Building a public health innovation ecosystem in the WHO European Region: meeting report

Copenhagen, 11–12 March 2024
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**Abstract**

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**Keywords**

PUBLIC HEALTH, ECOSYSTEM, HEALTH POLICY, INVESTMENTS

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# Abbreviations

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<th>Abbreviation</th>
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<tr>
<td>AI</td>
<td>artificial intelligence</td>
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<tr>
<td>apps</td>
<td>applications</td>
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<td>BCI</td>
<td>behavioural and cultural insights</td>
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<td>COVID-19</td>
<td>coronavirus disease</td>
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<td>DFC</td>
<td>Development Finance Corporation</td>
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<td>EEG</td>
<td>electroencephalography</td>
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<td>EIB</td>
<td>European Investment Bank</td>
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<td>EU</td>
<td>European Union</td>
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<td>IT</td>
<td>information technology</td>
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<td>mRNA</td>
<td>messenger RNA</td>
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<td>NCDs</td>
<td>noncommunicable diseases</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>WFP</td>
<td>World Food Programme</td>
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The WHO European Region is facing a myriad of complex health challenges that necessitate innovative solutions beyond traditional public health approaches. These challenges encompass a high prevalence of noncommunicable diseases, tobacco use, vaccine-preventable diseases, vector-borne diseases, HIV, multidrug-resistant tuberculosis alarming rates of antimicrobial resistance and an aging population. Amidst these challenges, the Region is presented with unprecedented opportunities driven by various types of innovation, ranging from organizational and social innovations to advancements in artificial intelligence, precision medicine and genomics.

To address these challenges and drive large-scale innovation effectively, a comprehensive strategic approach is essential. This approach involves reframing public health challenges by considering the social, political, commercial and digital determinants of health, and determining measures that maximize the impacts of innovation. The WHO Regional Office for Europe initiated the meeting “Building an innovation ecosystem for public health in the WHO European Region” – the first of its kind – to foster a collaborative platform where stakeholders collectively address pressing public health challenges using innovative approaches and emerging technologies. Key discussions at the meeting revolved around the value systems behind innovation policies, governance of health innovation, public sector capacity, relations between public and private interests, and the financing of public health innovation.

Key takeaways from the meeting underscored the significance of collaboration, patient involvement, and leveraging existing resources and partnerships to scale up innovation. Participants emphasized the need for bold guidance from WHO, streamlined regulatory processes and collaborative efforts with governments to deploy innovative solutions effectively in health systems. Strong recommendations emerged for countries to realign policies for shared goals, establish innovation capacities, identify and scale up impactful innovations, and develop governance and coordination mechanisms aligning the innovation community around promoting health and well-being.
The WHO European Region is facing a string of complex problems that cannot be solved with traditional public health approaches. The search for innovative solutions must be taken up systematically and with urgency to address these problems, including the following:

- Noncommunicable diseases (NCDs) collectively contribute to 90% of deaths and 85% of years lived with disability in the Region (1). Innovations in remote monitoring, artificial intelligence (AI) and accessible medical devices, along with policies to promote healthy behaviour, are essential for the management and prevention of these diseases. Novel medicines and new ways of delivering timely acute care represent underused opportunities.

- Despite a high level of adherence to the WHO Framework Convention on Tobacco Control, the European Region has the second highest prevalence of tobacco use among the WHO regions, and the highest smoking rates in women, and is experiencing a slow decline in use that is far below the agreed targets for 2025 and 2030 (2). New vigour and new solutions are needed.

- An ageing population – 20% of people in the Region are over 65 years (3) – is straining health-care resources. Addressing this issue requires innovative home care strategies, including assistive technologies and interdisciplinary teams, especially for managing the multimorbidity that is common among older people.

- The resurgence of vaccine-preventable diseases, as evidenced by recent measles outbreaks, highlights the urgent need for innovative vaccination strategies to improve coverage and address vaccine hesitancy through community outreach and incentives.

- The rise in vector-borne diseases, exacerbated by climate change and rapid urbanization, calls for advanced surveillance using remote sensing, real-time reporting and geographical information systems for targeted control of vectors.

- HIV remains a challenge, particularly among young adults in the eastern part of the Region. Innovative vaccines and long-acting antiretroviral therapies are crucial for transformational prevention and treatment.

- Antimicrobial resistance is a growing global threat, necessitating a coordinated approach, including surveillance, prudent antibiotic use and new treatment strategies. This urgent threat is the theme of an upcoming High-Level Meeting of the United Nations General Assembly later in 2024.

- Gaps in universal health coverage persist, especially in underserved areas. Innovations in health systems, such as integrated care and digital health solutions, are vital for improvement.

**The cost of inaction**

Public health cannot be relegated to being a fortuitous side-effect of innovation driven by industry policy. Public health ministries and policy must harness innovation now, because advances in technology are disrupting the practice of clinical and population health, and because there is a large pool of potential partners in the European Region working on health innovation, largely untethered from and independent of public health guidance.

As an example, over the past year, glucagon-like peptide 1 receptor agonists have taken the world by storm (4), upending the clinical management of diabetes and obesity, creating vast revenues for the companies involved and profoundly impacting the lives of millions of people. Using traditional public health approaches, it would take many years before these drugs are incorporated into guidance for rational use at population level. Globally, similar disruptive developments are being seen in messenger RNA (mRNA) technologies, immunotherapy, genomics, digital solutions and other areas.

Countries that fail to implement a proactive innovation strategy could miss out on valuable opportunities to enhance public health outcomes, or risk prematurely embracing developments that have not undergone a full public health assessment. The consequences of inaction would therefore be significant. The consequences of allowing commercial interests to dominate over public health needs could also be disastrous.
The Region has a unique opportunity to harness the potential of innovation hubs and science parks, which actively seek to engage with public health initiatives and contribute to improving public health outcomes. These hubs, often supported by government funding, foster dynamic ecosystems that promote creativity and technological advancements. Such hubs have been established across the diverse economies of the Region. They possess rich expertise, abundant resources and extensive networks that can be effectively used to address public health challenges. However, without formal partnerships between these innovation hubs and public health authorities, there is a risk of overlooking the significant potential for collaboration.

Aims and objectives

The WHO Regional Office for Europe invited representatives of Member States and other key stakeholders to a meeting “Building a public health innovation ecosystem in the WHO European Region” in Copenhagen, Denmark on 11–12 March 2024. The aim of the meeting was to create a collaborative platform where stakeholders could collectively address pressing public health challenges using innovative approaches and emerging technologies. The meeting’s main objective was to ensure that the diverse needs, aspirations, perspectives and challenges faced by Member States are adequately represented. The meeting was attended, both in person and virtually, by ministers, high-level policy-makers, academics, innovators and digital health experts, as well as representatives of international organizations, foundations, civil society organizations and youth movements (see Annex 1. List of participants).

The event presented a unique opportunity to inspire the innovation ecosystem community to engage with public health initiatives and define solutions that had the potential to tackle the complex challenges facing the Region. Participants also discussed the value systems behind innovation policies, the governance of health innovation, the capacity of the public sector, the relations between public and private interests, and the financing of public health innovation, both for research and development and for implementing solutions at population scale (see Annex 2. Programme).
Opening address

The opening session was moderated by Moredreck Chibi, Technical Officer, Public Health Innovation, WHO Regional Office for Europe, who called on participants to make innovation the core of public health, harnessing people’s ingenuity and creativity to tackle the numerous health challenges confronting the Region.

Hans Henri P. Kluge, WHO Regional Director for Europe, welcomed participants with a sense of excitement and hope. The world is presented with unprecedented opportunities, driven by emerging technologies and innovations that can revolutionize public health. The WHO European Region is pioneering cutting-edge breakthroughs in digital health, embracing advances that ranged from electronic health records to telemedicine, mobile health applications (apps) and digital solutions. Breakthroughs in gene therapies, personalized medicine and regenerative therapies are opening new frontiers in disease treatment.

Health innovation is not solely about market growth, however, it is also about enhancing patient outcomes, improving access to care and tackling critical challenges in public health. Hans Henri P. Kluge called on participants, playing to their respective strengths, to envision an innovation ecosystem that is guided by public health principles, where the needs of underserved people is met and interventions are accessible in an equitable and affordable way. For its part, the WHO Regional Office for Europe will work hand-in-hand with countries on identifying priority health needs where innovation could be effectively deployed; on developing policies and incentive frameworks to foster an environment conducive to pioneering developments; and on facilitating the adoption and sustainable scaling-up of evidence-based innovations to promote equitable access to health services.

Keynote speakers

Willum Þór Þórsson, Minister of Health of Iceland, in a prerecorded video address, said that the Government of Iceland was supporting the well-being economy, striving to ensure that its policies were designed not just for short-term gain but were aligned with long-term goals of sustainability and well-being. He emphasized the importance of political commitment in advancing the well-being economy agenda, both nationally and internationally – in Iceland, that commitment is led by the Prime Minister’s Office. Recognizing that no nation can thrive in isolation, Iceland is seeking to build political support and foster innovation through partnerships with countries around the world. Its engagement in initiatives such as the Wellbeing Economy Governments partnership (9) demonstrated its commitment to learning from and contributing to global efforts to redefine prosperity. Iceland hosted a well-being economy forum in 2023 and plans are being made to hold a similar event in 2024, with the aim of sharing innovative ideas and strategies for promoting a well-being economy.

In Iceland, the health sector is at the heart of the well-being economy. It acts not just as a beneficiary of well-being policies; it is also an important driver and co-creator, shaping interventions that align public health goals with broader economic and social objectives. Emphasis is placed on the role played by legislation and politically binding commitments, such as the fiscal framework, in implementing policies that align with the well-being economy. It is also important to develop comprehensive well-being indicators that go beyond traditional economic measures such as gross domestic product. These indicators, covering social, economic and environmental dimensions, provide a more holistic view of the quality of life and inform government policy formulation. Work on fostering the well-being economy is far from complete, however, and the challenges being faced demand continuous innovation, collaboration and dedication.
Ilona Kickbusch, Founding Director and Chair, Global Health Centre, Graduate Institute of International and Development Studies, Geneva, Switzerland, agreed that innovation could not be viewed in isolation; it happens in context, within society, and is driven and differentiated by a number of characteristics. Innovation entails the complete reframing of a problem or challenge, rather than incrementally adapting or adding components to a programme. It requires both a safe space and a culture, and it calls for the application of design thinking, notably including feedback loops that take account of user needs. In public health, in particular, social movements (such as Black Lives Matter or ActUp) have been instrumental in reframing problems. The WHO Regional Office for Europe has for a long time been at the forefront of public health innovations by advocating for health promotion in the 1970s and 1980s, focusing not only on the individual but also on the environment, making the healthy choice the easier choice and creating healthy public policies. More recently, public health has been reframed through the consideration of a range of environmental, political, commercial and digital determinants of health. Public health innovations must build on Health for All values and public support.

There are multiple types of innovation, all of which are needed; the important consideration is whether an innovation contributes to the overall ecosystem of public health and creates a positive dynamic. The role of social innovation is absolutely critical. Noteworthy examples of such innovation includes the North Karelia Project on cardiovascular disease prevention in Finland (6) and the WHO Healthy Cities movement (7). Nonetheless, in order to foster sustainability and resilience, there is a need to communicate causes and impact differently. Models based on health promotion and health determinants are being replaced by an integrated, systems-based impact model that focuses on planetary health, One Health, the well-being economy and so-called doughnut economics, or an economic model that offers a blueprint for creating a safe and just space for humanity in balance with nature.

Cajsa Lindberg, Senior consultant, Business Sweden and a patient advocate and cancer survivor living with diabetes and panhypopituitarism, echoed the need for users or patients to be involved as co-creators in identifying real-life problems and then developing sustainable solutions. Patients are experts in gaining experience of how technology works in real life; in her case, the 18 years that she has used an insulin pump are the equivalent of 75 working years for an engineer. The same consideration also applies to policy-making and system design. Drawing on people’s varied expertise as lawyers, economists, strategists or visionaries makes policies more effective, realistic and sustainable. It is crucial that people with lived experience are systematically included at all stages of innovation, from planning through design to implementation and evaluation of solutions.

Peter Schwarz, President-elect, International Diabetes Federation and Head, Division for Prevention and Care of Diabetes, Technische Universität Dresden, Germany, argued that digitalization was not about providing new opportunities for physicians or offering new ways to store data; instead, it afforded a big chance to address the many and varied needs of people living with diabetes. Good diabetes control entails engagement in people’s daily routine, in the form of contact with health practitioners, social support, behaviour self-management and behaviour change therapy. Mobile technologies and apps enable such engagement; their use by patients accounted for the same level of improvement in long-term blood sugar levels as lifestyle changes. Smart health is a disruptive innovation in the diabetes sector.

In Germany, digital health apps are now licensed and reimbursed like drugs and can be used to perform functions such as automatic meal analysis without the manual logging of meals, individual glucose profiling with root causes and explanations, and the provision of periodic summaries, including glucose control and risk scores. Digital biomarkers can be tracked on patients’ smartphones, analysed in the context of lifestyle and the environment by means of AI, and used to diagnose disease and initiate, monitor and adjust treatment. The International Diabetes Federation (Europe) has drawn up recommendations on how to develop user-centred apps focused on patient’s needs and a best practice access pathway for apps, as well as how to support the integration and uptake of high-quality apps into the health ecosystem. As President-elect of International Diabetes Federation, Peter Schwarz’s mission is to ensure that every person worldwide had the same access to the same quality of prevention and diabetes care. To that end, he proposed that surveys should be carried out in order to produce an annual diabetes index, making the quality of diabetes care comparable between countries, regions and states.
Tanya Mulcahy, Director, Health Innovation Hub, Ireland, pointed out that innovation was only impactful if it was implemented at scale. Early diagnosis, intervention and treatment are needed in order to tackle the many issues being faced by health systems, including ageing populations; the chronic disease burden; mental health, especially in children; hospital overcrowding; women’s health; and the environment. It is necessary to develop, test and implement innovations that address the most pressing issues, to fund research, to support the development of solutions, and to engage with all those involved in ecosystems, particularly end users, patients and payers. AI, digital systems, data analytics, precision medicine and genomics, and remote monitoring and point-of-care diagnostics all offered huge potential, but they were not being implemented on the ground across the world. For innovations to be implemented at scale, innovation ecosystems must be established and must work together on meeting identified needs.

The Health Innovation Hub in Ireland, established in 2013, is funded by Enterprise Ireland, the government agency providing support to expand research capacity in companies, to increase collaboration between enterprises and the research sector, and to maximize commercialization of the State’s research investment. The Hub is staffed by personnel from the public health system. Companies approach the Hub with innovations at all stages of development, but it is also important to engage with end users, such as patients and caregivers, and to consider how good solutions can be procured at scale, nationally and globally.

Examples of the Hub’s work include a recently completed pilot study and trial of a compostable personal protective equipment apron and subsequent development of composting infrastructure for use in the health system nationwide. A speech and language therapist had developed a tool that enabled patients with Parkinson’s disease to preserve their voice; pilot trials had found enhanced communication, more timely intervention and improved quality of care and, ultimately, quality of life. AI tools were also being used to predict and improve neonatal health, while innovations in the feeding of preterm infants had resulted in better outcomes and heightened achievement of developmental milestones. The Hub is also working with another company on point-of-care testing to detect viral load in settings where there is no access to laboratory skills or technology.

To have an impact on public health, innovation must take place in a joined-up ecosystem, with support from the government, a base in academia and engagement with enterprise partners. Health-care systems must be open to testing and trialling innovation, and patients and end users must be part of the network. Ecosystems themselves should not work alone but in networks. In the digital space, in particular, thought must be given to how to encourage health systems to embrace, adopt and implement innovations.
Panellist presentations

Natasha Azzopardi-Muscat, Director, Division of Country Health Policies and Systems, WHO Regional Office for Europe, moderating the session, recalled that participants in the Tallinn Charter 15th Anniversary Health Systems Conference entitled “Trust and transformation – resilient and sustainable health systems for the future”, held in December 2023 (8), had emphasized innovation as a critical driver of health system evolution. She emphasized that the discussions at the current meeting would explore public health policies for health systems, with a specific emphasis on understanding the policy environment surrounding innovation, including the necessary legal and regulatory frameworks. Reiterating WHO’s core principle of ensuring equity in health care, she emphasized the importance of stakeholder engagement throughout the policy development process.

The first invited speaker, Danica Grujičić, Minister of Health of Serbia, speaking via video link, recalled the discussions at the WHO Regional Office for Europe’s Regional meeting on the health and care workforce, held in Bucharest, Romania, in March 2023 (9), emphasized the significance of human capital and highlighted her government’s efforts to address the migration of health-care workers. Specifically, it was implementing a programme to employ graduates from medical faculties and secondary medical schools. Between 2018 and 2023, more than 1700 doctors and 1600 nurses and technicians had been hired in public health institutions in Serbia – a notable achievement, particularly during the coronavirus disease (COVID-19) pandemic.

Among ongoing initiatives, digitalization is a top priority in Serbia. The Government is collaborating with the World Bank on disease prevention in primary health care. It is important to revise the regulations covering the health system and health insurance in Serbia; an endeavour that requires support from other countries and WHO, as would efforts to regulate tobacco use.

Cristina Chiotan, Head, Public Affairs and Stakeholder Relations, EIT Health Central Office, Belgium, highlighted the significant public interest in innovation within the realm of public health. EIT Health is a network organization comprising over 120 partners from various sectors, such as business, industry and academia. Collaboration among these diverse sectors has been essential, as innovation often occurs at their intersection.

Policies must be designed and tailored to meet specific needs and address existing challenges, and the people who are responsible for policy implementation must be listened to. Critical questions should be posed concerning the need for innovations and how best to support organizations in bringing new ideas to market. An ecosystem needs to be built up, involving universities, hospitals, health-care professionals, small and medium-sized enterprises, industry and start-ups, aimed at fostering innovation within society. Achieving large-scale innovation requires a robust policy framework to facilitate widespread adoption and implementation, particularly with regard to technology assessment. Policy intervention also has a role to play in facilitating the integration of innovation into health care, making it accessible to all.

EIT Health is coordinating the European Taskforce for Harmonised Evaluations of Digital Medical Devices, led by France, and is collaborating with Germany to replicate its fast-track system in other countries, aiming to improve access to digital medical devices globally. It is essential to ensure that innovations in health care embody the values of quality, effectiveness and value for patients. Despite the complexities of navigating the health innovation ecosystem, Cristina Chiotan emphasized the value of the ecosystem and the need to embrace it in order to drive progress in health care.

Els Torreele, Policy Associate, University College London Institute for Innovation and Public Purpose, United Kingdom, reflected on her extensive experience of over 20 years working within the health innovation ecosystem, highlighting the interconnectedness of various policy domains, including economic, fiscal, monetary, industrial and intellectual property policies. During the 1980s and 1990s, there had been a belief that the private sector would drive innovation, but governments have a key role to play in leading the private sector towards equity-oriented objectives. While equity might not be a primary objective of the private sector, it is imperative for governments to prioritize equity in policy-making. The root cause of inequity is not market failure but rather a failure in public health policies.
The work of the University College London Institute for Innovation and Public Purpose and its founding director, Mariana Mazzucato, focuses on placing public health objectives at the centre of economic policies. This approach entails re-evaluating how health innovation is financed and who leads these efforts. The Institute rejects the notion that the economy should solely prioritize efficiency, advocating instead for a perspective that emphasized health and equity. Embracing equity as a core value can lead to a re-evaluation of economic principles, ensuring that economic justice for health occupies a central position.

Brian O’Connor, Chair, ECHAlliance, Ireland, noted fragmentation within the health sector and emphasized the importance of collaboration, as no single entity could address all the challenges alone. ECHAlliance has played a role as a global connector, particularly during the COVID-19 pandemic, extending its reach across Australia, Canada, India and Latin America. Brian O’Connor thought that WHO should provide more specific, bold and direct guidance to organizations present at the meeting, articulate clear objectives for the year and offer direction on how they could contribute and take collective action.

Anca Toma, Executive Director, European Patient Forum, acknowledged the trend of increasing patient involvement in health-care innovation, although there was still progress to be made: patients often faced challenges in accessing treatments resulting from the innovation process. There had been a doubling in patient involvement in treatment development globally, with Europe leading at 50%. In Czechia and Denmark, patient organizations are involved in rare disease management and hospital care delivery, respectively, while in France and Germany patients are involved in health-care organization and policy-making. There is a need for more structural support to efficiently manage the additional workload generated by patient involvement. While involving patients in innovation and policy development might not always be the most efficient process, it leads to better outcomes for people, which should be at the core of health systems.

Responding to questions raised by the moderator, Cristina Chiotan said that EIT Health had taken early action in response to a proposal for a regulation of the European Parliament and of the Council on a European Health Data Space, organizing 10 round tables for Member States in 2023 to facilitate discussions among sectors that traditionally did not collaborate, thereby driving innovation. She stated that it was important to tailor systems and processes to suit each country’s context, while grouping similar countries to facilitate collaboration and knowledge sharing, and learning from other countries’ experiences to avoid repeating mistakes.

Els Torreele highlighted the fact that the innovation process was not linear; efforts must be made to map where value was created and by whom, particularly from an economic perspective. Valuing improvements in health pose a challenge, especially in contrast to the profit-driven motives and measurements of the private sector. The value chain should be demonetized and the factors that contributed to people’s health and well-being should be identified, in order to establish a model that incorporates those aspects in the context of a well-being economy.

Pointing to the development of a pandemic accord for prevention, preparedness and response to emergencies, where some countries are advocating strongly for equitable outcomes, she emphasized the urgent need for a global policy environment that prioritizes equity and solidarity, and for the market and the economy to be reframed to prioritize health and well-being, focusing on delivering interventions that address people’s health needs equitably and affordably. Europe could lead by example in promoting a health-centric approach to innovation and evaluating companies based on their contributions to human well-being.

Brian O’Connor noted that the term “ecosystem” had once been unfamiliar but was now commonly used: multistakeholder meetings were currently being organized worldwide on a regular basis. Successes and failures must be shared across ecosystems, to facilitate learning and growth. The global challenges faced by ecosystems include those of understanding developments in other regions, exchanging knowledge and facilitating responses to specific opportunities. As an example, the government of the region of Catalonia had sought to invest €200 million in digital health initiatives but had encountered difficulties in finding suitable expertise. ECHAlliance had bridged the gap by leveraging its network of members and connecting the region with the necessary expertise and the expert organizations with funding, thereby addressing critical needs within the ecosystem.
Discussion

In the discussion that followed, a participant from the Ministry of Health of Malta, Dr Stefan Buttigieg, asked about the balance between showcasing achievements and acknowledging and learning from failures, particularly in the government context. Brian O’Connor suggested that WHO could support case studies and comparative analysis of failures and successes in countries, emphasizing the lessons learned from mistakes and how they could be avoided, and facilitate the sharing of findings. Els Torreele stressed the need for nuance in maximizing successful outcomes, cautioning against a simplistic approach that focuses solely on failures. In response to a question about how to integrate support for service delivery into innovation strategies, she drew attention to the significance of policy innovation and its implementation in service delivery. Different narratives surrounding innovation should be considered, particularly in the context of technology ecosystems, where profitability often dictates success.

Michael Twomey, Health Innovation Ireland, posed a question about the importance of understanding biases in innovation processes, wondering whether innovators genuinely listened to patients, rather than relying solely on the expertise of clinicians. It is important to recognize what is valuable to stakeholders and to ensure that their perspectives are truly heard and considered in the innovation process. A representative of the Ministry of Health of Serbia, Dr Luka Dragečević, asked whether policies would need to be revisited, and possibly reformulated, in view of the emergence of lucrative technologies such as those based on mRNA for vaccines and gene therapy, and the increasing emphasis on patents and intellectual property. Dimitra Panteli, European Observatory on Health Systems and Policies, asked how policy on innovation could create room for frontline health professionals, and how the gap in implementing innovation could be bridged in order to help them work more effectively.

Panellists responded to those questions and made some closing remarks. Anca Toma said that input from the public, while not monetizable, was crucial for achieving better outcomes for everyone. Emphasizing the value of learning from mistakes, she noted that innovation sometimes lay in learning from others and making small changes. Innovations in health systems must be safe, effective and accessible to all. Lastly, she drew attention to the importance of accountability in health systems and governance, noting that civil society and stakeholder engagement is crucial in this regard.

Cristina Chiotan advocated for learning from both failures and successes, viewing them as opportunities for growth. It is important to create a safe space for stakeholders to openly discuss their experiences, and to listen to students and researchers, building their capacity to integrate their work into regulatory frameworks. A starting point for tackling the challenge of shortages of health-care professionals, particularly specialists, in Europe could be for students to update curricula in order to include ideas for innovation and digital transformation in health systems, driven by the perceived benefits for patients.

Brian O’Connor wondered why it takes so long for excellent ideas to be put into practice. In the National Health Service in the United Kingdom, for instance, it could take 15 to 20 years for an innovation to be implemented. In Rwanda, on the other hand, a woman had created and implemented a handheld ultrasound device costing US$ 5000. WHO should draw on existing networks, including those constituted by participants in the meeting, to promote innovative companies and organizations worldwide.

Els Torreele noted that some innovations took time to be applied while others did not, and not all needed to be scaled. It is essential to be transparent and open in learning from failure. Turning to the issue of intellectual property and its impact on the economics of innovation, she highlighted the monopolization of knowledge in the medical field, citing the example of mRNA vaccine technology, which had been in development for 20 years before the COVID-19 pandemic. She questioned why collective research efforts were not governed as a common good, suggesting that intellectual property rights might hinder progress.
This session was moderated by Kremlin Wickramasinghe, Regional Adviser, Nutrition, Physical Activity and Obesity, WHO Regional Office for Europe.

Setting the scene for the session, Nika Pajda, Senior policy and special projects manager, and Becky Odoi, Youth representative, Bite Back, a United Kingdom-based youth activist organization, said that they had been campaigning for a healthier and fairer food system since 2019. Growing up in the twenty-first century, they had had social media and the Internet at their disposal all their lives. That had influenced their affinity for companies selling junk food and fast food products, for example, as well as delivery apps. What looked like harmless advertising was actually contributing to the relentless targeting of young people, willing them to continue engaging with companies’ brands, with no thought of the consequences that it would have on their long-term health. Research conducted by Bite Back had revealed that the online advertising spend by the top ten biggest fast food outlets and delivery platforms in the United Kingdom had increased by 75% between 2021 and 2022, to £88 million; that food manufacturers had spent £55 million on online advertising of foods high in fat, salt or sugar in 2022; and that half of 13–15 year olds had a food and drink brand or delivery app installed on their phone. All children deserve to grow up free from targeting by junk food giants. Bite Back was campaigning for legislation to end unhealthy food and drink advertising online.

The session marked the launch of the WHO Regional Office for Europe position statement (Box 1) on making the WHO European Region the healthiest online environment for children.

Box 1. Position statement
1. Every child must be protected from violence, exploitation and abuse on the Internet.
2. Children’s rights must be respected by governments and commercial entities.
3. Any person under the age of 18 must be recognized as a child.
4. Children must be protected from unhealthy marketing.
5. Data collection from children should be reduced to a minimum and not used for commercial purposes.
6. Transparent monitoring and evaluation should be implemented.
7. Cross-border collaboration should be improved.
8. Children’s health should always be prioritized.

Hans Kluge,WHO Regional Director for Europe, noted that digital technology was currently conducting the largest experiment in history on the world’s young people. The WHO European Region had the ambition to become the region with the safest online environment, an ambition that he had heard echoed in his recent visits to countries. In striving to attain that goal, countries could learn from previous practices to protect children, such as the introduction of safety requirements in children’s playgrounds or identity checks to restrict the sale of alcohol and tobacco to children. Innovative approaches were needed, however, in order to scale up interventions to population level and to keep pace with rapid developments in the digital environment. WHO had developed tools to tackle unhealthy digital marketing and would bring together all stakeholders with the aim of turning the position statement into a charter on children’s health and the digital environment.
Aleš Musar, spouse of the President of Slovenia, recalled that a summit of spouses of European leaders had been held in Zagreb, Croatia, on 9–10 May 2023 (11) to launch the network on the prevention of childhood obesity in the WHO European Region. Following that event, he had convened a multidisciplinary group of experts in his country, who had drawn up a list of actions specific to Slovenia based on the Zagreb Declaration (12). They included measures to regulate and monitor advertising in the digital environment. A national conference on the subject would be held later in 2024. WHO was playing a crucial role in supporting the formation of national and international networks, not only as an instigator of policy recommendations but also as a forum for the exchange of experience.

Margarida Tavares, Secretary of State for Health Promotion, Portugal, said that Portugal was the first country in the European Union (EU) to have a regulation in place for food marketing, including digital marketing. Implemented in 2019, it restricted the marketing of harmful food products to children under the age of 16. By law, advertisements targeting them were banned from television, radio, cinema, print publications, websites and social media, and also in some spaces and activities related to children such as schools, sports and entertainment. The Government had faced strong opposition from the economic, food and advertising sectors, and it had taken more than three years to have the law approved in the Portuguese parliament. A major issue was that the law could not be applied to food companies, advertisers or digital platforms that were not based in Portugal. The regulatory frameworks that were in place to ensure cybersecurity and data privacy raised concerns regarding the tools that could be used to monitor digital marketing. Food brands were disguising their advertisements to avoid being seen as marketing their products to children, and they were adopting new strategies such as brand marketing. The first formal evaluation of the impact of the regulation is under way. The WHO position statement would support the Government’s efforts to improve the regulation and tighten the restrictions on food marketing to children, for instance by increasing the age limit to 18 years.

Mari Velsand, Director-General, Medietilsynet (Norwegian Media Authority), believed that while the food people ate shaped their bodies and their lives, so did information. Protecting minors from harmful content was a core mission for most media regulators in Europe. Harms affected not only physical health (unhealthy foods or beverages) but also mental health (bullying, body pressure or disinformation). The key issue for media regulators was to strike the right balance between protecting children from online harm and supporting their right to interact, play, obtain information and learn. This is a complicated task in a global, digitalized environment, where content is distributed across national borders without necessarily being fact-checked or verified as suitable for children. She welcomed the multiple legal frameworks in Europe that addressed the protection of children online, including the recently adopted Digital Services Act (Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 (13)). However, regulation alone is not enough to protect children in the digital environment; promoting media literacy was therefore vital, to ensure that citizens are equipped with adequate skills and tools to be able to navigate both actively and safely online. A recent survey by the Authority found that children thought that violent online content, especially between young people, caused the most harm – a finding that will be used as the basis for information campaigns to raise awareness among all age groups.
Gabriella Sutton, Project Coordinator, Policy and Practice, EuroHealthNet, said that the position statement tied in very well with EuroHealthNet’s work to improve health equity and well-being in Europe and to act through the determinants of health, with the digital dimension being a cross-cutting factor. The position statement is an important advocacy tool. It is important to make sure that strong legislation is in place, going beyond voluntary initiatives of co-regulation and self-regulation, to tackle the marketing and advertising of unhealthy food and sugary drinks to children and ensure that everyone had equal opportunities to access healthier online environments. The statement also signals the importance of finding new ways to work together across all levels of governance and in areas that go beyond the traditional public health remit, such as schools. EuroHealthNet is the lead agency in the EU-funded Schools4Health (2023–2025) initiative. She hoped that these new ways of working will support school cultures and structures not only to create healthier physical and social environments but also to see their applicability in online environments.

Götz Gottschalk, Head of Health, YouTube Germany, explained that YouTube Health aimed to raise health literacy by providing a digital platform for authoritative health partners. In 2022, an expert panel convened by the United States National Academy of Medicine, the Council of Medical Speciality Societies and WHO had published a set of principles on identifying credible sources of health information. YouTube Health had subsequently created products that were able to highlight authoritative health information on the platform. In November 2023, the British Medical Journal, in collaboration with WHO and supported by an unrestricted educational grant from YouTube, had brought together global experts to discuss the guiding principles for making developmentally appropriate mental health content and communication available online for young people. YouTube had 200 billion views of health condition-related content in 2023; in Germany alone, it had received 3 billion views, 253 million of which had been aimed at mental health conditions. The WHO position statement will provide YouTube with a navigation point for promoting authoritative content and making sure that a close watch is kept for harmful content.

Josianne Galea Baron, Children’s Rights and Business Specialist, United Nations Children’s Fund (UNICEF), said that UNICEF worked in over 190 countries and territories to advocate for the protection of children’s rights, including in the digital environment and the health space. The business and human rights perspective provides a framework within which UNICEF can address the risks and harms to child rights that were related to digital technologies, especially as many of the sources of innovation, services and products are businesses in the private sector. It is important to note that children not only represent the future, they also currently account for 30% of the world’s population and encompass a whole world of diversity. It is unsatisfactory to refer to them as “vulnerable users”, since they are also content creators, innovators, influencers, coders, human rights defenders and advocates. Efforts should be made to understand how digital technologies can both create new risks and harms, on the one hand, and support and improve the situation and outcomes for children, on the other. According to Josianne Galea Baron, a review made in 2022 had shown that personal information was 42% more likely to be shared with advertisers on child-directed apps, and there were numerous instances of children being present in adult-centric environments, but it could also be argued that designing services for children created more inclusive and rights-respecting services for everybody.

The position statement makes reference to three core documents relevant for UNICEF: the Convention on the Rights of the Child (15); the Committee on the Rights of the Child’s General comment No. 25 (2021) on children’s rights in relation to the digital environment (16); and the Guiding principles on business and human rights, issued by the United Nations Office of the High Commissioner for Human Rights (17) and endorsed by the Human Rights Council in 2011, which introduced the concept of remedy for infringement of human rights. UNICEF is working with the United Nations Office of the High Commissioner for Human Rights on a paper exploring how the Guiding Principles could be applied to children’s rights in the digital environment, as part of its efforts to account for and respond to the potential impacts of innovation on children’s rights and human rights.
Responding to questions raised by participants, Hans Kluge noted that the role of WHO was to bring health matters, including digital health and health security, to the attention of ministers and heads of State at European level. Margarida Tavares explained that the Directorate-General for the Consumer in Portugal was responsible for investigating alleged infringements of the food marketing regulation and for screening online advertising to identify unfair commercial practices – levels of compliance of up to 94% have been found. Directorate-General for the Consumer is also conducting interviews with companies to examine how they comply with or evade the law, and it is developing indicators for measuring compliance more precisely. Mari Velsand said that the Digital Services Act (18), in force in EU countries since February 2024, made it illegal to target advertisements to minors; placed more responsibility on digital platforms to identify and mitigate risk to children and youth, and to remove illegal content as defined under national law; and required more openness and transparency in the use of algorithms and data. Health authorities and media regulators should cooperate on defining harmful content in the digital environment and discussing the use of social media and mobile devices.

Aleš Musar called for recognition that what happened in the digital world was real. While it was possible to regulate the physical world and to detect harmful content on the Internet with the help of AI, activities at the peer-to-peer level were far less manageable. Only digital natives, young people born into the online environment, can be successful in shaping this environment. Götz Gottschalk reiterated that information was a determinant of health.

All panellists drew attention to the importance of cooperation, not only between the public and private sectors but also between countries, supported by WHO, and they recognized the need to have high ambitions regarding children’s online safety. The positive side of digital innovation for health promotion should not be overlooked, however. The position statement is crucial in making the important issue of a healthy online environment for children more visible.
Panellist presentations

Allison Ekberg, Technical Officer, Integrated Management and Service Delivery for NCDs, WHO Regional Office for Europe, moderating the session, highlighted the connection between innovation and transformation within the health system. She emphasized the importance of exploring various perspectives and essential building blocks for that transformation.

Dimitra Panteli, Programme Manager and Senior Health Systems Analyst, European Observatory on Health Systems and Policies, set the scene for the session by delving into the various components and aspects of innovation within health systems. The European Innovation Scoreboard, drawn up by the European Commission, provides insights into innovation across various fields, although it is not specific to health. While some European countries, such as Denmark, were considered lead innovators, drawing conclusions about innovation in health systems is challenging owing to their complexity, the number of diverse actors, and contextual factors that differ significantly from other innovation systems.

Various types of innovation can be distinguished, including product innovation, process innovation, service innovation and social innovation. The European Observatory is endeavouring to categorize innovations on scientific bases, such as life sciences (biomedical), information sciences (technological) or social sciences (organizational). Many innovations span multiple categories, complicating classification. The traditional innovation process involves funding basic research leading to development, regulation, marketing and implementation. However, that linear process is not applicable to all types of innovation.

Dr Dimitra Panteli, WHO Global Observatory on Health Research and Development, indicated that research into medicinal products, particularly for NCDs, outweighed that related to vaccines, diagnostics and other conditions. There is a lack of alignment between the outputs of innovation and actual population needs, possibly influenced by commercial attractiveness. There are varying levels of public funding for innovation. The impact of the COVID-19 pandemic is evident in increased funding for, and investment in, telehealth and data sharing. AI offers significant potential for handling various health system tasks, but clear criteria are needed for its development and implementation. Regulations, standards and principles play a key role in shaping innovation strategies, underscoring the importance of WHO involvement in this process.

The realm of organizational innovation encompasses new care models, where digital health plays a significant part. Examples included hospital-at-home programmes, virtual wards, and apps designed to deliver health care directly to patients outside traditional hospital settings. System innovation within primary health care will ensure the effective delivery of health-care services to diverse populations. In a public consultation held at the request of the European Commission in 2023, digital health and AI were not seen as top priorities. Instead, issues such as climate change and ageing consistently ranked high, prompting consideration to be given to innovation in these areas.

In conclusion, Dimitra Panteli emphasized that innovation and health system transformation required political commitment. A policy brief that was presented at the Tallinn Charter 15th Anniversary Health Systems Conference outlined strategies that policy-makers could use to drive widespread innovation within health systems (19). They included leadership, shared commitment, resource allocation, utilization of information technology (IT), and fostering robust stakeholder engagement and communication.
Opening the panel discussion that followed, Bakyt Dzhangaziev, Deputy Minister of Health of Kyrgyzstan, outlined the essential elements necessary to foster significant innovations, emphasizing the critical role of infrastructure, legal frameworks and effective communication channels. In Kyrgyzstan, efforts are underway to collect comprehensive medical data from patients in order to create digital health profiles for each citizen, including children. The Government is actively developing the necessary legal structures for digital technologies and exploring various financial models to support these initiatives. AI poses significant challenges, particularly regarding ethics and principles, as do managing the vast amount of health-care-related big data. As a top priority for the current year, the Government aims to establish a secure data repository, accessible to academics and the scientific community for research purposes. Strategies for involving users in innovation include using multiple communication channels, such as social media and dialogue tables, to effectively reach out to families. Notably, during critical events such as the recent measles outbreak, these channels play a vital role in informing parents and disseminating essential notifications.

Katja Čič, Programme Manager, Youth Health Organization, Slovenia, highlighted the pivotal role played by young people in driving innovation and community engagement, emphasizing their continuous pursuit of fresh perspectives and innovative solutions. Youth organizations constantly strive to meet the ever-evolving needs of their demographic, with innovation being a prerequisite for securing funding and remaining relevant. She called for the inclusion of youth voices in policy consultations, particularly those organized by the European Commission, in view of their long-term impact on health priorities. More generally, she advocated for the greater involvement of young people in shaping policy agendas, given their substantial stake in future health outcomes.

Co-creation in settings such as the Health and Well-being Forum for Youth in 2022 is effective in facilitating meaningful collaboration between youth and organizations such as WHO. This engagement has evolved into deeper involvement, as seen in events such as the Seventh Ministerial Conference on Environment and Health, which had included specific initiatives on the Budapest Declaration, a youth pre-event, and a youth side event showcasing youth consultations. Other examples included the Youth Alcohol Network for the Evidence into Action Alcohol Project and an event entitled “Force of the future: Co-creating youth action on immunization”. Quoting Thomas A. Edison: “I have not failed. I’ve just found 10 000 ways that won’t work”, Katja Čič emphasized that innovation in the youth space entailed learning from failures, an integral part of the innovation process. Young people must be involved in transforming health systems, service delivery and decision-making; their expertise in technological issues made their inclusion imperative.

Cris Scotter, Policy Adviser, Health Workforce and Service Delivery, WHO Regional Office for Europe, drew attention to the longstanding issue of workforce shortages, noting that they had been evident even before the onset of the COVID-19 pandemic but had been further highlighted by it. Simply importing more workers was not a sustainable solution; instead, a shift in perspective was needed towards enhancing workforce effectiveness. Virtual wards and remote delivery of services were cited as innovative solutions for tackling workforce challenges. In addition, professional boundaries within the workforce should be transcended and collaboration across disciplines fostered, while patients should be empowered and integrated into their own care teams, facilitated by technology, such as the use of mobile phones for health monitoring. Innovative approaches are also applicable in remote health-care settings: in northern Sweden, for instance, patients interacted with medical practitioners through a suite of medical devices. It is important to invest in public health and primary health care, in order to prevent people’s health status from deteriorating and to avert the need for extensive medical care. The preventive approach not only reduces health care costs, it also contributes to economic growth, as healthy populations are associated with increased gross domestic product.
Catherine Delevoye, Senior Business Adviser, Technoport SA, Luxembourg, described the approach adopted at the technology business incubator. Initially, their focus was on supporting technology providers in the commercialization process. However, having identified service delivery as a weak point in the value chain, and recognizing the need for customization in fields such as disability, they shifted to a more user-centric approach, involving collaboration with medical practitioners, engineers, designers and patients to develop prototypes that met specific needs. This shift highlighted the importance not only of product innovation but also of service innovation in meeting user requirements and facilitating societal integration.

The co-creation process promotes a closer, more personal relationship with patients and empowers them to have a significant impact on their own care. This empowerment not only improves patient psychological state but also enhances their compliance with expectations concerning rehabilitation. Breaking down barriers between different professions fosters collaboration and inclusivity; bringing together individuals from diverse backgrounds, such as designers, engineers and health-care providers; facilitates meaningful discussions; and generates innovative ideas – incorporating various perspectives and embracing diverse views enriches the innovation process. Expectations among stakeholders are being managed successfully, but challenges have arisen with policy-makers and hospital directors, who are concerned that co-creation might compromise quality and management standards. The involvement of patients and customization has led to changes in product development and market regulation. Discussions with policy-makers are ongoing to address these concerns and ensure patient safety. Consent requirements for patients with disabilities varies between countries, highlighting the need for policy alignment. It is important to strike a balance between empowering individuals and ensuring their safety. The reimbursement of innovative devices is another challenge: insurance companies often struggle to categorize new products, leading to uncertainty about coverage. Efforts are being made to address the challenge of integrating new technologies into existing health-care systems. Discussions are ongoing with authorities in Belgium, France, Germany and neighbouring countries to establish common policies.

Vanessa Ribeiro, Head, Planning and Innovation, Portuguese Association for Hospital Development, was pleased to participate in a panel discussion focused on organizational innovation, rather than solely on technological innovation. Three strategic approaches are being adopted in Portugal. First, a dedicated innovation team has been established within her organization and is engaged in partnerships with various stakeholders, including government departments, academia and health-care providers, albeit with less involvement from patients. Second, a political decision has been taken to expand integrated care organizations; as of the beginning of 2024, they have been scaled up to cover the entire country, encompassing a population of 10 million. Despite initial expectations that professionals would naturally organize themselves to deliver integrated care models, this has not proved to be the case; legislation alone is insufficient to ensure effective implementation. To support the expansion of integrated care, a new financing model had been introduced, and there were hopes for its success. The third approach involves active participation in international projects as catalysts for innovation. By engaging in such projects, the Association aims to demonstrate to health-care providers and decision-makers the necessity of certain methods and areas for disseminating innovation within the health-care system.

Discussion

In the discussion that followed, Ilona Kickbusch drew participants’ attention to the Lancet and Financial Times Commission’s publication from 2022, Governing health futures 2030: Growing up in a digital world (23), which addresses numerous topics relevant to the discussion. The Commission is currently focused on promoting data solidarity and developing a blueprint for digital health systems tailored to young people. The three-year project aims at addressing the specific needs and preferences of younger generations in the realm of health-care technology and digital solutions. In the previous 18 months, her team has actively engaged with more than 100 individuals under the age of 30 from 36 countries by means of a social media campaign, calls for essays, and six virtual consultations with global youth networks. The team has gathered valuable insights from youth representatives regarding the technological and digital transformations they wished to see in the health-care system. The findings, which shed light on young people’s perspectives and aspirations regarding digital health
innovations, will be published in a first interim report in the following week. A number of key insights can already be discerned. First, young people emphasized the importance of a preventive approach, closely tied to digital health literacy and civic literacy. They advocated new guidelines to ensure safe online participation and the creation of a secure digital environment. Sexual and reproductive health has emerged as a top priority for many young people, and they have expressed a strong desire for digital platforms to provide accessible information and resources in that area. Mental health also features prominently, with young people emphasizing the need for preventive measures and access to professional support through innovative programmes such as chat services. Importantly, young people have a distinct viewpoint in that they did not primarily identify themselves as patients.

Tanya Mulcahy highlighted the importance of communicating the value of innovations to health-care professionals; by applying technological innovations, they could allocate more time to patient care. Noting that ethical approval is required for each instance of implementation of an innovation in the Irish health-care system, she wondered whether similar processes were followed in other countries.

Clayton Hamilton asked who was involved in the process of setting priorities for innovation, given limited health budgets, and whether financial considerations were the sole factor. While recognizing the need to acknowledge and discuss failure in innovation, he emphasized the importance of understanding what evidence is needed in order to demonstrate success.

Cris Scotter, responding to Tanya Mulcahy, underscored the importance of involving the health workforce in the design of services, highlighting their invaluable frontline experience and insights into the effectiveness of innovations. Efforts need to be made to reconcile the short-term nature of government investment cycles and the longer-term requirements of innovations, ensuring sufficient time for their evaluation and possible adoption.

Dimitra Panteli said that a combined approach to prioritization should be adopted, involving data analysis and stakeholder engagement. The NEED (Needs Examination, Evaluation and Dissemination) project (24) under the Belgian presidency of the EU Council was an example of a comprehensive framework for identifying areas of need. On the topic of evidence, Dimitra Panteli explained that a consultation in Germany prior to the adoption of fast-track legislation on medical digital technology highlighted the challenges of reconciling the need for rigorous evidence with the pace of technological development. There is an ongoing debate regarding the acceptance of less traditional forms of evidence within established evidence-based systems. Cross-country learning and exchange of experiences are valuable in tackling those complex challenges.

Katja Čič, emphasizing the importance of ethical considerations in work with youth organizations, underscored the need to ensure the safety of young participants and other stakeholders. Regarding non-traditional evidence, most of the evidence generated by young people is not recognized by traditional science. The WHO Regional Office for Europe was remediying that shortcoming through its Youth Alcohol Network for the Evidence into Action Alcohol Project, where a youth review has been made of alcohol industry-funded health messaging in EU countries. Improved communication channels can ensure that youth-generated evidence is effectively integrated into decision-making processes. Data on youth are often not fully representative. The Youth Health Organization advocates addressing topics that might not be popular with youth, such as alcohol policy and tobacco control, and expanding the conversation by incorporating different components, such as the environmental perspective or community engagement.
Catherine Delevoye addressed the financial dimension and decision-making process regarding assistive technologies, particularly in the context of disability or ageing. Given that one third of assistive devices are eventually abandoned by end users, it is essential to engage and empower users in the adoption and utilization of these technologies. Users who are involved in the customization process are more likely to remain engaged and proactive in seeking solutions if problems arise, thereby reducing the likelihood of abandonment.

In conclusion, Allison Ekberg asked each panellist about his or her vision of an ideal innovation ecosystem. Katja Čič stressed the importance of involving non-traditional health stakeholders, specifically youth organizations, in the innovation ecosystem. Their unique perspectives, often overlooked within governmental spaces, could effectively translate ambitious ideas into practical solutions. Organizations like WHO have a pivotal role to play in facilitating that process, bridging the gap between unconventional concepts and practical implementation within the health-care sector.

Cris Scotter, highlighting the tendency of organizations to constrain individuals within bureaucratic frameworks, acknowledged the need for structure but advocated for greater support for and recognition of entrepreneurialism. It is important to foster a culture that encourages innovative thinking, whether through process development, cross-skilling or involving diverse stakeholder groups in co-designing improvements. Innovation does not always require radical changes; even incremental improvements can significantly advance health-care practices.

Catherine Delevoye wanted to see a less siloed and more interconnected system, with increased collaboration and communication among stakeholders. Best practices and ideas should be shared, to align efforts and create a common vision. The current panel discussion had offered a valuable opportunity to bring together diverse perspectives, foster dialogue and exchange ideas, ultimately contributing to a more cohesive and effective innovation ecosystem. Vanessa Ribeiro also stressed the importance of sharing knowledge and learning from others’ experiences, in order to avoid repeating mistakes. There is a need to discuss the management and evaluation of innovation, answering critical questions about how to assess the effectiveness of innovations and ensure ongoing reassessment and adaptation. In view of the iterative nature of innovation, continuous evaluation and refinement are necessary in order to secure sustained improvements.

Bakyt Dzhangaziev noted that various forms of innovation, including assistive technology, required different types of national support to thrive. Global organizations such as WHO and the International Telecommunication Union are essential in providing support for innovation, which also requires financial backing, local partnerships, strengthened collaboration and improved access to technologies.

In her concluding remarks, Allison Ekberg emphasized the importance of engaging various stakeholders and highlighted the need for prioritization, assessment, evaluation and consideration of context in the innovation process.
Panellist presentations

Introducing the session, Katrine Habersaat, Regional Adviser, Behavioural and Cultural Insights (BCI), WHO Regional Office for Europe, explained that this discussion would consider social innovation in public health, focusing on whole-of-society approaches, bridging with civil society, involving behavioural and social sciences, and taking account of the cultural context of health.

Tiina Likki, Technical Officer, BCI, WHO Regional Office for Europe, noted that awareness of the role of behaviours in health had not yet translated into a consistent and evidence-based public health response, including in the area of social innovation. To bridge that gap, the WHO Regional Office for Europe was increasingly invested in BCI, which entailed gaining insights into the contextual and individual factors that affected health behaviours; using those insights to develop evidence-based policies, services and communications, with a focus on improving health and well-being and reducing inequities; and evaluating what worked. It combined robust evidence from the scientific disciplines that dealt with human behaviour and a more bottom-up participatory approach, to understand the local context and identify innovative solutions. A concrete example that married up those bottom-up and top-down approaches relates to breastfeeding in Kyrgyzstan, in a project where local researchers, following training in methods for conducting qualitative research in scientific behaviour change frameworks, were able for the first time to interview health workers and new mothers on their experiences and to co-design appropriate solutions.

Anna Jansson, Unit Head, Public Health Agency, Sweden, noted that the revised version of the handbook Physical Activity in the Prevention and Treatment of Disease (25), issued by the Swedish National Institute of Public Health, listed 47 different symptoms where physical activity had been shown to promote health and prevent disease. An approach known as “physical activity on prescription” has been in use in Sweden for 25 years. The five core components of the approach have focused on patient-centred individualized counselling, in line with the evidence-based recommendations contained in the Handbook, delivered by means of traditional written prescriptions and follow-up measures carried out through a community-based network in a supporting environment. The effectiveness of the approach depends on close collaboration between civil society and the health sector. The European Physical Activity on Prescription project (26), implemented since 2019, integrates the Swedish model in different country contexts, emphasizing the importance of internal and external networks.

Nils Fietje, Technical Officer, BCI, WHO Regional Office for Europe, spoke on the impact of art on people’s health. Research has increasingly shown how cultural activities, and art interventions in particular, can have a measurable impact on health and well-being: singing improved lung functioning for patients with chronic obstructive pulmonary disease or post-COVID-19 condition, dancing supported gait and balance in people with Parkinson’s disease, and clowning reduced stress and anxiety in hospital wards. Health-care providers were increasingly being allowed to prescribe cultural activities, such as going to a museum or joining a reading group, to patients suffering from a range of health challenges, from low mood and anxiety through to depression. A scoping review of the evidence on the role of the arts in improving health and well-being, published by the WHO Regional Office for Europe in 2019 (27), shows how the arts can help tackle so-called wicked or complex health challenges, such as diabetes, obesity and mental ill health, that conventional medical practice was unable to address effectively on its own. The WHO Collaborating Centre for Arts and Health has conducted research, based on cohort studies in the United Kingdom (28), which showed that engaging in arts and culture in later life reduces the risk of developing age-related disability by 20% and chronic pain by 25%, and increased the odds of ageing healthily by 84%. These
effects were as strong as the effects of physical activity. In collaboration with the Jameel Arts & Health Lab, WHO was currently preparing a five-part Lancet series on the health benefits of the arts, with a focus on prevention and control, as well as on the treatment and management of NCDs.

**Bengt Stavenow, Senior Adviser, Invest4Health**, said that his organization, which had received funding from the EU’s Horizon Europe research and innovation programme, was aimed at exploring financial models for health promotion and disease prevention and transforming public health financing by incentivizing investments and asset maximization. The Invest4Health consortium comprised 18 partners and constituted a blend of researchers and practitioners. It is developing innovative smart capacitating investment models and testing them in practical settings; test beds have been established in the region of Skåne, Sweden, focusing on children’s and young people’s mental health; in North Rhine-Westphalia, Germany, midlife and occupational health-related issues are in focus; and in West Wales (United Kingdom) and Galicia (Spain), the focus is on elderly people and independent living, and social prescribing, respectively. A collaboration platform ensures that data are shared and different types of stakeholders are engaged and provide the necessary means to co-govern the initiative itself. Part of the project consists of an open call to additional regions to help evaluate results and findings and then to constitute a second tier of implementation. Dissemination of results take place through so-called social franchising offerings, where the knowledge gained, insights and recommendations are packaged and offered to other regions, and where a business model for an ongoing, sustainable operation is defined.

**Iveta Nagyova, President, European Public Health Association**, pointed out that health problems do not exist in silos and disciplines and therefore could not be solved in silos. However, it is necessary to move beyond the rhetoric of multidisciplinary and multi-sectoral collaboration and truly apply the principles of knowledge fusion, making synergistic use of knowledge from multiple sources, fields and disciplines. One of the most promising areas of knowledge fusion was behavioural insights, which combines lessons from behavioural economics, psychology, neuroscience and social sciences with empirically tested results. Such an approach can yield multiple and often relatively low-cost, scalable yet light-touch benefits in terms of more efficient health systems. Examples included targeted messages to reduce antibiotic prescription, failed colonoscopies and missed outpatient consultations or to improve medication adherence. Treatment compliance is strongly affected by the way in which physicians communicated with patients, and how patients perceived the communication and the information provided. The four primary types of capital recognized by ecological economists (natural, human, built and social) should be expanded to include behavioural capital. A memorandum of understanding recently signed by the WHO Regional Office for Europe and the European Public Health Association covers six areas, including BCI, and addresses NCDs and measures to foster innovation (29).

**Discussion**

In the discussion that followed, participants expressed the belief that, in the area of NCDs and with ageing populations and fewer resources available to health systems, countries had no alternative but to innovate. The multidisciplinary approach should encompass people such as historians, philosophers and writers who are active in the so-called health humanities. Similarly, cultural institutions and urban planners should be encouraged to think in terms of health strategies. Broadly speaking, numerous stakeholders should be encouraged to share common goals. The behavioural model based on capability, opportunity and motivation is applicable not only at the individual but also at the societal level. Examples of successful and sustainable social innovation initiatives can be seen throughout the world, not just in western, educated, industrialized, rich and democratic countries. Enablers of such initiatives include investment (of up to one third of the project budget) in readiness to run a whole-community intervention, and awareness of the multifaceted nature of both problems and solutions, as evidence by the fact that there is no simple relation between a single intervention and a single outcome. Structures have to be adapted to local circumstances.

Panellists agreed on the need for innovative approaches (such as the application of improved interview techniques) to collecting interdisciplinary information and data, both quantitative and qualitative, covering the whole life cycle, in order to inform policy-making. Social innovation initiatives have to pay attention to the needs of users or beneficiaries, whether they are health-care personnel, patients or consumers. Technology is seen as an enabler, rather than a solution, and both technological and social innovation is necessary. In conclusion, panellists believed that successful innovation requires commitment, consistency and, above all, collaboration.
Panellist presentations

Andrew Nerlinger, Executive Director, Global Health Security Fund, moderated a discussion on impact investment for health. Participants offered various definitions of the term, including measures to support small and medium-sized enterprises and start-ups and prepare them to enter the business world and increase their impact; investment for maximum impact using measured indicators, or objective key results; and looking at the social and or environmental returns on an investment, in addition to monetary gain. Invited panellists were then encouraged to address the question of what constituted impact investment.

Pradeep Kakkattil, Co-founder, Health Innovation Exchange, pointed out that, in order to close the 20–30 year gap in life expectancy between advanced economies and low- and middle-income countries, resources need to be leveraged from trillion-dollar markets, rather than provided in the form of relatively modest amounts of official development assistance. Impact investment could therefore be seen as the ability to leverage resources to have impact on the ground for making the changes that are needed. The Women in Innovation Fund, launched by the Health Innovation Exchange in 2022, aimed to empower women-led health start-ups and catalyse grassroots societal impact of female entrepreneurs in Africa and Asia. The Fund applies a hybrid model of taking equity in companies while looking for sustainable returns over a much longer time frame than the classic venture capital cycle of three years.

Karen Hitschke, Board member, Yunus Social Business Global Initiatives, noted that the concept of social business also represented a financially sustainable model that was independent of donations. As Professor Yunus said, “A charity dollar has only one life, a social business dollar can be invested over and over again”. In terms of piloting innovations, social businesses generated immediate market feedback while exerting pressure on prices, enabling products and solutions to be brought to low-income settings and fostering health equity in general. WHO had a role to play as a convenor and a bridge in that context.

Nadia Desai, Supply Chain Officer, World Food Programme (WFP), said that private equity and venture capital players were very interested in impact orientation. The Global Ventures fund, for instance, is investing in health care and other solutions in the Middle East, northern Africa and sub-Saharan Africa, while Quadria Capital is an independent health-care-focused private equity firm with investments across the Asia-Pacific region. Much of the impact being achieved by these funds is trickling down to low-income populations through cross-subsidization.

In the previous few years, WFP and WHO have acted as founders of a start-up, convening health partners around a project, known as Initiate (30) to develop a product that they themselves have chosen, designing and testing a prototype that they are currently preparing to produce at scale. The initial capital has been provided by the two organizations, but funding is currently being actively sought during the scale-up phase; in this context, further market access analysis will be carried out.

Raphael Ferry, Innovative Finance, Gavi (the Vaccine Alliance), said that Gavi had made itself into an impact investment vehicle for certain financial institutions, such as the European Investment Bank (EIB) and the United States International Development Finance Corporation (DFC), who had seen an opportunity to provide it with the resources that it needed in the form of returnable capital. While Gavi talks about its impact in terms of return on investment, it is clear that the overall impact is far greater than the financial return.
Andrew Nerlinger, Executive Director, Global Health Security Fund, Switzerland suggested that the participants in the meeting constituted an innovation ecosystem that could provide the technology sector or venture capital with bridges or so-called touch points to access the global health community. He asked panellists to describe other practical ways in which innovation ecosystems could contribute to impact investment.

Pradeep Kakkattil, Co-Founder, Health Innovation Exchange & Women in Innovation Fund, emphasized that innovators needed to act with humility and understand what was really needed on the ground. The value in innovation and investment is often unlocked at the intersection between different sectors. That is why the Health Innovation Exchange has set up the Climate and Health Innovation and Equity Fund. A lack of trust between innovators and the public sector is a major challenge. Ultimately, the members of an ecosystem should work together, trust each other and together look at how they can bring about the scale that is needed, in terms of innovation and investment. The health sector has to be able to bring all these different actors together to work to its common purpose; that is where WHO has an important role to play in defining the direction of travel, stating what is needed and outlining how it can be achieved.

Karen Hitschke, Co-founder, Yunus Social Business agreed that WHO should be instrumental in identifying the problem and specifying the technical and pricing requirements that have to be met in order to be successful in certain markets, thereby providing transparency to the private sector and building trust on both sides. It is important for venture capitalists and impact investors to believe that their product or service can really find a market, if an innovation is successfully developed. The public sector, which includes WHO and government bodies, can help by providing information about the regulatory environment or the composition of the market and, more generally, by ensuring a conducive environment in this market in terms of infrastructure and the education system, for instance.

Nadia Desai said that the design of future innovations for WFP would begin with holding workshops with partners to really identify the problems that they were facing in emergency preparedness and response. A specific innovation challenge could then be launched. When proposals are received from start-ups on how to tackle this challenge, the organizations managing the project could consider how to give them some market access at a very early stage and explore some of the adjacent markets.

Raphael Ferry recalled that Gavi, the Vaccine Alliance, had been set up by public sector donors to create a market that had enough power to crowd in investments effectively. WHO has been key in identifying the types of products that Gavi could invest in. Efforts have been made to incentivize scale-up with regard to pneumococcal vaccines and vaccine manufacture in Africa, in order to address supply insecurities and support global health security. Ecosystems, in the form of networks, relationships and expertise, constitute important levers of influence.

Discussion

In the discussion that followed, one participant asked how non-financial return on investment was calculated by Gavi and why WHO would have the role of convincing developers or venture capitalists that there was a market in which they could sell their products.

Raphael Ferry, Impact Investment Officer, Gavi, said that Gavi was a vehicle that development finance institutions could invest in. It could then deliver its impact and return the capital to them. For example, during the COVID-19 pandemic, Gavi received very large numbers of donor pledges. The funds did not come in right when pledges were made, so Gavi had securitized them with the EIB and DFC in such a way that the financial institution would lend the capital up front, and Gavi could then engage with manufacturers and conclude agreements. Once the funds were received from sovereign donors, the capital was returned to the DFC or EIB. The arrangement was very measurable for the financial institutions: they knew exactly what Gavi did with the funds, and the capital was returned in due course thanks to the revenue flow from sovereign donors.

Karen Hitschke replied that the role of WHO, working closely with governments, was to specify what structures needed to be in place in a country in order to allow companies to enter the market. Regulatory mechanisms were required in order to ensure health equity.
Another participant asked, with regard to the trickle-down effect, how it would be possible to avoid a health system where the costs of caring for poor people would be socialized, while the few benefits that could be gained from catering to the wealthy would be privatized.

In reply, Raphael Ferry noted that, while charity was not the solution to everything, it was the solution for some things; a layer of philanthropy could be a way of reducing the risk for a commercial investor. In certain areas, more innovative models could be adopted, with blended vehicles involving different types of capital. Nadia Desai offered some examples of that approach, citing Grameen Health Care Services Ltd. in Bangladesh, which offered eye care treatment through a differentiated pricing scheme based on patients’ ability to pay, and a company in Japan that was working on developing thermostable insulin for use in countries that had issues with maintaining cold chains. In both cases, the innovation is around the business model used to capture the whole range of the population and to foster health equity through an intentional trickle-down effect. In addition, venture capitalists are starting to measure their own impact in terms not only of financial return but also of attainment of the Sustainable Development Goals. Impact investment should not be considered separately from conventional investment; there is a continuum in the way that impact was created.

Pradeep Kakkattil pointed out that large numbers of people in China and India had been lifted out of extreme poverty not by aid, but by investments that helped to grow the overall economy. In the same way, improvements in people’s health were best achieved not through very technical measures, but by adopting a political and macroeconomic approach. Impact investment in low- and middle-income countries can focus on the financial side, or health insurance, and on digital health and building digital infrastructure. Consideration should be given to ways of leveraging AI and point-of-care technologies, in order to generate potentially huge returns on investment, both financial and in terms of impact.

In conclusion, panellists briefly offered their closing thoughts. Andrew Nerlinger said that the Global Health Security Fund was taking on supporting an innovation ecosystem programme called Biological Preparedness and Resilience through Evolution and Innovation of Laboratories (known as BIO-PREVAIL), an effort focused on making high-containment laboratories more sustainable and more secure for use in resource-constrained settings. Nadia Desai looked forward to engaging with participants on the specific business model that WFP is developing for humanitarian interventions. Raphael Ferry called for further discussion on innovative investment models that could deliver more impact using the scarce capital that was available. Karen Hitschke was keen to continue bridging the for-profit, non-profit and impact investment worlds, working out a common language and building an ecosystem in which all stakeholders can play their respective roles in an atmosphere of mutual trust. Pradeep Kakkattil intended to focus on building an early warning system for climate-resilient and equitable health infrastructure.
Emerging scientific innovation

Marilys Corbex, Regional Adviser for Cancer, WHO Regional Office for Europe, moderated a panel discussion on emerging scientific innovation.

Petro Terblanche, Chief Executive Officer, Afrigen Biologics (Pty) Ltd., South Africa, emphasized that innovation should be viewed not as an end but rather as a means to achieve specific goals. Purpose-driven innovation should lead to tangible outcomes. Noting Europe’s strong track record in innovation, she suggested that one of the opportunities lay in leveraging ecosystems to create a network that fostered connectedness and built global partnerships, both vertically and horizontally. From lessons learned during the COVID-19 pandemic, it is clear that public health challenges are not confined to specific regions but are shared globally. Innovative ecosystems must therefore promote collaboration and partnership on a global scale. Innovation should not be viewed solely through the lens of competitiveness: the objectives of open innovation and access should be factored into the design of health systems.

The mRNA technology transfer programme at Afrigen Biologics began in 2021 amidst a global shortage of vaccines. Its primary objective is to facilitate the rapid transfer of technology to partners, thereby expediting vaccine manufacturing capabilities, particularly in middle-income countries. The programme has formed a unique network of partnerships, including both public and private entities, in 15 countries across four continents, covering a population of 3 billion. Innovation does not occur in isolation; 60 years of research and US$ 15 billion in investment enabled the rapid development of the COVID-19 vaccine. Despite being termed “reverse engineering” by some, the process is also described as “forward innovation”, leveraging public knowledge and partnerships to develop vaccines using mRNA technology.

The mRNA technology transfer programme’s future endeavours include the development of new COVID-19 vaccines using mRNA technology, fostering multi-product innovation on a global scale. An end-to-end vaccine manufacturing platform is undergoing validation for preclinical stages and advancing towards clinical validation. From the programme’s inception, there has been a recognition that existing mRNA vaccine modalities are not suitable for low-income countries, necessitating innovative solutions. Afrigen Biologics’ strategy focuses on innovation for growth, with emphasis on streamlining processes, reducing costs and ensuring freedom to operate, while leveraging pockets of excellence in mRNA technology. Key areas of work include manufacturing technology, formulation capabilities, research, organizational durability, DNA and RNA development, targeting additional diseases, and exploring alternative delivery methods.

Partnerships are critical for driving the innovation strategy forward, facilitating the translation of targets into actionable solutions and ensuring sustainability. Efforts are not driven solely by investment considerations but rather by unmet needs, disease burdens and opportunities for mRNA technology to contribute to public health. In Denmark, for instance, a partnership has been established with Evaxion, a biotech company developing AI platforms, to develop a vaccine targeting gonorrhoea and antimicrobial resistance, addressing a significant public health priority. The current mRNA technology transfer programme has set up an end-to-end research, development and manufacturing platform to support clinical and preclinical needs for 15 partner organizations. The platform offers open access to all partners, providing comprehensive training, sharing of experiences and complete packages of resources, including quality control and facility designs.
The importance of mRNA technology lies in its versatility and its wide-ranging applications, including therapy for chronic diseases such as cancer, metabolic disorders, and cardiovascular diseases. Additionally, mRNA technology has significant potential for addressing challenges related to climate change. An analysis of the global pipeline of mRNA vaccines revealed that only 70% of the pipeline was focused on vaccination, with the remainder targeting therapeutic applications, particularly in Europe. Governments in Europe, as well as those of Canada and South Africa, were supporting and promoting the mRNA technology transfer programme.

Phillipe Menu, Chief Medical Officer and Chief Product Officer, SOPHiA Genetics, Switzerland, believed that collaboration between medical professionals and technology companies should be more common. Technological advances such as cloud computing and AI are having a transformative impact in various industries, but the health sector has lagged behind in adopting these innovations. This was due not to a lack of data but rather to the complexity and diversity of health data, which comes from various sources and are interpreted by different providers across multiple institutions.

Three major ecosystem challenges can be identified: first, data exists but are siloed and do not flow smoothly between instruments and institutions; second, data are not harmonized, hindering seamless operation within systems; and third, there is little sharing of knowledge, owing to incentives that favour the hoarding of data rather than widespread benefit. Despite these challenges, most technology companies share the objective of improving the quality of care for all patients; his company has the goal of connecting data points worldwide at scale to address these issues. SOPHiA Genetics operates as a cloud-native technology platform with three main characteristics: it is decentralized, allowing users to generate data locally while connecting hospitals across 70 countries worldwide; it is technology-agnostic, adapting to the tools already used by providers, rather than imposing new ones; and it is multimodal, going beyond genetics to integrate other modalities.

During the COVID-19 pandemic, SOPHiA Genetics deployed a sequencing technology on its Data Driven Medicine platform capable of processing tens of thousands of genome samples of the virus. Had it been scaled up, real-time monitoring of the virus’s mutational drift would have been feasible. The platform is currently focused on cancer and rare diseases, with the pandemic having provided an opportunity to expand into infectious diseases. Over the previous decade, SOPHiA Genetics has developed genomic capabilities, incorporating other data modalities such as imaging, including computerized tomography and brain scans, into their AI analysis.

The company computes genomic data and provides AI analysis for various medical applications. SOPHiA Genetics ensures the privacy of patient data and has equipped 50 laboratories worldwide to process thousands of patient samples. Currently, the company is studying 4000 late-stage lung cancer patients to predict response to therapy. SOPHiA Genetics also utilizes cloud-based AI to develop predictive models, starting with imaging data and expanding to include genomic data from both the virus and the patients themselves. By collecting genetic and demographic information, it is possible to develop predictive models to stratify patients by risk.

Collaboration with the biopharma market is crucial for SOPHiA Genetics; its platform can help biopharma companies to identify patients who would benefit most from specific therapies. Since its foundation 10 years earlier, SOPHiA has expanded its global reach, connecting with 800 health-care institutions across 70 countries, and had processed 1.5 million genomic profiles on its platform; it is currently assessing 1000 patients daily. The vision of democratizing data-driven medicine revolves around ensuring that patients worldwide have equal access to high-quality data analytics, regardless of their location.
Michael Twomey, Senior Clinical Research Manager and Clinical Evaluation Lead, Health Innovation Hub, Ireland, described emerging diagnostic tools and innovations in neonatal health care in Ireland. The Health Innovation Hub is collaborating with Cergenx, a company using AI to detect newborn brain injury. Michael Twomey explained that current practices often miss these injuries, which impact around eight in 1000 newborns: 50% of cases are missed at birth. This has lifelong consequences for infants, families and society. Current assessment options are inadequate: electroencephalography (EEG), the gold standard, is costly and not generally available, requires expertise for analysis, takes time to obtain results, and is impossible to scale. The findings of clinical assessment are highly subjective and inconsistent, posing risks of limited diagnosis and delayed care. To address these problems, CergenX has developed a simple yet effective device that used automated AI assessment for objective decision support and provides results in just 15 minutes, usable by all clinicians.

Brain injury affects 2.6 million newborns each year globally. EEG monitoring is not readily available in 53% of hospitals, leading to 55% morbidity and mortality rates. Existing care solutions are limited: only 9% of neonatal seizures are detected, and conventional EEG monitors are expensive, complex and inaccessible in many areas. Additionally, hospitals rely on external consultants, resulting in delayed seizure treatment. A company called NeuroBell offers real-time AI-supported seizure detection with a 98% performance rate. Compared to conventional EEG monitors, NeuroBell’s pocket-sized, wireless device can be set up in less than 10 minutes. Early detection and treatment lead to better outcomes for newborns (31). Timely and accurate monitoring empower health-care professionals, especially in regional hospitals, to deliver excellent care to the most vulnerable patients.

Anna Laura Ross, Unit Head, Emerging Technologies, Research Prioritization and Support, WHO headquarters, speaking via video link, gave an overview of how WHO approaches emerging technologies and aims to harness them for global health benefit. WHO’s goal is to accelerate the introduction and adoption of innovations while ensuring equitable access and mitigating associated risks. The Organization employs a foresight approach to understand emerging technologies and their potential implications. It engages in horizon scanning to analyse trends, identify risks and opportunities, and develops various scenarios for future outcomes. It looks at innovations in terms of their potential impact on global health and their chance of widespread adoption in resource-constrained settings and over different time horizons. It works with a global network of experts, including specialists in innovation and health-care professionals working in various contexts, and integrates expert insights with literature reviews and other approaches in order to gain a comprehensive understanding of emerging innovations.

In a recent exercise, approximately 100 innovations were identified and categorized into eight innovation groups (32). They were the ranked based on their overall promise, considering factors such as probability of adoption and potential impact, with the aim of identifying innovations that had both a high chance of adoption and high impact. The five most promising innovations were the application of genomics for early diagnosis and pre-diagnosis of diseases, on which a dedicated work programme has been established within the unit; enhanced systems for vaccine production and global distribution; low-cost viral diagnostics; the development of broad-spectrum antimicrobial drugs that did not cause resistance or tolerance; and rapid remote diagnostics, including devices such as smart watches, cell phones and wearable sensors. WHO is closely monitoring areas such as neurotechnologies, the application of monoclonal antibodies and 3D bioprinting, in which it has identified four distinct scenarios illustrating how various drivers can influence the trajectory of 3D bioprinting, ranging from printing complex organs like the heart to more immediate applications such as skin grafts.

It is important to understand the technological, cultural, legal, political and structural enablers of innovation. No technology or innovation is without risk; examples include the accentuation of health inequity, inadequate data privacy and possible misuse of a technology associated with biological risks. To address these concerns, WHO published the Global guidance framework for the responsible use of the life sciences: mitigating biorisks and governing dual-use research (32) and has developed a training course on foresight approaches in global public health available on OpenWHO.org.

Ilona Kickbush emphasized that health data constitute a crucial component of the health market, emphasizing that the market encompasses not only products but also data. She noted the EU’s efforts to safeguard data through altruism and sharing, alongside private regulations. Ilona underscored the importance of considering the purpose of public health data, advocating for the development of the concept of “data solidarity.” This approach prioritizes the use of data for public health purposes, shifting the focus from data privacy to data use. She highlighted the significance of addressing issues related to data mitigation and taxation implications within this market context. For instance, taxation on data usage could be viewed to ensure that companies leveraging health data for profit contribute to the public good, including investments in health-care infrastructure, research, and other public health initiatives. She concluded by emphasizing that privacy alone would not resolve the challenges associated with health data, underscoring...
the need for a more comprehensive approach centered around data use and purpose.

Petro Terblanche, responding to the comments by Ilona Kickbusch, outlined the broader ecosystem of biotechnology in Africa. The continent had been able to produce only 1% of the vaccines that it needed in 2021, while utilizing 25% of global vaccine volumes (33). The Partnership for African Vaccine Manufacturing, supported by the African Union and global partners, had accordingly been set up with the goal of meeting 50% of the continent’s vaccine needs by 2040. A science-based and data-driven approach is being followed in establishing an ecosystem for vaccine manufacturing in Africa, encompassing regulatory frameworks, technology, intellectual property, research and development, and capacity-building. Existing companies are being strengthened, partnerships like the one between BioNTech and the Government of Rwanda are being fostered, and the research, development and manufacturing sector is being encouraged to conduct preclinical studies and clinical trials. Challenges included overcoming regulatory constraints and implementing preferential and pooled procurement, market reforms and changes in the policy environment. Despite these challenges, she was optimistic, citing the evidence-based strategy and global interest in supporting Africa’s vaccine manufacturing efforts. It is essential to forge strategic partnerships in order to transfer technology, attract foreign investment, build the industrial sector and strengthen the continent’s capacity for vaccine production.

In answer to a question raised by Gauden Galea, Director, Division of Special Initiatives on NCDs and Innovation, WHO Regional Office for Europe on whether development of Modena-like mRNA vaccines through the mRNA programme had implications on intellectual property rights, Petro Terblanche noted that the waiver of intellectual property rights was limited to COVID-19 vaccines. Afrigen Biologics is developing a platform based on the COVID-19 vaccine, which will be validated with preclinical data before being transferred to partners. The intellectual property landscape is more complex for partners within the EU. Recently, big pharmaceutical companies have been expanding their intellectual property coverage in the territory of the mRNA programme. To address these challenges and ensure freedom to operate, Afrigen Biologics is adopting innovative strategies, such as utilizing different untranslated regions and lipid nanoparticle formulations. However, it is necessary to enter into voluntary licensing discussions with the holders of certain patents, underscoring the importance of prioritizing public health over intellectual property rights.

Philippe Menu, also responding to Gauden Galea, agreed that data privacy and data security were key issues. SOPHiA Genetics did not own the data, nor did the hospitals it served; ultimately, the data were owned by patients. SOPHiA Genetics computed the data in the cloud and extracted aggregated, anonymized statistics that could be used to train algorithms. Full patient consent had been obtained in the study of lung cancer patients that SOPHiA Genetics is conducting. While data privacy is key, it is also important to be able to connect data points and engage in data processing at large scale.
Michael Twomey emphasized the importance of gathering feedback from key stakeholders, to ensure that solutions align with health system needs and are safe for use. Tanya Mulcahy added that therapeutic hypothermia significantly improves outcomes for neonates experiencing seizures. Early detection using AI and simple point-of-care devices is therefore essential and has the potential to impact public health.

Anna Laura Ross agreed with Gauden Galea that foresight and horizon scanning approaches could be applied in other domains, such as social innovation. She was working with other departments at WHO headquarters and some Member States to assess how this methodology could be used in various aspects of their work.

Els Torreele, noting the predominant influence of commercial drivers in technological innovation, asked what constituted success in health innovation; was it obtaining marketing authorization for a technology or capturing market share? She underscored the importance of ensuring equitable access to innovations. In response, Anna Laura Ross emphasized the need for innovative approaches that prioritized the adaptation of technologies to address global health needs, such as the bioprinting of skin grafts. Diverse business models should be explored and communication with the private sector fostered, to ensure that the innovations developed had a broad potential application in resource-constrained settings and an impact on global health.

Philippe Menu, responding to a question on predicting patient-specific risks, reported that testing on 20,000 women with ovarian cancer had revealed that half of these patients were positive for homologous recombination deficiency. Without the SOPHiA DDM platform (34), they would have lacked access to this vital diagnosis. SOPHiA Genetics found that approximately 30% of patients exposed to immunotherapy exhibited some response, while the remaining 70% were subjected to a costly therapy with significant side-effects and little or no benefit. The company’s multimodal models boasted an 80% accuracy rate in predicting which patients would respond to therapy. Genomic biomarkers were being developed that would guide the selection of optimal therapies for individual patients, potentially revolutionizing health care in the coming five years with advances in AI.

One participant asked private sector stakeholders whether they were committed to open-source any part of their technology. Petro Terblanche said that the current COVID-19 platform developed at Afrigen Biologics was designed to be shared with all partners. Any improvements in the platform made for vaccines against gonorrhoea or respiratory syncytial virus infection would be accessible to partners with payment of minimal royalties. Philippe Menu explained that, while SOPHiA Genetics used patents to protect its commercial interests, the company also engaged in open-source initiatives through the publication of research papers, citing the example of collaboration with hospitals in France focused on predicting the recurrence of kidney cancer. Michael Twomey believed that all companies should consider equitable access to their innovations. Funders should prioritize solutions that benefited disadvantaged populations.

Anna Laura Ross noted that WHO was the fifth largest United Nations agency in terms of volume of procurement. Dedicated teams within WHO focused on developing procurement models for Member States.

Ilona Kickbusch emphasized that the health market encompasses not only products but also data. The EU has tried to address data governance through appeals to altruism and regulations on privacy. It is important to consider the public purpose of data. The concept of “data solidarity” shifts the focus from data privacy to data use and includes issues related to mitigation and taxation of data used solely for private purposes. Privacy alone will not resolve the challenges associated with health data; a more comprehensive approach is needed, centred on data purpose and use.
Panellist presentations

Clayton Hamilton, Coordinator, Data and Digital Health, WHO Regional Office for Europe, introducing and moderating the session, described the methodologies involved in scaling digital innovation within health systems and reforming service delivery, as well as the risks associated with scaling, and drew attention to the importance of identifying both implicit and explicit drivers of digital health. The WHO Global strategy on digital health 2020–2025 (35) and the Regional digital health action plan for the WHO European Region 2023–2030 (36), were examples of the amplification effects that could be achieved when technology was scaled equitably within health systems, effectively serving as a public health good. Digital health innovators are inherently change-makers, driven by a desire to make a difference.

In the subsequent panel discussion, the first panellist, Merilin Varsamaa, Head, Health Technology, Tehnopol, Estonia, said that the health technology community at Tehnopol had been active for over eight years, collaborating with various stakeholders such as IT companies, hospitals, the global pharmaceutical industry, start-ups, universities and public entities, including the Estonian Health Insurance Fund and Enterprise Estonia. Its core mission was to support innovation in health care and to facilitate the scaling of Estonian companies and their technologies. Given Estonia’s small size, there is a need for a global strategy, in order to work effectively across borders. Estonia participated in the EU’s Horizon Europe programme, for instance, in a project focused on lung disease patients that involved three main elements: a medical device for actively monitoring patients’ health; software for data collection and analysis provided by a Belgian company; and integration facilitated by an Estonian company. Estonia’s open approach to innovation, involving collaboration with key stakeholders, had been a catalyst for its significant achievements; partnerships with innovative, competent and dedicated public sector entities have been crucial. Ongoing support for a lung cancer patient pathway project involves collaboration with major pharmaceutical companies, hospitals and patient representatives.

Juha Paakkola, former Director, Health Capital Helsinki, Finland, also emphasized the importance of collaboration between public health entities and innovators. In Helsinki alone, approximately 500 health start-ups and innovators had joined forces with key stakeholders, including the municipality, universities and leading health-care institutions, to form a vibrant ecosystem. So-called horizontal collaboration is important, with initiatives such as establishing incubators and test environments bridging the gap between preclinical studies and clinical trials. University hospitals in Finland have implemented co-development ecosystems to facilitate collaboration between clinicians and innovators. Three areas of urgent need were identified during the COVID-19 pandemic: funding, connecting with end users, and partnering with diverse stakeholders. Examples of successful collaboration in Finland include the development of a smart watch for monitoring birth complications, and a home dialysis solution facilitated by partnerships between health-care providers, technology companies and data experts.

In order to address the most acute problems in health care, it is necessary to engage with end users and stakeholders in destination countries at an early stage, to ensure that solutions are aligned with their needs. Co-development processes are useful for gathering high-quality feedback information. The extensive data collected by hospitals from patient populations are valuable for identifying key needs and enabling innovators and companies to develop solutions that effectively address real-world challenges.

Jesper Grønbæk, Chief Executive Officer, Health Tech Hub Copenhagen, Denmark, provided insights into successful strategies for driving scalable and societal health innovation in the Danish health system. It is essential to engage various stakeholders, including industry, local government, hospitals and nongovernmental organizations, to ensure that solutions reach as many people as possible. Denmark’s robust IT infrastructure, including electronic prescription and medical records accessible through apps, is a key factor in enabling successful projects. However, there are also challenges in scaling newer technologies within the health sector; many innovations remain confined to specific wards or hospitals and are rarely scaled across the
country or internationally. There is a need for greater collaboration and coordination within the ecosystem to address these challenges and ensure that innovations reach their full potential.

Sameer Pujari, Global digital health strategy and governance, WHO headquarters, emphasized the rapid evolution of AI in health care. WHO is looking at AI from a unique perspective, with a focus on its use in diagnosis, clinical care, research, vaccine delivery and drug discovery. WHO has launched a global initiative on AI in health jointly with the International Telecommunication Union and the World Intellectual Property Organization. Member States are urging WHO to provide guidance and facilitate an enabling environment. There is an urgent need for stronger regulations and appropriate governance in this domain, coupled with robust ethics bodies and evaluation mechanisms, so that innovations can be rapidly deployed at national and international levels. Member States should collaborate to establish effective governance frameworks.

Countries needed to address three key aspects. First, they should create enabling ecosystems conducive to AI deployment, which will involve training the health workforce. Second, they should facilitate collaboration across sectors, as solutions often require deployment beyond traditional health boundaries. And third, countries should take ownership of implementation to ensure effective integration of AI technologies.

Merlin Varsamaa emphasized the importance of a needs-based approach, carrying out market validation and conducting research into existing solutions, rather than creating new ones from scratch. The success of Tehnopol was due to the fact that its creation had been facilitated by the Government of Estonia, the city of Tallinn and Tallinn University of Technology, with a mandate to support the scaling of technology and entrepreneurship. Tehnopol is involved in various EU projects aimed at achieving these objectives. The hubs that have been established in different countries are all effective facilitators of innovation. Telemedicine solutions for mental health, developed in collaboration with Estonian companies, have been presented at the Digital Health Nordic hybrid event held in Helsinki, Finland, in February 2024. With the Estonian Ministry of Economic Affairs, Tehnopol have developed a programme providing funding and support for companies to improve existing AI solutions or build new ones, and it is participating in broader technology-focused programmes, such as the North Atlantic Treaty Organization’s Defence Innovation Accelerator for the North Atlantic for the development of dual-use technologies.

Juha Paakkola emphasized that without adequate funding, innovation efforts might falter. It is important to attract innovators, especially in developing countries, by engaging in impact funding. Health data are essential for innovation, yet in Finland and elsewhere in Europe they are owned by the individual. Sitra, the Finnish public innovation fund, has developed the concept of fair data sharing. It is hoped that the European Health Data Space legislation, currently being considered by the European Parliament, will create a good uniform data environment that will stimulate public and private sector investment in research, development and innovation.

Jesper Grønbæk focused on the need to bring about a cultural transformation within the health sector. Governments and health-care institutions will have to be receptive to making structural adjustments in health systems, and clinical staff should be motivated and incentivized to scale up the implementation of successful initiatives. The value and cost–benefit of preventive health care has been underscored by the Nordic Health 2030 Movement (37), but the long time frame that such care requires is at odds with politicians’ typical four-year terms of office. Initiatives should therefore be driven by organizations such as WHO, the EU and key private foundations. Low-cost approaches, such as the exercise by prescription initiative in Sweden, should be scaled up. Collaboration with pension companies, which have a vested interest in preventive measures, was also a promising approach.

Juha Paakkola drew attention to the importance of innovations that empower individuals to take greater responsibility for their health. A recent initiative in Helsinki connected health-care and social care data with information gathered by the emergency services, creating a comprehensive health data platform. Legal challenges, particularly regarding data transfer, are the biggest obstacle.
Clayton Hamilton delved into the issue of the scaling of innovative preventive measures, raising concerns regarding the role of AI in prevention and how to address risks and biases inherent in algorithms. He wondered what steps countries could take to ensure equitable access to AI-driven preventive health-care solutions.

Sameer Pujari emphasized the potential of AI for addressing needs and gaps in health-care provision, particularly in areas such as screening and treatment of cervical cancer where infrastructure might be lacking. In order to support AI, data must be available and global governance should be established with a view to facilitating data-sharing solutions. Regulators and governments have a role to play in training ethics committees in evaluating AI-driven solutions and ensuring equitable access to them, while respecting individuals’ data rights and developing appropriate data-sharing protocols and processes. WHO is an enabler and could facilitate solutions that addressed the challenges faced by health systems. In doing so, its approach in the field of AI had to be science-based.

Discussion
In the general discussion that followed, one participant asked what particular issues in digital health and AI required attention in the context of regulation. In response, Juha Paakkola emphasized the challenges faced by start-ups with regard to the regulatory landscape, and specifically compliance with the EU Medical Device Regulation and the lack of notified bodies, which results in many of them opting to establish themselves in the United States. More streamlined regulatory processes are required in order to support innovation within the EU. Merilin Varsamaa echoed that concern, noting that collaborative efforts with European partners included participation in AI accelerators aimed at navigating EU Medical Device Regulation. However, there is a need for a support system to assist companies in obtaining classification. Sameer Pujari noted that in October 2023 WHO had issued a publication entitled Regulatory considerations on artificial intelligence for health (38), which includes a special checklist designed to assist governments and developers in navigating these processes. Clayton Hamilton drew attention to the need for regulations governing digital identity, data protection, and medicines and prescription practices, noting the value of EU regulations as guidance in that regard.

Another participant asked about potential incentives for collecting big data on addressing social determinants of health and informing decision-making in that regard. Merilin Varsamaa responded by highlighting the need to shift focus from the immediate outcomes of treatment to the long-term results of preventive measures, which could ultimately lead to cost savings. Juha Paakkola highlighted Finland’s approach of collecting social care data and health data while paying attention to legal and ethical concerns and looking at the feasibility of enacting appropriate legislation. Jesper Grønbæk noted that there were fewer start-ups in the preventive care sector, possibly owing to a lack of financial support and reluctance among potential funders. Increased interest and investment from governments or other organizations could stimulate innovation in this space. Clayton Hamilton highlighted the recent shift towards the collection of data on social determinants of health and the incorporation of these determinants into the design of digital solutions.

Ilona Kickbusch emphasized the significant financial considerations surrounding the collection of personal health data by private companies like Apple. She questioned the ownership of such data, particularly in the context of individuals freely sharing their health-related information through devices such as smart watches and fitness trackers. While private companies profited from collecting and utilizing these data, their potential public value was not being fully realized. If the data collected were not put to public use, the companies concerned should be taxed and the revenue generated used for prevention in the public sector. The extensive health-related data gathered by private companies should be made accessible to health-care professionals, to enhance patient care. She urged a re-evaluation of how such data were managed and utilized, to ensure that they benefited the broader domain of public health.

In conclusion, Clayton Hamilton asked panellists which actions they believed that countries should take to effectively scale up innovations in the health sector. Juha Paakkola emphasized the crucial role of funding in that regard. Merilin Varsamaa stressed the importance of leveraging existing resources and partnerships to scale up innovation, and advocated reaching out to science and business parks, as well as innovation hubs. She also highlighted the opportunity to participate in EU projects and the need to build partnerships with innovators. Jesper Grønbæk said it was important to identify which aspects of health-care technology governments should develop internally, and what should be procured from external sources. Sameer Pujari underscored the need for collaborative efforts and government support to effectively deploy innovative solutions in health systems.
Participants gathered in small groups to discuss two questions raised by Moredreck Chibi. He called on representatives of Member States to think about the gaps and challenges in their context, asking where they saw the value of an ecosystem like the one convened. Participants from partner organizations were encouraged to reflect on the opportunity to connect with the broader ecosystem for public health.

In feedback to the subsequent plenary session, moderated by Allison Ekberg, a representative of the Ministry of Health of Greece, Theodora Stavrou, noted the revolutionary ideas and ways of thinking that had been presented at the meeting, particularly for those working in the public sector. The compilation of a glossary might help to promote a common understanding of the concept of an innovation ecosystem. It is necessary to understand how these ideas can be implemented at the national level, in a context where EU regulatory frameworks were already in place, especially for vaccines and drugs. Issues need to be addressed as a matter of urgency, in view of the rapid spread of AI. A representative of the Ministry of Health of Cyprus urged governments and national bodies to set priorities, particularly in addressing the equity gap in innovation and the costs associated with technology implementation. It is important to take account of ethical considerations in both technological and social contexts, and to bring together a broad spectrum of stakeholders, including entrepreneurs, patient organizations and healthcare professionals, to facilitate co-creation initiatives.

A representative of Czechia, Ondřej Májek acknowledged that, as a government official, he was not accustomed to interacting with industry and private stakeholders, but he recognized the potential benefits of such collaboration. However, the constraints imposed by national regulations concerning procurement could potentially hinder cooperation with the private sector. A participant from Malta asked how initiatives in the field of health innovation could best be organized, notably in terms of organizational structure, resource allocation and funding mechanisms. He also highlighted the importance of transparent prioritization of innovative initiatives, in order to ensure accountability and efficacy in the implementation process. A speaker from Kyrgyzstan noted the different approaches to the management and funding of innovation in health care in public entities in countries such as Ireland and Portugal, compared to his own. WHO should explore the various funding models and organizational structures found in the 53 countries in the WHO European Region.
Another participant emphasized the importance of funding in the area of prevention and the necessity for innovative thinking in that context. From the perspective of small States, he advocated the development of innovation ecosystems that addressed common thematic areas. Consideration should be given to utilizing platforms and apps such as Spotify and Netflix to disseminate health-related content, and to exploring ecosystems (LinkedIn, for instance) where specific expertise could be sought, and knowledge transferred.

One participant reported that her group had raised concerns about the lack of an ecosystem for innovation around prevention, noting the difficulty in competing for budgets and in defining target groups among the general population. New types of health-care professionals or educational initiatives in schools might be needed, in order to address these issues. Another group of participants emphasized the integration of AI in e-Health and highlighted the need to build new innovation ecosystems focused on disease prevention, mental health issues and primary health care.

Highlighting the importance of sharing knowledge and experiences among countries, one participant suggested that a platform or library should be established where countries could share reports on successful strategies and interventions. Another participant noted that health innovation could not be effectively evaluated using economic measures alone. The complexity of the topics discussed and the diversity of solutions presented were viewed as an opportunity for collaboration and exchange of ideas among countries. Stakeholder analysis, including understanding values and needs, identifying solutions and ensuring acceptance, was regarded as an effective way of addressing problems. Speaking the language of stakeholders and comprehending the environment in which they operate makes it easier to engage with them and avoid overlooking key players, such as young people.

One speaker emphasized the need for greater collaboration between countries. Drawing parallels with the climate movement, which had been effective in raising awareness and fostering collaboration across borders, he underscored the importance of making more noise in the health sector, in order to drive international cooperation and innovation. Other participants advocated fostering creativity through regular conversations among stakeholders. By examining their thought processes and engaging in introspection, people can begin to recognize and change negative tendencies, thereby creating a more conducive environment for innovation.

One panellist said that efforts should be made to identify with potential users, in order to ensure that technological solutions effectively meet their requirements and address their concerns. She highlighted the importance of technology developers prioritizing the goal of understanding people’s health-care needs and incorporating them into business models through co-creation, rather than remaining isolated within their own bubble.

Allison Ekberg, summing up, emphasized the significance of peer networks and the collaborative nature of problem-solving within ecosystems, suggesting that active participation and collaboration among all stakeholders were essential for fostering innovation and addressing complex issues effectively.
Gauden Galea emphasized that the meeting had been a first step in understanding what an innovation ecosystem looked like, laying the foundation on which to build the public health innovation strategy that would be submitted to the WHO Regional Committee for Europe for adoption in October 2025.

Numerous images of public health innovation were presented during the meeting. In technical terms, public health innovation was seen as the creation and implementation of a novel process, policy, product, programme or system, leading to improvements that impact health and equity. It can be visionary, completely reframing a problem or challenge, or iterative, involving the exploration of ideas and knowledge creation. Innovation has multiple personalities: local, collective, contextual, digital, organizational, process, social, financial, product- or service-related. The broad and multifaceted definition of innovation provides a rich framework for exploration and implementation.

Innovation can also be thought of in the context of the five interrelated pillars of the final report of the WHO Council on the Economics of Health for All (39): vision and values, governance, financing, capacity and measurement. Under the first pillar, meeting participants were urged to embrace doughnut economics (two concentric rings, representing a social foundation and an ecological ceiling), to adopt the well-being economy and to build a just and safe place for humanity, channelling their innovative energies in that direction. With regard to the governance of innovation, the meeting looked at price-setting and regulation, on the one hand, and institutional arrangements such as health innovation hubs and vaccine hubs on the other, as well as support for innovation from public bodies. The launch of the position paper (10) on making the WHO European Region the healthiest online environment for children represented another facet of governance.

In a rich and detailed discussion on financing, participants examined impact investment, contrasting it with impact finance and conventional investment, and considered development assistance, health insurance and solidarity-based funding, as well as the concepts of the data market and data solidarity. Other approaches that were explored included measuring sustainable returns on investment on a metric of societal impact; distinguishing between beneficiaries and buyers; identifying levers of influence (capital, networks and expertise) and market and technical requirements; validating markets; de-risking market entry for innovators; and examining so-called pain points (specific issues encountered by customers, both existing and potential, within the business environment).

Young people possess the capacity to act in the new world of innovation, digital technology and AI. People with lived experience of NCDs and mental health and neurological conditions are invited to attend a WHO regional meeting in June 2024 and become involved in health policy-making. The health workforce was also recognized as a co-creator and major user of innovation. Development of capacity was also a major topic of discussion in the session on health systems and service delivery innovation, where participants outlined the prerequisites for innovation, as well as in the session on social innovation for health and BCI.

Measurement was a feature of discussion at the recent WHO global high-level technical meeting on noncommunicable diseases in humanitarian settings (40), during which staff from the Regional Office for Europe organized two side events, on research and on innovation. In preparatory work for those events, it was found that the level of research was inversely proportional to need, with very little work being done on health conditions in refugee camps, for instance. Part of the innovation journey involves supporting the research agenda.

The next steps will be to make the innovation ecosystem more concrete, to bring the ideas put forward at the meeting into a coherent strategy and action plan, and to clearly define the role of WHO and other players.
1. Monitoring noncommunicable disease commitments in Europe 2021: are we on track to reach targets 10 years after the Moscow Declaration and First United Nations High-Level Meeting? Copenhagen: WHO Regional Office for Europe; 2021 (https://iris.who.int/handle/10665/350457).


1 All references were accessed 23 May 2024.


Annex 1. List of participants

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2 The level of accuracy of participant information is dependent on that provided by the participants themselves.
<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Israel</td>
<td>Sharon Alroy-Preis</td>
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<tr>
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<tr>
<td>Italy</td>
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<tr>
<td>Kyrgyzstan</td>
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<tr>
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<td>Serbia</td>
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<td>Türkiye</td>
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<tr>
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<td>First Gentleman</td>
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<td>Spain</td>
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<tr>
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<td>San Marino</td>
<td>Andrea Gualtieri (Virtual)</td>
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</tbody>
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Liviu Vedrasco
WHO Representative
### Day 1: Monday, 11 March 2024

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<td>9:00–10:30</td>
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<td>· Willum Þór Þórsson</td>
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<td>· Peter E. Schwarz</td>
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<td>· Tanya Mulcahy</td>
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<td>10:30–11:00</td>
<td><strong>ACTIVE BREAK AND GROUP PHOTO</strong></td>
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<td><strong>POLICY IMPLICATIONS OF HEALTH INNOVATION</strong></td>
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<td>· Natasha Azzopardi-Muscat</td>
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<td>· Danica Grujicic</td>
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<td>· Anca Toma</td>
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<td>· Brian O’Connor</td>
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<td>12:10–13:20</td>
<td><strong>MAKING THE WHO EUROPEAN REGION THE HEALTHIEST ONLINE ENVIRONMENT FOR CHILDREN</strong></td>
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<td><strong>Moderator</strong></td>
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<td>· Nika Pajda</td>
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<td>· Becky Odoi</td>
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<td>13:20–14:20</td>
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Annex 2. Programme continued

14:20–15:30  HEALTH SYSTEMS AND SERVICE DELIVERY INNOVATION

Moderator
- Allison Ekberg | Technical Officer, Noncommunicable Diseases, WHO Regional Office for Europe

Scene Setting
- Dimitra Panteli | Programme Manager/Senior Health Systems Analyst, European Observatory on Health Systems and Policies

Panelists
- Bakyt Dzhangaziev | Deputy Minister, Ministry of Health, Kyrgyzstan
- Katja Cič | Programme Manager, Youth Health Organization, Republic of Slovenia
- Cris Scotter | Health Workforce Policy Advisor, WHO Regional Office for Europe
- Catherine Delevoye | Senior Business Advisor, Technoport SA, Luxembourg
- Vanessa Ribeiro | Head of Planning and Innovation, Administration of the Health System, Portugal

Reflection and discussion

15:30–16.00  ACTIVE BREAK

16:00–17:15  SOCIAL INNOVATION FOR HEALTH

Moderator
- Katrine Habersaat | Regional Advisor, Behavioral and Cultural Insights (BCI), WHO Regional Office for Europe

Panelists
- Bengt Stavenow | Senior Advisor, Invest4Health Consortia
- Anna Jansson | Head of Unit, Public Health Agency, Sweden
- Iveta Nagyova | President, European Public Health Association (EUPHA)
- Tiina Likki | Technical Officer, BCI, WHO Regional Office for Europe
- Nils Fietje | Technical Officer, BCI, WHO Regional Office for Europe

Discussion

17:15–17.30  CLOSING DAY 1

18:00–20.00  DINNER

Day 2: Tuesday, 12 March 2024

<table>
<thead>
<tr>
<th>TIME</th>
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<tr>
<td>9:00–10:15</td>
<td>IMPACT INVESTMENT FOR HEALTH</td>
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<tr>
<td>Moderator</td>
<td>Andrew Nerlinger</td>
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<td>Pradeep Kakkattil</td>
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<td>Karen Hitschke</td>
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<td>Nadya Wells</td>
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10:15–10:45  ACTIVE BREAK

10:45–12:00  EMERGING SCIENTIFIC INNOVATION

Moderator
- Marilys Corbex, Regional Advisor for Cancer, WHO Regional Office for Europe

Panelists
- Petro Terblanche | Managing Director, Afrigen Biologics (Pty) Ltd., South Africa
- Phillippe Menu | Chief Medical Officer and Chief Product Officer, SOPHiA Genetics, Switzerland
- Michael Twomey | Senior Clinical Research Manager and Clinical Evaluation Lead, Health Innovation Hub, Ireland
- Anna Laura Ross | Unit Head, Emerging Technologies, Research Prioritization, and Support, WHO Science Division, WHO headquarters (virtual)
Day 2: Tuesday, 12 March 2024

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<th>TIME</th>
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<tr>
<td>12:00–13:00</td>
<td>FACILITATED DISCUSSION</td>
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<td>13:00–14:00</td>
<td>LUNCH</td>
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<td>14:00–15:15</td>
<td>SCALING TECHNOLOGICAL AND SERVICE INNOVATION</td>
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<td>15:45–16:45</td>
<td>FACILITATED DISCUSSION</td>
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<td>16:45–17:30</td>
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The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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