnonline.sk/

[8] Use of digital health tools in Europe: before, during and after COVID-19 (who.int)

[9] EXPH (EXpert Panel on effective ways of investing in Health),
Assessing the impact of digital transformation of health services, 20 November 2018.

Prioritization of healthcare digitalization in new funding programmes

Funding for digitalisation, such as in infrastructure, is key to unlocking the full potential of the transformation. As a response to the pandemic's effect on national healthcare systems, the European Union created the **Recovery and Resilience Facility**[10], as well as a novel standalone funding programme on health: **EU4Health**[11]. In order to obtain funds from the former, Member States were obliged to submit national recovery and resilience plans (RRPs), which could include a focus on the digitalisation of the healthcare system. The EU members in the CEEBA region often included components that would foster digitalisation. Many countries want to invest in the digital transformation of their healthcare system and infrastructure - modernising it. Other measures which are mentioned focus on the improvement of digital skills among the population or the retention and attraction of the necessary healthcare workforce.

The EU4Health programme has as one of its goals to contribute to strengthening health systems by strengthening health data, digital products and services and overall fostering the digital transformation of healthcare. As such, in 2022[12] alone, 29 million euros were dedicated to the training of the healthcare workforce (including in digital skills), and more than 75 million euros were allocated to the setup of infrastructure on which the future European Health Data Space should be based.

[10] Recovery and Resilience Facility | European Commission (europa.eu)

[11] EU4Health programme 2021-2027 – a vision for a healthier European Union

[12] Summary EU4Health – 2022 work programme

III.

Methodology

PHSSR framework for health system assessment

As mentioned above, the CEEBA-HPN report will follow the methodology to assess the healthcare system sustainability and resilience which was developed by the London School of Economics in the framework of the PHSSR. The PHSSR **defines health system sustainability** as follows: *'A health system's ability to continually deliver the key health system functions of providing services, generating resources, financing, and stewardship, incorporating principles of fair financing, equity in access, and efficiency of care, in pursuit of its goals of improving population health, and responsiveness to the needs of the populations it serves, and to learn and improve in doing so'*[13].

Whereas sustainability and resilience are often linked to one another, the PHSSR **defines health system resilience** as *'A health system's ability to prepare for, absorb, adapt to, learn, transform and recover from crises born of short-term shocks and accumulated stresses, in order to minimise their negative impact on population health and disruption caused to health services'*[14].

The PHSSR methodology used to assess healthcare system performance is based on multiple facets, including **governance, financing, workforce, technology and healthcare delivery, population health and environmental sustainability.** Along the lines of a set of relevant questions per area, a picture should be created of the state of play of the health system's resilience and sustainability. In light of this, the challenges and recommendations identified in this report will be presented according to these parameters but framed to fit with the focus area of 'human-centric digitalization of healthcare'.

Data collection method

The information presented in this report was collected based on the insights of the members of the CEEBA-HPN Steering Committee and supplemented by desk research.

[13]The London School of Economics and Political Science (2021), The Partnership for Health Sustainability and Resilience - Interim Report of the Pilot Phase (p.7). Available at: https://www3.weforum.org/docs/WEF_PHSSR_Interim_Report_of_the_Pilot_Phase.pdf

[14]The London School of Economics and Political Science (2021), The Partnership for Health Sustainability and Resilience - Interim Report of the Pilot Phase (p.8). Available at: https://www3.weforum.org/docs/WEF_PHSSR_Interim_Report_of_the_Pilot_Phase.pdf

IV.

Challenges & opportunities ahead of "Human-centric digitalization of healthcare" across the CEEBA region

A. Challenges and opportunities in healthcare digitalization across the CEEBA region.

In this section, we will dive deeper into the different challenges that the countries within the CEEBA region face in terms of health system digitalization – along the lines of the seven parameters from the PHSSR framework. In addition, we will also identify opportunities which could help foster the transition process.

1. Health system governance

For health systems to function optimally and consequently, to be resilient, a clear governance structure should be put in place, with an active role for the government at various levels (national, regional, local) through different authorities with a clear competence. Equally important is the availability of a policy strategy for long-term digitalisation which sets out the course as well as the priorities for the country and renders it possible to target investments. Within the CEEBA region, there is a variation in terms of **availability of digital health strategies**. All countries in the region have at least to some degree a strategy in place. In Serbia, for instance, a dedicated Digital Health Strategy for 2022-2026 was presented[15] earlier in 2022 with a general goal of the digitalization of the health system for better, more efficient and affordable healthcare. In Poland, an e-Health Development Programme for 2022-2027 has been launched[16]. In other CEEBA countries, which are part of the European Union, there are at least dedicated digital health priorities outlined in their Recovery and Resilience Plans (RRP). For instance, in Romania, the development of an eHealth and telemedicine system is incorporated in its plan[17]. A benefit of these RRPs is that the Commission will assess as a third party how the implementation is progressing.

With regards to the implementation of such digital health priorities, a main need is a **clear role for authorities (such as a national agency) as well as a clearly established timeline,** as often these strategies cover multiple years. Additionally, cooperation between the public sector, industry, healthcare professionals and patients is pivotal – both to identify the needs to be addressed, as well as potential fitting solutions. An example of such cross-stakeholder collaboration can be seen at the European level, where the pharmaceutical companies which are members of the European Federation of Pharmaceutical Industries and Associations (EFPIA) hold dialogues with patient groups in the region, through the setup of a specific working group focused on the Central and Eastern European region. In line with this, it could however be useful to build the competences of patient associations in the region further.

[15] Draft digitalization program in the healthcare system of the Republic of Serbia for the period 2022-2026. and the Action Plan for the implementation of the Digitalization Program in the health system of the Republic of Serbia for the period 2022-2023 Draft digitalization program in the healthcare system of the Republic of Serbia for the period 2022-2026. and the Action Plan for the implementation of the Digitalization Program in the health system of the Republic of Serbia for the period 2022-2023

[16] Ministerstwo Zdrowia (2022). Program rozwoju e-zdrowia w Polsce na lata 2022 – 2027. Available online at: https://www.gov.pl/web/cyfryzacja/prezentacja-strategii-rozwoju-e-zdrowia-w-polsce-na-lata-2018-2022

[17] European Commission (2021). Analysis of the recovery and resilience plan of Romania.

The **inclusion of patients in the design and implementation process of policy strategies** is particularly key (for instance through the consultation of umbrella patient organisations or those dedicated to a specific disease area), as the strategies will have a significant impact on them, and the acceptance and uptake of digitalization in healthcare are predominantly reliant on their awareness and literacy. Whereas in the development of Serbia's Digital Health Strategy umbrella patient organisations were consulted, this is not the case in all parts of the CEEBA region. In most countries the engagement of patients in the decision-making process is limited, and in countries like Slovakia patient organisations rather provide feedback on their own initiative.

Finally, another challenge that prevails in the CEEBA region constitutes the **limited systematic collection of evidence on the value and effectiveness of digital services and products in healthcare.** This hampers the promotion of their use among healthcare professionals and providers, as well as patients and citizens. In many countries, this collection process is implemented to a limited extent. Feedback from pilot projects could pose a solution in that respect, also to reflect on barriers to digitalization in a real-world setting. In such feedback processes, an important role could be laid out for patient organisations, both umbrella organisations as well as those focused on a specific disease area. However, although a project-by-project approach can be helpful, there is also a need to look at the bigger picture.

2. Health system funding

Allocating resources to the healthcare system is important in order to implement the digitalisation process. The public expenditure on healthcare in the CEEBA region remains however relatively low. For example, whereas in 2019 Romania spent 5.7% and Poland 6.5% of their GDP on healthcare, Western European countries, allocated up to 11.7% of their GDP to this sector[18].

The root causes of this limited financial resource allocation to healthcare (and its digitalisation) are dependent on the country setting. However, there are some common barriers to funding. First of all, in multiple countries such as Slovakia and Lithuania, a **mentality shift** towards healthcare spending is needed, with expenditure being viewed as an investment (which will yield both health and economic benefits) rather than primarily as a driver of costs. A lower cost does not mean greater efficiency and cost reduction may reduce flexibility, diversity and redundancy of the healthcare system, which is needed for resilience. Secondly, an **integrated approach supported by legislative initiatives,** as was often witnessed during the COVID-19 pandemic, would support directing financial resources to healthcare. However, sometimes there are **capacity** issues which prevent this from happening, such as in Bulgaria.

[18] Eurostat (2021). Healthcare expenditure statistics.

While there are certain challenges to the financing of healthcare digitalisation and digital infrastructure, there are also factors in play that determine its success. For example, it is essential that the use of scientifically validated digital products and services is financially incentivized for HCPs so they can prescribe them to patients, who can get reimbursed. Building on the mindset to embrace digital tools and services in the healthcare setting and direct funding to it, it is important to create awareness of its benefits by underlining the **potential savings in the longer term,** such as through more adequate care provision and prevention activities resulting in fewer patient admissions. In that regard, a focus should also be on **educational activities** towards patients and healthcare professionals on the value of digital health tools and the safety of the data transmission infrastructure used. Furthermore, a **collaborative approach** involving industry, all healthcare professionals (including nurses), patients and decision-makers would foster healthcare digitalisation funding. A driving role in such processes should be allocated to the government authorities.

3. Health and care workforce

As in most European countries, in the CEEBA region, there is a **shortage of healthcare workers,** such as in Estonia, Slovakia, Romania and Slovenia[19]. The **ageing population** will likely add further pressure on the workforce. In the European Union, in 2019 already 23% of the healthcare workforce was aged 55 years or older[20]. A consequence of the healthcare worker shortages throughout the EU is the labour migration of healthcare professionals from the Eastern parts of Europe to the West[21]. This adds another layer of difficulty to workforce retention in the CEEBA region. However, migration does not only occur between but also within countries. As such, a next issue includes the **disbalanced regional distribution of healthcare professionals.** Digital health tools can however to some extent alleviate such pressures, by increasing the efficiency of care provision and reducing the administrative burden for healthcare professionals. Additionally, tools such as mobile applications can help patients to manage their own conditions, resulting in fewer hospital admissions or faster recovery.

To address workforce issues, it can be valuable to set up a **national approach to long-term workforce planning.** Workforce planning refers to an approach that outlines actions based on perceived future demands in terms of population as well as skills. As such, it is valuable to consider a component on the need for digital skills by the healthcare workforce in such planning activities. In many CEEBA countries, there is to a certain extent a healthcare workforce plan with a digital health component in place, but in countries such as Slovakia and Estonia, this is not the case. In Serbia, a healthcare workforce plan is included in the Digital Health program and addresses capacity needs, education and motivation.

[19] European Commission, Directorate-General for Employment, Social Affairs and Inclusion, McGrath, J., Analysis of shortage and surplus occupations 2020, Publications Office, 2020

[20] EPC (2021). Well-performing public services for a fair and resilient European society. Available online at: https://www.epc.eu/content/PDF/2021/SEWB_PULSER.pdf

[21] Eurofound (2013). Mobility and migration of healthcare workers in central and eastern Europe. Available online at: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1335en.pdf

Aside from planning, there is a need to focus on the **education of healthcare professionals** to be able to make efficient use of digital services and products, either during the curriculum or afterwards as part of life-long learning. In many CEEBA countries, such as Poland or Slovakia, digital education is not part of the curriculum for future healthcare professionals. It rather depends on the **willingness and interest** of students and healthcare professionals to expand their knowledge in this area. The ageing of the workforce often negatively affects this motivation to alter the status quo in terms of procedures and embrace digital. Indirectly, this in turn has an impact on younger generations, who follow the work ways of their senior peers, and as such are discouraged to propose change. Instead of educational activities during the curriculum, training is in some cases provided by vendors directly (such as in Serbia) or through European projects. National authorities should reflect on the way to enhance the willingness of healthcare professionals, such as through reimbursement of digital services rendered.

4. Medicines and technology

In an ideal world, the implementation of digitalized healthcare should be rapidly leading to quick access of citizens to such tools. The **COVID-19 pandemic has accelerated the implementation of digitalized healthcare** in the CEEBA region, in areas such as ePrescription or teleconsultation and patients seem to have embraced these changes. In the Czech Republic, a survey of cancer patients outlined the perceived **benefit of telemedicine options to reduce the chance of infections,** but also to save travel time and money, as well as to reduce stress[22]. However, patients do in some cases fear that digital services and products would affect human touch in the patient-doctor contact, as well as adequate protection of their data. Although in many cases teleconsultations are useful, it would be useful to clarify in what situations teleconsultations are less appropriate (i.e. maternal care). National guidelines on remote consultations and their procedures would be helpful in that regard.

Next to the need for adjustment due to the pandemic and **general willingness by the public,** other factors that would help foster digital care implementation in the region include the **existence of a digital infrastructure,** for instance in terms of e-health records and digital insurance information. E-health records and associated databases should be fit-for-purpose to deliver a high-quality analysis of real-world evidence data to produce improved treatment outcomes and take into account healthcare payers' considerations for reimbursement decision-making. The interoperability and integration of different IT systems used should be reflected upon as well. **Universities** can play an important role to collaborate in health data analytics and health informatics, through training new greatly needed specialists, competent in analytical skills, as well as providing consultations and evidence-based advice in this area.

Above all and as mentioned before, **investments are needed both from the public and private sector,** combined with a plan to in a stepwise approach move forward with the digital transition while continuously coordinating with all relevant stakeholders, including marginalized communities, to identify issues which can be tackled.

[22]Hlas onkologickych patient (2021). Stojí onkologičtí pacienti o telemedicínu? Available online at: https://hlaspacientu.cz/wp-content/uploads/2022/05/tz_telemedicina_v_onkologicke_peci_final_101.pdf Z

5. Health service delivery

Health service delivery can be positively impacted by digital services and products, not only by increasing patient-doctor contacts due to the reduction of administrative burden on healthcare professionals but also in terms of the quality of the care provision (continuous patient monitoring or digital interpretation of MRI or CT scans, for example) and the planning as well as coordination of care.

In the CEEBA region, there are still steps to be taken to incorporate digital services and products as standard in care delivery. In terms of **digital health policies and quality standards** being implemented (such as on telemedicine or the use of algorithms in healthcare), there is a variation between countries, with Slovakia and Bulgaria having the least of them in place. However, in many countries policy modification needs have been identified. Addressing these needs would tackle this.

The pandemic has accelerated the shift to digitalized delivery of care in the CEEBA countries, however. **ePrescription and teleconsultations** were made available, and often supp orted by health insurance companies, such as in Slovakia. In the Czech Republic, similar approach-es were observed by insurance companies, which seemed to move towards embracing digital services and products altogether for improved healthcare[23]. In Lithuania legislation was adjusted to enable telehealth services in primary care for citizens and reimbursed by the National Health I nsurance Fund[24]. Policy changes towards telemedicine also recently have been adopted in Roma-nia[25]. Additionally, in Romania digital platforms were used for **patient communication and further patient education** on their condition and treatment options.

A next step in the process would be to continue using the benefits of digital services and products to support healthcare staff and patients as **part of the standard of care,** for example, to **empower patients in chronic condition management** but also to further educate them on the value of such solutions and set up support programmes, as well as to **expand the teleconsultations and patient data access to specialists beyond general practitioners.**

6. Population health & health promotion (health of the population linked to the levels of need and demand that a health system must meet)

The use of digital services and products can also support **population health,** for instance, to gather information on health needs within society's **epidemiology of infectious or non-communicable diseases.** The use of contact-tracing apps, which were made available by the majority of CEEBA governments during the pandemic is an example of the latter.

[23]VZP (2021). Přínos telemedicíny pro zdravotnictví. Available online at: https://www.vzp.cz/poskytovatele/informace-pro-praxi/poradna/prinos-telemediciny-pro-zdravotnictvi

[24]WHO (2021). Multi-disciplinary primary health care during the COVID 19 pandemic: improving access through remote consultations.

[25]Ministerul Sănătății (2022), Normele de aplicare a serviciilor de telemedicină, aprobate. Available online at: https://www.ms.ro/2022/09/14/normele-de-aplicare-a-serviciilor-de-telemedicina-aprobate/

Another opportunity to which digital services and products can contribute is **health promotion,** for instance through the use of wearables which give insights into health determinants (e.g. amount of sleep or heart rate) and social determinants (e.g. digital literacy programmes; monitoring digitally the progress of health-social care programmes integration; leveraging consistently digital data of patients for the purpose of improved social care; digital health technology development being designed to reduce access inequalities – like connectivity). Government initiatives can play an important role in **addressing social determinants of health.** In the CEEBA region, such initiatives which include the use of digital services and products are only to a limited extent or partially present, with the exception of Serbia. In the Czech Republic, such a strategy does not exist at all.

A pre-requisite to optimise the effect of such initiatives constitutes digital literacy of the public. To that end in Slovakia, the government opened the set-up of a project that aims at improving **digital skills** for seniors[26]. In Romania, both the government as well as non-governmental organisations have set up programmes to foster digital literacy in health. Steps could be taken to further educate patients both on digital services as well as products, particular to their disease area.

7. **Environmental sustainability** (preventing and minimising carbon footprint and impact on climate as an element of overall healthcare system sustainability)

Aside from benefits on the healthcare provision, digital services and products can also contribute to health system resilience and sustainability in a different way – by reducing the environmental impact of the system. In general, the use of digital services and products **reduces the amount of paper** used, by transitioning from paper dossiers to electronic health records, or the online provision of patient information. Telemedicine can also contribute to a **reduction of greenhouse gas emissions** due to reduced travel times by patients to healthcare facilities.

A strategy or other incentives to reduce the environmental impact of the health system, which promotes the digital provision of health services is however not implemented in most countries of the CEEBA region. Some countries do reflect on the issue with the support of **European fund mechanisms.** Above all, more deliberation at the technical and political levels is required to ensure that the energy consumption of the data economy does not dilute the potential environmental gains.

B. Good policy practices in "Human-centric digitalization of healthcare" from CEEBA-HPN countries

In this section, we dive deeper into four examples from the CEEBA region of good practices in the set-up and implementation of "Human-centric digitalization of healthcare".

[26] Slovensko (2022), Podpora digitálnych zručností seniorov. Available online at: https://www.slovensko.sk/sk/oznamy/detail/_podpora-digitalnych-zrucnosti

Estonia:
National Health Information System for enhanced patient outcomes

Background	The Estonian National Health Information System (HIS) is a system in which healthcare providers are connected and where patients' health data is stored centrally. It has been in operation since 2008. In the system, almost all Estonians have a countrywide digital record available, which includes an overview of case summaries, immunisation data, dental care documents, health certificates and access to reimbursed bills by the National Health Insurance Fund. The system also renders an e-prescription possibility. As a next step, there is a focus on the collection of genomic data of individuals which can be used for personalised medicine, offering specific diagnoses and treatments.
Its contribution to greater resilience and sustainability of healthcare systems	The system touches upon multiple aspects of healthcare resilience and sustainability. First of all, the system enhances the environmental sustainability of the healthcare system by reducing the amount of paper used (i.e. in prescriptions). Additionally, it improves access to healthcare and patient engagement in managing their own conditions by providing them with access to their own data. Furthermore, for healthcare professionals, the administrative burden is reduced with the transition to digital formats for health records and prescriptions. Finally, personalised medicine by the use of genome data is likely to increase the effectiveness of treatment, reducing hospitalisation rates for certain patients.
Key results in terms of uptake of digital solutions by patients, healthcare professionals and the public sector	The system is used for 100% of prescriptions, of which 98% are prescribed digitally and the remaining 2% are entered at the pharmacy. Furthermore, every month around 2.5 million queries are made to HIS by doctors, and in total, more than 40 million different documents have been stored in the system.
Enabling factors and barriers	One of the main enabling factors is the fact that the system's interface is user-friendly, widely perceived as secure, and accessible at all times. In order to ensure the integrity of the health data, blockchain technology is used, and authentication is based on the Estonian digital ID. In terms of transparency, patients can review data about their visits to healthcare professionals, check prescriptions and review which medical specialists have accessed their data. Furthermore, next to access to their own data, patients can also view data from their children or delegate data access to others as needed.
Learnings for implemetation	The system has proven fruitful, given its wide use in Estonia. The key learnings of the implementation are threefold: Firstly, adequate infrastructure needs to be in place prior to the launch of such a system. Secondly, educational programmes are essential to ensure that those who need support the most (i.e. those of higher age), are able to use it and receive support as needed. Finally, the solution needs to be user-friendly, reliable and perceived to provide benefits for all stakeholders involved (patients, healthcare professionals and public institutions), as well as treatment centers.

Poland:
eHealth solutions for primary care

Background	The pandemic has resulted in a shift to the use of eHealth solutions for primary care in Poland. One of the solutions entails a platform for doctors to issue e-prescription (erecepta) and e-referrals (Gabinet). It was originally set up for primary care physicians to check COVID-19 tests from their patients, but the platform was expanded with additional elements over time. The e-prescription solution was implemented in order to adhere to social distancing and minimize the risk of infections. A telemedicine platform for first contact (TPK) was also set up for use by patients outside of regular general practitioners' office hours. Patients can choose to fill in a form or call a number, which is answered by a nurse or doctor. Based on this contact it can be decided whether a visit to the hospital is needed.
Its contribution to greater resilience and sustainability of healthcare systems	Gabinet is a system that can be used free of charge by doctors and supports the use of electronic documentation towards a more efficient administration. The e-prescription solution not only contributed to limiting the chances of COVID-19 in primary care, but it also reduces the administrative burden and use of paper. The TPK-platform allowed relieving the emergency departments and more rapid assistance for those patients with urgent conditions. Above all, it saves time and resources for both healthcare professionals and patients.
Key results in terms of uptake of digital solutions by patients, healthcare professionals and the public sector	In the first half of 2020 over 207 million e-prescriptions were issued in Poland. Of the Polish population, approximately 84% assessed the use of e-prescriptions positively, mainly due to the ease of use and reduction of paper. The Gabinet platform is used widely by healthcare professionals as a result of the COVID-19 pandemic. The TPK-system was used over 22,500 times in less than 3 months, also by patients from foreign countries, such as Ukraine and those who speak English.
Enabling factors and barriers	A main enabling factor for the uptake of Gabinet constitutes the need for change resulting from the pandemic. Moreover, the provision of free technological support for the medical community supported the uptake. The key barrier to the use was mainly technical: the technological limitations of the platform itself and technical issues in its functioning.The key enabling factor for the TPK-platform was the positive feedback from patients regarding their use of the platform, which attracted further use by others. A key barrier for the system was the need for a change in the habits of patients, as well as limited promotional activities around the platform. For the e-prescription solution, a factor that helped get the tool off the ground was the involvement of the pharmaceutical industry in introducing the change. On the other side of the coin, the limited acceptance in pharmacies, limited awareness, and patient mentality to use the prescriptions can be considered a barrier. The technological limitations among healthcare professionals and the general public also existed.
Learnings for implemetation	A key learning of the TPK-system is the need to inform patients about digital solutions in order to efficiently make use of the system. For the e-prescription system, a key learning is the need for educational activities in order for stakeholders involved to understand the system and its benefits. Consultations with those involved to get their feedback would be a relevant tool to help in that regard, as well as to make improvements. A key learning for implementation from the Gabinet-tool is to build on external challenges (i.e. the pandemic) and build on the solution, also including other functionalities and add-ons.

Bulgaria:
Information system for health registers – RegIntermed

Background	In Bulgaria, the National Council on Prices and Reimbursement of Medical Products has partnered with a software company to establish a big data and AI-enabled system which processes real-world data from electronic health records, thereby enabling the evaluation of innovative drug effectiveness and fostering value-based payment models. The software extracts medical statistical data from hospital information systems to analyse treatment outcomes and clinical survival compared to the trials.
Its contribution to greater resilience and sustainability of healthcare systems	The use of real-world evidence for the evaluation of innovative treatment improves the assessment tools for national authorities to make informed decisions about the effectiveness and comparative value. The use of real-world evidence can create efficiency in public spending. The use of real-world evidence for the evaluation of innovative treatment improves the assessment tools for national authorities to make informed decisions about the effectiveness and comparative value. The use of real-world evidence can create efficiency in public spending.
Key results in terms of uptake of digital solutions by patients, healthcare professionals and the public sector	As mentioned, the technology is in use by the National Council on Prices and Reimbursement of Medical Products, which is a government authority. However, also other payors will be able to assess the reports provided based on the analyses from real-world evidence.
Enabling factors and barriers	Foremost, it is key that the government took a collaborative approach with industry to move forward with this innovative technology for real-world evidence generation. In particular, it is helpful that the government saw the added value of the digital tool for its own procedural work in the evaluation of real-life effectiveness of innovative medicines, and allocated resources to it. Additionally, it is helpful that Bulgaria already introduced an electronic health record portal in 2019, which enables evidence collection. One of the key challenges entails the need to improve the quality of the data sources for evidence generation. Additionally, the use of electronic health records is hampered by a lack of digital skills, particularly among the older generations of Bulgarian healthcare professionals.
Learnings for implemetation	The implementation of new policies is a key success factor and collaboration with the pharmaceutical industry is critical. Additionally, clear and concise messages and proper communication plans are needed to deliver the value proposition to the authorities. When needs are identified, it is useful to cooperate with an experienced technology partner that has a track record in practice solutions. As this is a complex process, all the players should work together and collaborate constantly.

Romania:
Information system for health registers – RegIntermed

Background	The information system for health registers – RegIntermed, was developed by the Authority for Digitalisation of Romania together with the Ministry of Health. The project digitalises health registers and ensures their interconnection with other IT platforms in the field of e-health, including the European e-health platforms. Approximately 12 of the 14 million euros of the project originates from the European Regional Development Fund through the European Competitiveness Operational Program 2014-2020.The project renders it possible to update information progressively, depending on the identified health information needs along the patient pathway, such as decision-making in emergency situations. Additionally, the system will allow for the secondary use of data for medical research, policymaking and epidemiologic insights.
Its contribution to greater resilience and sustainability of healthcare systems	The system will focus, for the first time, on prevention and traceability. The system will be able to integrate data from several IT sources, due to which it will be able to help generate essential statistics for substantiating policies in the health system and for making optimal decisions at the medical level - for the benefit of patients, through long-term follow-up of possible treatment results.
Key results in terms of uptake of digital solutions by patients, healthcare professionals and the public sector	The system will be sized to cover the needs at the national level, of around 55,000 healthcare professionals, over two million patients and 300 operational process administrators.
Enabling factors and barriers	One of the key enabling factors entails the collaboration between the Ministry of Health and the Authority for Digitalisation of Romania. A top implementation team with a clear roadmap was set up and the competence and understanding of EU funding accession strengthened. On the other side of the coin, the main barriers included the limited administrative capacity to get the project off the ground, as well as challenges related to the tender system and governmental cloud infrastructure.
Learnings for implemetation	A new institutional architecture is needed in the area of IT at the governmental level with special attention to cybersecurity, based on a clear strategy and coordination of the field, with specialists at all levels of the IT area. Aside from this, efficient management for the implementation of the projects must be introduced, with a matrix of activities with deadlines and managers and responsibilities, plus an implementation plan.

V.

Policy solutions & recommendations for enhanced resilience & sustainability

Based on the areas and recommendations identified by the PHSSR, relevant to healthcare digitalisation[27], the external environment, the challenges and opportunities in the region, identified by the CEEBA-HPN experts, the CEEBA-HPN roundtable discussions, and the well-working practices from the region, the CEEBA-HPN would like to offer the following recommendations and policy solutions:

01

Health system governance (steering & rule-making functions)

I. Putting in place **a long-term, 5-to-10-year strategy for digitalization** in a multi-stakeholder approach, ensuring **co-design by patients, academia, industry** (large and small companies, from the medical technology, biotechnology, digital health and vaccine sectors, as well as investors) and **healthcare professionals.** These strategies should be based on ethical principles[28] and learnings from other countries[29] and establish the **responsible institutions** for their implementation, as well as progress reports and check-points. Their effectiveness could be measured against a set of non-financial Key Performance Indicators (KPI's) such as effectiveness, accessibility, useability and traceability (e.g., level of uptake of ePrescriptions) and could be enhanced by learning from countries' patterns of excellence of strategies for digitalization of healthcare. Political leadership and a high-level governance structure responsible for healthcare digitalization such as a dedicated Ministry of Digitalization in the CEEBA countries are much-needed and can be conducive to a thriving digital health ecosystem.

II. **Collecting evidence** underpinning the effectiveness, accessibility, usability, traceability and added value of digital services and products, in order to foster the promotion of their use, while **ensuring coordination** between health authorities responsible for digitalisation in healthcare & authorities responsible for setting quality standards of care to ensure digital health is leveraged to improve quality.

III. **Building on existing EU-level frameworks** such as the European Health Data Space and the Artificial Intelligence Act to enable a seamless link to best practices and access to additional funding earmarked for healthcare digitalization.

[27] WEF_PHSSR_Interim_Report_of_the_Pilot_Phase.pdf (weforum.org)

[28] French Presidency of the Council of the EU (2022). European ethical principles for digital health. Available online at: https://presidence-francaise.consilium.europa.eu/media/zp2jt3up/european-ethical-principles-for-digital-health_fr_eng.pdf

[29] Artur Olesch (2022) Digitalisation: A missing connector for health systems in Europe? Available online at: https://apps.who.int/iris/bitstream/handle/10665/362200/Eurohealth-28-3-24-28-eng.pdf?sequence=1&isAllowed=y

02

Health system funding
(generating, pooling & allocating financial resources into healthcare)

I. **Focusing long-term on the holistic value** of strengthening ambulatory and primary care building on the effects of investments that bring short-term returns such as current positive economic gains (e.g. by identifying and demonstrating achieved pre-defined savings going beyond the financial aspects, such as improvements in health outcomes) and moving towards **improved integrated care,** which would facilitate patients' treatment across different healthcare sectors. The integration between primary and post-primary care can be empowered, among others, by setting a common standard for information exchange.

II. **Investing in digital infrastructure and digital health institutions.** Such investment needs to be accompanied by **an appropriate legislative framework** to enhance transparency and clear processes, and by appropriate **educational activities** towards patients and healthcare professionals on the value, safety and security of digital health tools, to reflect new expectations and obligations from the health system. To aid this investment, capacity should be built to implement initiatives like the future European Health Data Space and to ensure proper access to and assimilation of available EU funds allocated through national resilience plans for healthcare digitalisation, where relevant.

III. **Setting a clear strategy on reimbursement of digital services and products** (e.g. data services and medical registries in healthcare institutions, and tools included in the chronic disease management pathways, as well as the data collected as part of medical services provided). To set such a strategy it is necessary to have in place clear leadership from the Ministry of Health and national payors, an integrated approach and partnership with HCPs and patients.

03

Health and care workforce
(planning, training, recruitment & retention)

I. Setting up **a national approach to long-term workforce planning** – by assessing potential future disbalances and demands in terms of skills, population and material resources, but also identifying potential inefficiencies in the workforce management in ambulatory care, and identifying digital solutions which could support the delivery of care with the scarcity of human resources. Such a plan can be part of or aligned with the national Digital Health programs.

II. Integrating **digital skills training programmes in the regular curriculum and continuous professional education** for HCPs & setting up programmes for long-term retention and motivation (e.g. included in National Recovery & Resilience plans, or national Digital Health strategy, and delivered by academic institutions, hospitals and other establishments) to alleviate unbalanced distribution of HCPs, reduce workloads and enhance work-life balance, and stimulate patients self-management. The education should be delivered by academic institutions but also needs to include on-site training modules.

04

Medicines and technology implementation

(making use of medicines & technology)

I. Creating **frameworks for public-private cross-sectoral collaboration to accelerate uptake of innovation** (for example, where private partners from diverse sectors, such as biopharmaceutical, biotechnology, medical technology and tech, support the deployment of pilot solutions working with public stakeholders who then scale the projects up) and encourage participation in the EU Innovative Health Initiative.

II. **Implementation of digital infrastructures** for deployment of electronic health records, as well as **the utilisation of existing infrastructures.** These need to be adapted and upgraded, while taking into consideration the need for the highest standards of privacy, cybersecurity, **interoperability, and integration of infrastructures across member states** to facilitate cross-border delivery of care and address the migration flows.

III. Adoption of **a systematic approach to the evaluation of digital services and products** by assessing the impact of their deployment before scaling them up. This requires taking into account local specificities and understanding existing problems and barriers (technical and legislative) and can be achieved by introducing two levels of post-certification (a regulatory one and a market- or academic-driven one).

05

Health service delivery

(healthcare services organization and delivery – ambulatory (primary care), hospital (secondary care), health of the population as a whole)

I. Identifying **policy modification needs for the delivery of care** (such as policies on the implementation of early diagnostic, treatment and rehabilitation algorithms in ambulatory and primary care, to the use of HCPs and to the benefit of patients) and implementing **telemedicine policies,** informed by clinical evaluations as well as assessments on cost-effectiveness.

II. Adopting existing **quality standards** to incentivise the quality of ambulatory and primary care and opting for standard of care instead of emergency care, by leveraging digital services and products supported by national insurers (e.g. ePrescriptions and teleconsultations, electronic health records, patient communication and patient education platforms). Making such tools part of the standard of care through, for example, the future European Health Data Space guidelines and implementing acts will empower patients in the management of their chronic conditions.

III. Elaborating **patients' and HCPs' guidelines** for implementing digital services and products in major diseases, utilizing relevant funding instruments. Such guidelines can be leveraged through patients' and professional medical associations, educating them on the value of digital tools and setting up support programmes to help them take such tools up.

06

Population health
(health of the population linked to the levels of need and demand that a health system must meet)

I. Addressing **socio-economic and health determinants,** population morbidities, prevention and prophylaxis, and promotion of healthy lifestyles **via general and personalized digital solutions** (e.g. digital literacy programmes; including digital products and services in countries' legal frameworks to enable their reimbursement; monitoring digitally the progress of health-social care programmes integration; leveraging consistently digital data of patients for the purpose of improved social care; digital health technological development being designed to reduce access inequalities – like connectivity).

II. **The data collected should also be re-used** in a wider setting, for the benefit of citizens, such as for reimbursement strategies, health technology assessments, policy making, research (for instance, in rare diseases via registries) and pandemic responses.

III. Improving **general health literacy** and responsibility for one's own health to reduce health inequalities. Particular attention should be paid not only to 'vulnerable groups' but more broadly to 'people in vulnerable situations' such as individuals requiring financial support and technical training to navigate innovative treatments and new health technologies.

07

Environmental sustainability (preventing and minimising carbon footprint and impact on climate as an element of overall healthcare system sustainability)

I. **Monitoring and reducing** the healthcare systems' environmental impact through digitalization (e.g. by reducing paperwork and transitioning from paper dossiers to eHealth records, and reducing travel times to healthcare facilities where relevant), in particular in the overall context of the European Green Deal.

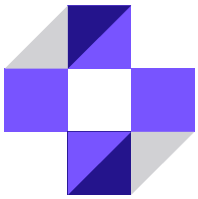
II. Putting in place **a strategy or incentives** within existing strategies to reduce the environmental impact of the health system (e.g. via European funding mechanisms).

Conclusion

The CEEBA region is in the middle of the digital transition of healthcare, fostering the resilience and sustainability of the national healthcare systems. Although the countries have many specific challenges that they face in this process, there are common hurdles which are to be overcome. The ongoing COVID-19 pandemic, as well as the war in Ukraine have laid bare the need to adjust the status quo towards a resistant system.

Along the framework developed by the Partnership on Healthcare System Sustainability and Resilience to assess the resilience and sustainability of healthcare systems, the CEEBA-HPN focused on one specific relevant aspect: human-centric digitalization of healthcare. Digital tools have gained prominence in healthcare throughout the world and have been put under the spotlight during the COVID-19 pandemic. Indeed, following this unprecedented momentum, it remains key to continue to invest in the sustainable development of digital solutions for the benefit of healthcare systems. By evaluating the different challenges present in the region, the CEEBA-HPN drafted targeted policy recommendations, which potentially can act as handles for national policymakers to make (further) policy change happen.

The digital transformation is being implemented throughout Europe and is likely to further Wdefine healthcare in the coming decades. Even though some countries might be a step further or behind in this process compared to others, it is important to take on board the learnings from others both in and outside a country, in order to help each other make the implementation a success and prepare the healthcare system for outside pressures. All to ensure the best possible environment for the healthcare workforce, and provide the optimal care for patients and citizens alike.



CEEBA Health Policy Network

A collaboration with the
Partnership for Health System
Sustainability and Resilience