LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Santé
et de la Sécurité sociale

Direction de la santé

National report of Luxembourg

National Action Plan for Health Security

23/01/2026

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Introductory note from the Director of Health

Protecting the health of the population from serious cross-border threats is a fundamental responsibility of the Luxembourgish health system and an essential pillar of European health security. In an international context of heightened geopolitical tensions and rapidly evolving health risks, the ability of states to effectively prevent, detect and manage public health emergencies is a strategic component of national and collective security.

Recent crises, most notably the COVID-19 pandemic, have highlighted the systemic impact that health emergencies can have, far beyond the health sector alone. They stressed the need for clear, operational and regularly updated policy frameworks, as well as robust preparedness, coordination and response capacities. In this context, Luxembourg reaffirms its commitment to sustainably strengthen its national capacities for prevention, detection and response to health emergencies, in line with European and international frameworks.

The National Health Security Action Plan (NAPHS) is developed pursuant to Article 8 of Regulation (EU) 2022/2371 on serious cross-border threats to health. It is also part of the World Health Organisation's International Health Regulations, which provide the global foundation for prevention, preparedness and response to public health emergencies. The NAPHS builds on the results of Luxembourg's Public Health Emergency Preparedness Assessment (PHEPA) under the European Framework, which allowed for an evidence-based analysis of national capacities, identifying both achievements and areas for strengthening.

On this basis, the NAPHS defines a strategic and operational roadmap aimed at consolidating Luxembourg's health security. It builds on existing arrangements while targeting the priorities identified as a result of the PHEPA evaluation. The plan is based on an integrated and multi-sectoral approach, mobilising all relevant actors, and recognising the complementary role of public authorities, health professionals of national actors, laboratories, research institutions as well as national and international partners.

Through the development and implementation of the NAPHS, Luxembourg affirms its commitment to sustainably protect the health of its population, strengthen the resilience of its health system in the face of increasingly complex health crises and actively contribute to collective health security within the European Union and at international level.

Director of Health

1. Introduction

1.1. Global health security context

Health security is part of a set of international, European and national frameworks to effectively prevent, detect and respond to health threats, whether of natural, accidental or intentional origin. Recent health crises, and in particular the COVID-19 pandemic, as well as current geopolitical challenges have highlighted the need to strengthen these frameworks to ensure sustainable, coordinated and risk-proportionate health preparedness.

At international level, the International Health Regulations (IHR) (WHO, 2024) is the legally binding instrument adopted under the auspices of the World Health Organization (WHO). It urges States parties to develop, strengthen and maintain essential national capacities for the prevention, detection, reporting and response to public health events that may constitute an emergency of international concern. In this context, the WHO has set up several complementary capacity assessment and monitoring mechanisms, including the annual self-assessments (SPARs) which are carried out dynamically in Luxembourg, serving as an essential basis for the European evaluation of PHEPA, the JADE simulation exercises in which Luxembourg participates, the Joint External Evaluation (JEEs), the After Action Reviews (AARs), the simulation exercises and the Universal Review of Health and Preparedness (UHPR). Luxembourg voluntarily committed to the latter, the most recent phase of which was the high-level mission on 27 and 28 November 2025.

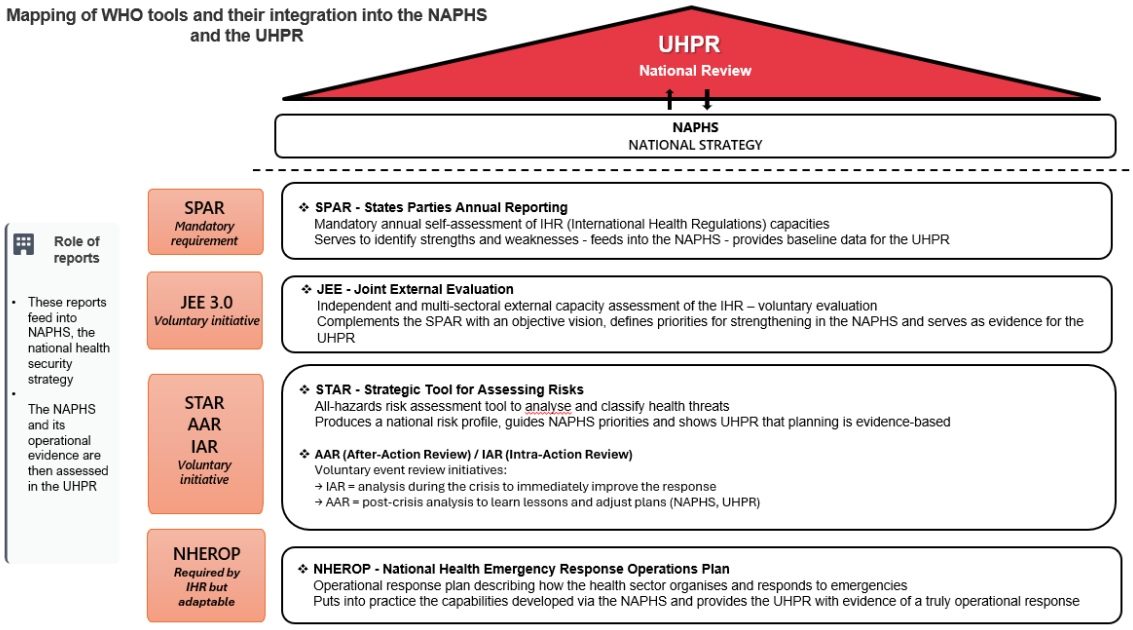

Figure: 1 Mapping of WHO tools and integration into the NAPHS and the Universal Health and Preparedness Review in Luxembourg. Source: Internal presentation, Emergency Preparedness and Response service , Health Directorate, Luxembourg

At European level, the health security framework was strengthened with the adoption of Regulation (EU) 2022/2371 (Official Journal of the European Union, 2022c) on serious cross-border threats to health, which entered into force in December 2022. This Regulation aims to improve prevention, preparedness and response to health threats within the European Union, by strengthening national and European planning, coordination between Member States and the tasks of the relevant European Directorates-General and Agencies. It establishes a structured cycle of self-assessment and external evaluation of national capacities, through the PHEPA led by the European Centre for Disease Prevention and Control (ECDC).

Luxembourg's PHEPA report was officially submitted by the ECDC on 23 April 2025. Sixty-six recommendations covering the 16 capacities described in Regulation (EU) 2022/2371 were transmitted to Luxembourg. That report was published on the ECDC website and on the Santesecu.lu website (ECDC, 2025) in January 2025.

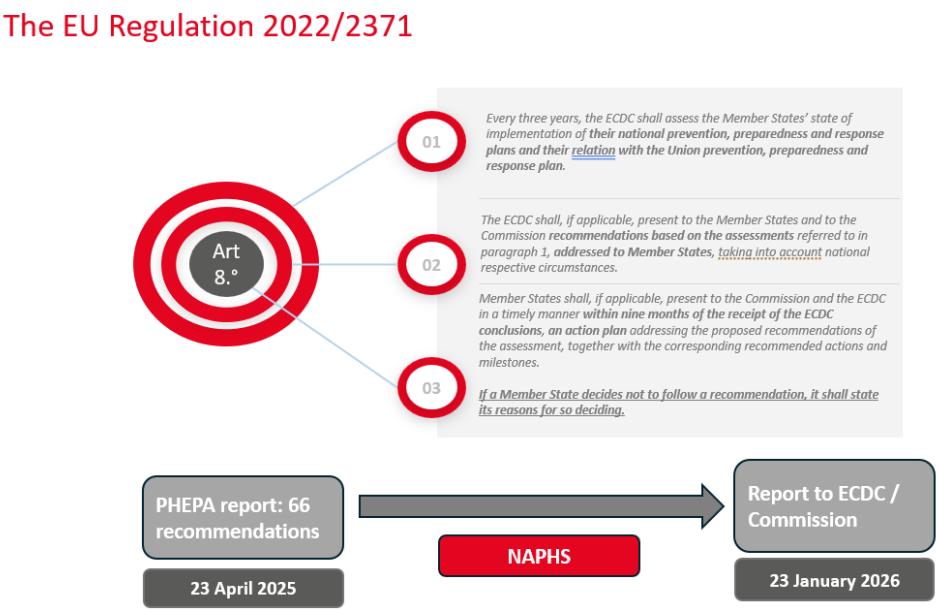

Figure: 2 Presentation of Article 8 of Regulation (EU) 2022/2371 and connection with the NAPHS in Luxembourg. Source: Internal presentation, Emergency Preparedness and Response service , Health Directorate, Luxembourg

At national level, Luxembourg has included the management of major crises, including health crises, in a comprehensive approach to national resilience, recognising the cross-cutting and systemic nature of contemporary risks (Le Gouvernement du Grand-Duché de Luxembourg, 2025). This approach is based on close coordination between the different sectors concerned, not just the health sector alone. Given the specificities of the country, including its strong cross-border integration, the high daily mobility of the population and its international openness, health security is a central pillar of this strategy. Strengthening

national capacities to prepare for and respond to health emergencies is thus part of a logical continuation of and coherence with existing national arrangements.

In this context, Luxembourg's approach is based on a coherent articulation between international, European and national evaluation and planning mechanisms. The Universal Health and Preparedness Review (UHPR), PHEPA and IHR-related tools provide a structured framework for capacity analysis, while national instruments allow for their delineation and implementation in the country-specific context. At operational level, Luxembourg has a national focal point for IHR within the Health Directorate (DISA), and similarly the National Competent Authority for IHR established in 2024, responsible for coordinating surveillance, preparedness and response at national level.

This articulation forms the basis for the development of the National Action Plan for Health Security (NAPHS), presented in the following sections.

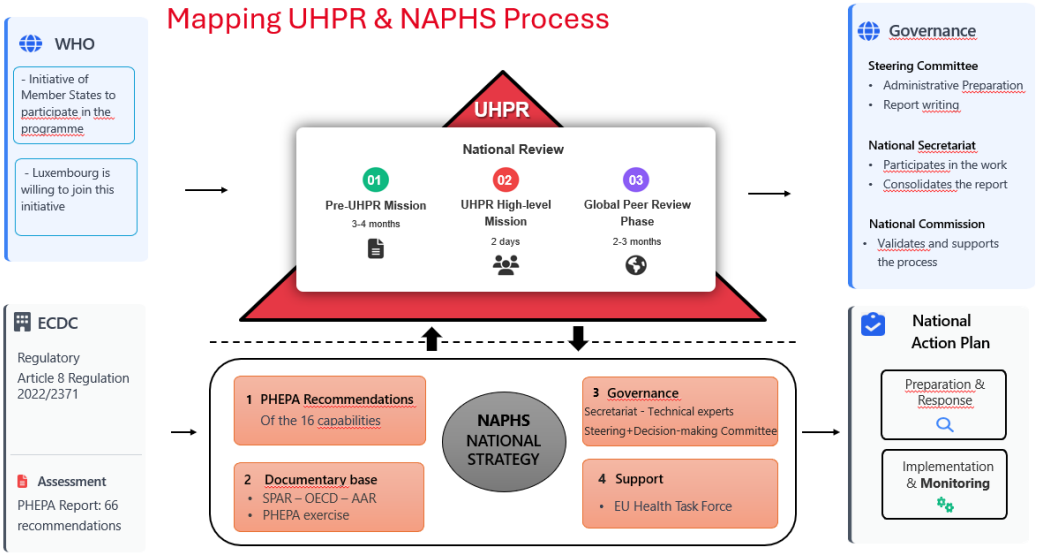

Figure: 3 Mapping of UHPR and NAPHS processes in Luxembourg. Source: Internal presentation, Emergency Preparedness and Response service, Health Directorate, Luxembourg

1.2. Need for NAPHS in Luxembourg

The development of a NAPHS in Luxembourg responds to the need for a single, structured and recognised framework to organise the implementation of the recommendations resulting from the assessments of national capacities for preparedness and response to health emergencies.

Under Regulation (EU) 2022/2371 (Official Journal of the European Union, 2022c) on serious cross-border threats to health, and in particular Article 8(1) thereof, it provides that every three years, the ECDC is to assess the level of implementation by Member States of

their national prevention, preparedness and response plans and their consistency with the Union prevention, preparedness and response plan.

Furthermore, paragraph 2 clarifies that following these assessments, the ECDC shall make recommendations to the Member States and the Commission, taking into account the specificities of each country.

Finally, according to paragraph 3, Member States are required to respond to the findings of the ECDC within nine months of the submission of the report and its recommendations, by submitting an action plan to the Commission and the ECDC. The plan should address the recommendations made and include concrete actions with deadlines. If a Member State decides not to follow certain recommendations, it must state the reasons for doing so.

The actions provided for in those plans may include, in particular:

- Regulatory amendments
- Training initiatives
- Documentation of good practices

In view of the above, the choice of NAPHS as the framework for responding to the PHEPA recommendations, adapted to the national context, has emerged as the most appropriate option for Luxembourg. The NAPHS is internationally recognised by the WHO as the reference tool for translating the results of health capacity assessments into concrete, planned and implemented actions. It offers a structured and integrated approach, compatible both with the requirements of the International Health Regulations (WHO, 2024) and with the European regulatory framework, while being adaptable to national specificities.

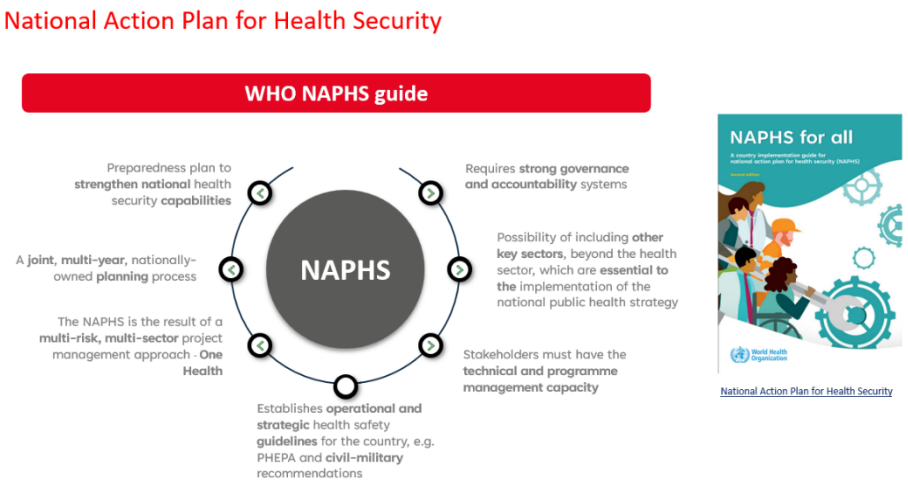

Figure: 4 Synthesis of the objectives and main organization of the NAPHS. Source: Internal presentation, Emergency Preparedness and Response service, Health Directorate, Luxembourg

1.3. Basic objectives and principles of the NAPHS

The NAPHS aims to sustainably strengthen a country's capacity to effectively prevent, detect and respond to health threats, particularly those that are urgent, cross-border or emerging, in accordance with the International Health Regulations (WHO, 2024).

Luxembourg has chosen the NAPHS to also translate the findings and recommendations from the PHEPA recommendations and the UHPR conclusions into concrete, measurable and sustainable improvements in national capacities for preparedness and response to health emergencies.

The NAPHS is the central tool for moving from evaluation to action in a coherent and results-oriented way.

The NAPHS therefore provides a systematic and transparent response to PHEPA recommendations. In line with the principles defined by the WHO, it builds on an in-depth analysis of existing capacities and the identification of priority gaps, in order to target areas requiring immediate reinforcement. It thus provides an essential strategic and operational framework for identifying, for each recommendation, the actions to be implemented, the institutional responsibilities, the planned deadlines and, where appropriate, the resources needed. In doing so, it ensures a coordinated and traceable response to the requirements of the European framework, while facilitating the monitoring of the progress of the actions taken.

Beyond this targeted response to the PHEPA recommendations, the NAPHS pursues a broader objective of comprehensive capacity building of the IHR and the national competent authority, as well as an integrated strengthening of national health security capacities. It is based on a multi-sectoral, multi-risk and collaborative approach, involving all relevant sectors and stakeholders, forming a One Health approach. It aligns with the criteria and principles defined by the WHO for national health security action plans and the national strategic resilience project and aims to ensure sustainable compliance with the IHR (WHO, 2024).

The NAPHS also aims to structure the strategic and operational prioritization of actions. It makes it possible to distinguish long-term strategic orientations from short- and medium-term operational activities, by consulting on high-impact areas for preparedness and response to health emergencies. In this context, it incorporates a needs assessment approach, facilitating the mobilisation of funding, alignment with national budgets and the sustainability of interventions.

In addition, the NAPHS aims to strengthen governance, coordination and accountability mechanisms. It implies the existence of robust governance systems, clear institutional accountability mechanisms and the mobilisation of appropriate technical expertise and programme management capacities, in order to ensure an effective and coherent implementation of the planned actions.

The NAPHS also aims to support policy dialogue and accountability at the national and international levels, providing a legible and shared framework for reporting on progress.

Finally, the NAPHS aims to institutionalise a dynamic of continuous improvement and sustainable capacity building. It is designed as a living document which will be regularly revised and adapted based on lessons learned from crises, exercises, After Action Reviews (AAR) and new national and international recommendations. Its ultimate objective is to contribute to the construction and maintenance of resilient health systems, capable of responding effectively to health emergencies in a sustainable, structured and integrated logic to national governance mechanisms.

1.4. Scope and cycle of the NAPHS

The NAPHS is part of the three-year cycle defined by Regulation (EU) 2022/2371, and more specifically in the context of the PHEPA. The NAPHS is the structured response to the PHEPA recommendations and covers the period between two assessment cycles, thus ensuring continuity between capacity assessment, implementation of actions and preparation of the next cycle.

The NAPHS will therefore be fully assessed and reviewed at the end of the next cycle of Regulation (EU) 2022/2371, in the first half of 2028.

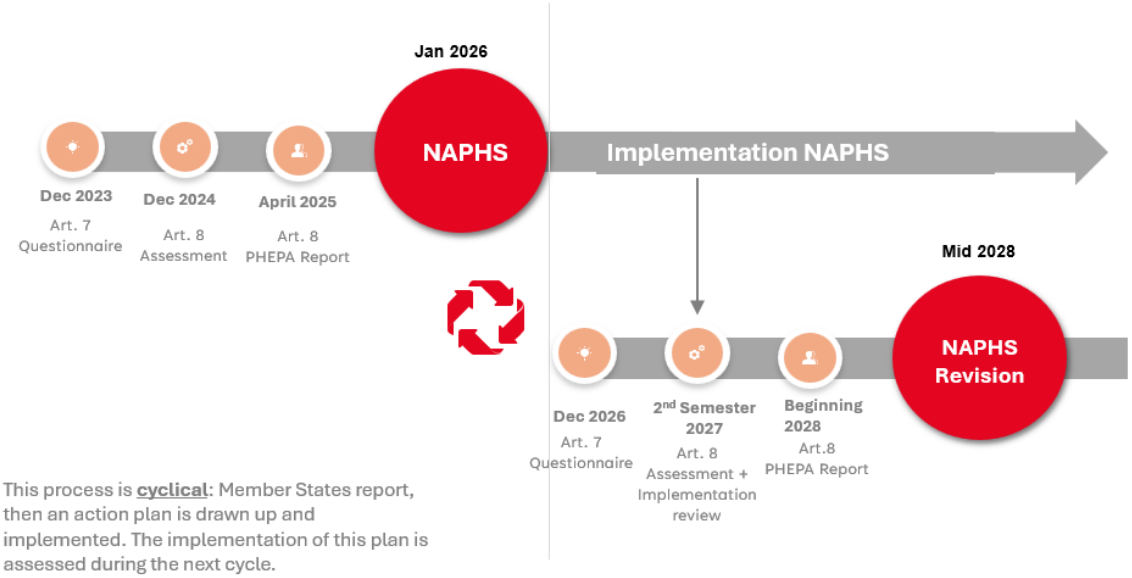

Figure: 5 NAPHS lifecycle in Luxembourg in the context of Regulation (EU) 2022/2371. Source: Emergency Preparedness and Response service, Health Directorate, Luxembourg

Throughout its implementation, the NAPHS is subject to regular review, monitoring the progress of ongoing actions, adjusting priorities where necessary and taking into account the evolving health context, lessons learned from crises, exercises and After-Action

Reviews. These reviews help to keep the plan aligned with European and international requirements, as well as with national priorities. This follow-up is described in the chapter 7 of the NAPHS.

Finally, the NAPHS is designed as a living document. It can be updated during the cycle to incorporate new recommendations, reflect progress or respond to emerging risks. This approach ensures the flexibility of the plan and its continuous adaptation, while ensuring its consistency with successive evaluation and planning cycles.

2. Country presentation

2.1. Country presentation

Geography

The Grand Duchy of Luxembourg, the second smallest country in the European Union after Malta, shares its borders with France, Germany and Belgium. Covering an area of 2 586 km^2, it covers 82 km from north to south and 57 km from east to west and is divided into 12 cantons and 100 municipalities (STATEC, 2024a).

Figure: 6 Geographical map of Luxembourg (source: Universalis encyclopedia)

Luxembourg devotes a significant part of its territory to agriculture and viticulture (61%), particularly along the Moselle, testifying to its rural heritage and its commitment to food production as well as the preservation of green areas. Nearly a quarter of the territory (23.4%) is covered by forests, underlining the importance given to biodiversity. Urbanization, on the other hand, remains under control, with only 10.4% of the territory devoted to built-up areas (STATEC, 2024a). This strategy aims to balance rapid economic growth and population expansion, fuelled by the country's role as a financial centre, with sustainable land management.

Political structure and governance

Independent since the Treaties of London of 1839 and 1867, Luxembourg is a parliamentary democracy in the form of a constitutional monarchy, the only Grand Duchy in the world.

The Grand Duke is the Head of State and exercises executive power in accordance with the Constitution (Journal Officiel du Grand-Duché de Luxembourg, s.d.). The official languages are Luxembourgish, German and French.

Demographic data

Luxembourg's population has almost doubled in 30 years. As of 1 January 2025, Luxembourg had a population of 681,973 (STATEC, 2025).

Almost half of this population is of foreign origin, of which the Portuguese and French communities are the most represented (STATEC, 2024a). This rapid population growth has a major impact on the country, requiring continuous adaptation, particularly in the areas of health, housing and transport. It also raises challenges in terms of caring for the population in the event of a health crisis, particularly because of cultural differences, language problems and the difficulty of reaching certain communities.

Finally, Luxembourg's population is ageing, with a decrease in fertility (1.25 children per woman in 2024) (STATEC, 2025) and an increase in life expectancy (life expectancy at birth of 85.3 years for women and 81.2 years for men in 2024) (STATEC, 2025).

Socio-economic background

Luxembourg enjoys one of the most prosperous economies in the world, with a high gross national income per capita (over USD 90 000 in PPP), supported by a highly developed financial sector, which contributes significantly to the country's gross domestic product (GDP) and employment. (WHO Regional Office for Europe, 2024) This prosperity is based on an open, small economy, strongly integrated into international trade channels, and closely linked to the European Union.

Despite this macroeconomic strength, the country faces significant structural challenges. The housing market is under severe pressure, notably due to population growth and demand from cross-border workers, leading to some of the highest housing costs in Europe (WHO Regional Office for Europe, 2024).

The country remains highly dependent on foreign and cross-border labour, which accounts for around 48% of the labour force, and up to 50% in some sectors such as health. This dependency is a vulnerability in case of border closures, as observed during the COVID-19 pandemic.

Luxembourg's labour market is characterised by its dynamism and one of the lowest unemployment rates in the OECD (5.2% in 2023) (STATEC, 2024a). However, despite this favourable situation, the at-risk-of-poverty rate has increased in recent years, reaching 20%, although it remains below the EU average (STATEC, 2024c).

A feature of Luxembourg's labour market is its high dependence on cross-border labour.

In 2024, of the 485,000 employees in Luxembourg, 47% are cross-border commuters (half from France) (STATEC, 2024b). This dependence on cross-border workers is particularly important for health professionals. In 2019, only one-third of nurses are Luxembourgish and only one-third of nurses reside in Luxembourg (WHO Regional Office for Europe, 2024). Moreover, in 2017, less than half of specialist doctors and two thirds of general practitioners are Luxembourgish (Lair-Hillion, 2019).

Infrastructure and interconnections

Luxembourg benefits from high-quality infrastructure that supports its internal connectivity and integration into the European area. The country has invested significantly in the development of its transport, energy, telecommunications and urban planning networks, while seeking to balance growth and sustainability.

Luxembourg is directly connected to the main European transport routes. It should be noted that public transport has been completely free since 2020, a unique measure in Europe that aims to promote sustainable mobility.

However, population growth and the increase in the number of cross-border workers (more than 220 000 people, almost half of the working population) put a strong pressure on infrastructure, leading to frequent bottlenecks, especially at borders. This situation may limit responsiveness in the event of a health crisis, in particular for cross-border healthcare staff.

2.2. The health system in Luxembourg

Governance

Luxembourg has a centralised and structured governance of its health system, divided between several administrations and under the supervision of a single ministry. The

Ministry of Health and Social Security (hereinafter M3S), resulting from the merger of the Ministries of Health and Social Security in 2023, plays a central role in the planning, regulation and financing of health care. It defines health policy, oversees care planning and regulation, defines health sector regulations and allocates authorisations to providers.

In addition, through the General Inspectorate of Social Security (hereinafter IGSS), the M3S ensures the supervision of public institutions that take care of healthcare, work disabilities and long-term care.

DISA is responsible for all public health matters, for the protection and promotion of the physical, mental and social health and well-being of citizens, and for the enforcement of health regulations.

The National Health Fund (hereinafter CNS) manages compulsory health insurance and dependency insurance. The management of health insurance by this single national institution, whose Board of Directors is tripartite (State, employees and employers), is a key element of the governance of the system.

Long-term care facilities, including nursing homes and integrated centers for the elderly, are under the authority of the Ministry of the Family, Solidarity, Living Together and Reception (hereinafter MFVSA).

Care offer

Luxembourg has a dense and diversified healthcare offer, with four main hospitals (hospital groups) well distributed throughout the country. These facilities provide acute and specialized care. There are a total of 13 hospitals with approximately 2,640 beds (approximately 4 beds per 1,000 inhabitants) in 2023.

Primary care is provided by a network of general practitioners of first resort, mostly in liberal practice, offering effective geographical coverage. In support, three on-call medical houses ensure the permanence of outpatient care on nights and weekends for non-hospital emergencies.

Beyond the hospital sector, medico-social structures (care homes, integrated centers for the elderly) and home care networks complete the system in order to ensure the continuity of rehabilitation and long-term care throughout the patient journey, under the supervision of the Ministry of the Family, Solidarity, Living Together and Reception.

Luxembourg showed solidarity and adaptation during the COVID-19 crisis by fully integrating border residents into its health response – screening, contact tracing and vaccination – illustrating its cross-border cooperation while revealing the need to sustainably consolidate its national capacities.

Health Human Resources

Luxembourg has a unique profile in terms of health human resources, marked by a high density of nurses, contrasting with a density of doctors below the European average (321 doctors per 100 000 inhabitants). This pattern is the result of the historical absence of national medical training, rectified only in 2021, with the opening of the Bachelor of Medicine at the University of Luxembourg (European Observatory on Health systems and policies, 2024). As a result, the country remains highly dependent on foreign-graduate doctors, mainly from neighbouring countries.

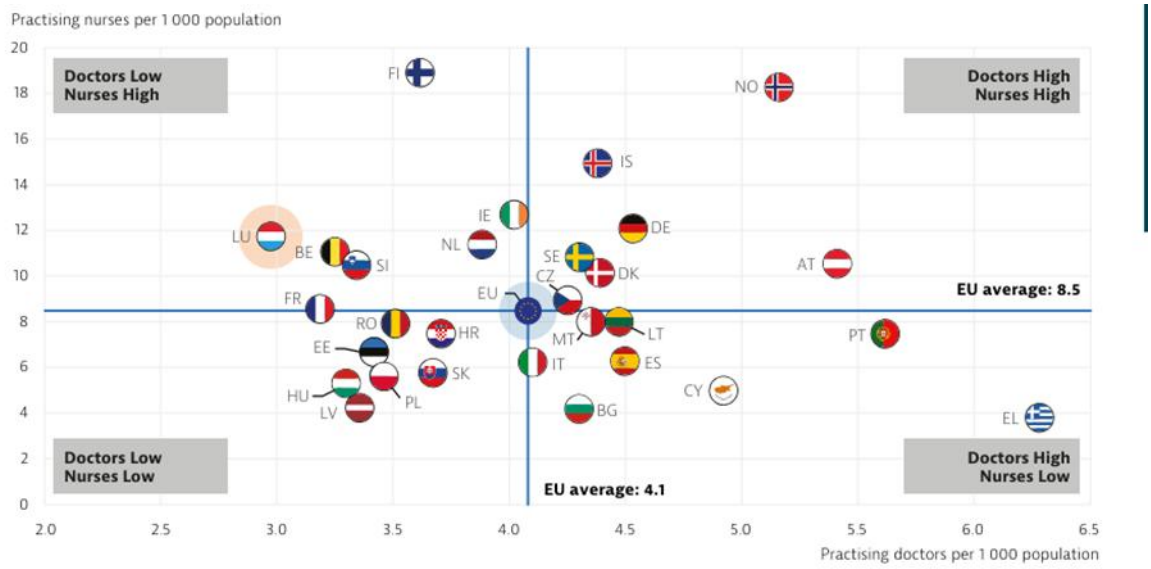

Figure: 7 Source: OECD - State of Health in the EU Luxembourg Country Health Profile 2023

This cross-border structure of health workers, while an asset in normal times, is a vulnerability in crisis situations, as demonstrated by the COVID-19 pandemic. Traffic restrictions and logistical tensions can then directly impact the continuity and capacity of care, particularly in the hospital and long-term care sectors.

Financing

The Luxembourg health system is based on a solidarity model based on compulsory health insurance, managed by CNS. Current health expenditure in 2022 was around 5.5% of GDP (OMS, s.d.-a), below the EU average, although increasing since the COVID-19 pandemic.

Health financing in Luxembourg is largely public: 81.3% of health expenditure comes from public funds, mainly through employers' and employees' social security contributions, while 18.7% (European Observatory on Health systems and policies, 2024) comes from private expenditure, mainly in the form of the insured person's balance.

The CNS signs multi-year agreements with providers (hospitals, doctors, laboratories), defining budget envelopes and tariffs, in a logic of cost control and financial predictability

Finally, although Luxembourg has significant fiscal margins, demographic projections and medical innovations point to a structural increase in financial health needs, requiring careful reflection on the sustainability of the current model.

Resilience and Emergency Preparedness

The COVID-19 pandemic has highlighted Luxembourg's rapid adaptive capacities, while revealing systemic fragilities in the management of health crises. The country has been able to rapidly mobilise its hospital structures, strengthen its capacity and establish a large-scale screening programme recognised at European level.

In addition, the response also benefited from strong cross-sectoral coordination, facilitated by the government crisis unit.

Finally, the COVID-19 vaccination campaign was launched in December 2020 and structured around priority phases defined by risk groups, with a strong logistical mobilization and the establishment of dedicated vaccination centres. In particular, Luxembourg has opened up access to vaccination to cross-border workers affiliated to the CNS, marking an inclusive approach in a context of strong regional interdependence. The country has also ensured regular data transparency through the national portal covid19.public.lu, contributing to public trust.

Monitoring

Luxembourg has a structured set of public health surveillance and alert systems covering biological, chemical, radiological and nuclear (CBRN) risks. Such arrangements are an essential pillar for early detection of health threats, prevention and crisis preparedness. They have characteristics specific to the Luxembourg context, linked in particular to the size of the country, its institutional organisation and its high degree of cross-border interconnection.

The governance and coordination of all surveillance systems is the responsibility of DISA, which ensures the strategic steering and overall coherence of the public health surveillance and alert system. In this context, INSA is a player in infectious disease surveillance and a national focal point for the International Health Regulations (IHR). As such, DISA is responsible for the centralisation and analysis of relevant information, the assessment of events that may constitute a public health emergency of international concern, as well as the notification to national and international bodies in accordance with the obligations of the IHR and in particular Annex 2. The functioning of the Luxembourg surveillance system is thus based on close and structured collaboration between the various services and institutions under DISA, as well as with the relevant national partners, enabling an integrated, responsive and proportionate approach to health threats.

Surveillance of infectious diseases in Luxembourg is based on a national legal framework setting out the arrangements for mandatory reporting of certain diseases and pathogens. This system is based on the declaration of cases by doctors and medical biology laboratories or the reference laboratory (LNS). The information collected is centralised by INSA, which provides epidemiological analysis, interpretation of trends and detection of unusual signals and response in terms of case management and outbreaks. On this basis, in liaison with the competent authorities and relevant partners, the necessary public health actions, such as epidemiological investigations, prevention and control measures, risk communication and, where appropriate, notification to national and international bodies, shall be coordinated.

As regards food surveillance, the Luxembourg Veterinary and Food Administration (ALVA) is responsible for the control and surveillance of food and the associated risks throughout the food chain. This surveillance shall be implemented in close collaboration with the LNS, in particular for laboratory analyses, and with the DISA for health risk assessment and coordination of public health actions in case of detection of a danger to the population.

Water monitoring is mainly carried out by the Water Management Authority (AGE), which monitors the quality of drinking water, bathing water and surface water. These devices make it possible to detect early any degradation likely to have an impact on public health and to guide appropriate prevention or management measures. The INSA and the Environmental Health Service are responsible for assessing and managing water-related risks in priority places (accommodating people vulnerable to legionella or lead). In addition, the surveillance of infectious diseases in wastewater is carried out by the Luxembourg Institute of Science and Technology (LIST), in collaboration with AGE and DISA. This device contributes to the early detection of the population circulation of certain pathogens and is a complementary tool to conventional epidemiological surveillance systems.

Radiological and nuclear monitoring is carried out by DISA's Radiation Protection Division, which is responsible for monitoring the population's exposure to ionising radiation. This includes monitoring of radioactivity in the environment, water and food chain, as well as monitoring of radiation sources and situations of occupational or accidental exposure. The Radiation Protection Division also contributes to the alert and preparedness systems for radiological emergencies, in connection with national and cross-border mechanisms.

Chemical risk monitoring in Luxembourg is carried out by DISA's Environmental Health Department. It aims to identify, analyze and prevent the impacts of environmental factors on human health. This is based on the assessment of the population’s exposures to chemicals in the environment and habitat, as well as on the analysis of situations that may lead to acute or chronic health effects, with a view to supporting risk prevention and management measures.

2.3. Main risks of the country

Luxembourg presents several structural vulnerabilities that have been highlighted not only in the discussions during the preparatory phase, most notably in the working groups, but

also following previous reports and health crises. Thus, these vulnerabilities are considered likely to affect its ability to effectively prevent, detect and respond to major health threats. These risks are linked to its size, cross-border configuration, demographics, health infrastructure and strategic dependencies.

Cross-border dependence on human resources

Around 50% of healthcare professionals working in Luxembourg live in a neighbouring country. This configuration optimises the provision of care on a daily basis but represents a vulnerability in the event of disruption of cross-border mobility or extraterritorial requisition.

Limited specialised capacity

Luxembourg does not have some specialised care structures, in particular for highly contagious diseases or large burns. The response to these needs is based on cooperation agreements with neighbouring countries. These external dependencies can represent fragility in the event of simultaneous crises.

Lack of expertise in some critical disciplines

Expert gaps are identified in sensitive areas such as Chemical, Biological, Radiological and Nuclear (CBRN) risks. The limited number of specialists in these fields could limit the ability to react quickly to prolonged or complex events.

Low interoperability of surveillance systems

Information systems (epidemiology, hospital, pharmacy) lack interconnection, which can hinder the production of consolidated real-time data in the event of a crisis. This fragmentation can affect the coordination and responsiveness of system actors.

Limited capacity in critical care

Although above the European average, with 20.4 adult intensive care beds per 100 000 inhabitants (European average 18.4 beds per 100 000 inhabitants), resuscitation (OCDE, 2024) capacity is proportionally smaller than in some of our neighbouring countries (Germany 28.1 beds per 100 000 inhabitants and France 27.2 beds per 100 000 inhabitants in particular). In the event of an epidemic or disaster, overloading of critical units could occur quickly, especially as specialised intensive care human resources are limited.

Dependence on supply chains

The country does not produce essential medicines or strategic medical equipment on a large scale and is highly dependent on European supply chains. National storage capacities are limited, exposing the system to risks of disruption in the event of an international logistical crisis or prolonged geopolitical tensions. These vulnerabilities particularly affect medical countermeasures such as emergency medicines in the event of a health crisis (antidotes, vaccines, live antibiotics, etc.) or personal protective equipment (masks, gloves, etc.).

Climate and environmental vulnerability

Luxembourg is exposed to increased heatwaves, significant precipitation events that can lead to rapid flooding and flooding, and degradation of air quality. These environmental hazards affect older people, people with chronic diseases and vulnerable populations more strongly. High temperatures promote ground-level ozone formation and air stagnation, leading to pollution spikes that can worsen respiratory conditions such as asthma. The extension of pollen seasons also accentuates respiratory allergies. In addition, warming and drought increase the risk of wildfires, which are important sources of fine particles and carbon monoxide, contributing to the degradation of air quality and the worsening of respiratory diseases.

Heat waves can cause an overload of emergency services, due to the influx of vulnerable patients, especially in the absence of adequate preventive measures. Increasingly frequent and intense flooding can cause diffuse pollution, affecting industrial or agricultural areas and transporting harmful substances such as hydrocarbons, pesticides or fertilizers.

These phenomena are accentuated in Luxembourg by several structural elements. The small size of the country combined with a high population density result in a high concentration of critical infrastructure (transport networks, urban and industrial areas) often located in river valleys. This configuration increases the sensitivity of the territory to floods and rapid floods. In addition, high levels of urbanisation and land take exacerbate urban heat islands and reduce the natural infiltration capacity of rainwater, aggravating both the impacts of heat waves and the risks of run-off and flooding. Finally, Luxembourg is highly interconnected at regional and international level, notably through transport, energy and supply chains. This strong interdependence makes it particularly sensitive to the indirect effects of climate change, including when climatic hazards occur outside its territory.

Beyond these impacts, climate change leads to a significant increase in infectious risks. Rising temperatures and changing ecosystems promote the spread of vector-borne diseases, including those transmitted by mosquitoes and ticks, as well as zoonoses and food-borne diseases. In addition, warmer and humid weather conditions can increase the risk of legionellosis, in particular via water networks and technical installations.

These developments confirm the need to strengthen preparedness, environmental monitoring and cross-sectoral coordination to anticipate and mitigate the health impacts of climate change.

Complexity linked to the multinational dimension

With 47% of the population being foreigners and more than 200,000 daily cross-border commuters (STATEC, 2024a), the country enjoys remarkable openness and valuable cultural diversity. This configuration is a force in normal times but can become a challenge in the event of a crisis: Cross-border mobility, language barriers, access to diverse communities and unequal access to health information can all complicate an effective and equitable response.

Cross-border cooperation to be formalised

Although bilateral relations are active, formal legal agreements on joint management of health emergencies (bed sharing, patient transfers, shared logistics) remain partial or specific. In the event of a crisis affecting several countries simultaneously, the absence of consolidated legal arrangements could slow down the response.

2.4. Recent experiences of health crises

Luxembourg has been confronted with several recent public health events that have highlighted the structural features of its health emergency management system.

The COVID-19 pandemic has been one of the most significant health challenges, leading to a coordinated and wide-ranging multisectoral mobilisation. This period allowed the implementation of enhanced screening, vaccination, epidemiological monitoring and health communication in a complex multilingual and cross-border context.

Beyond this major crisis, other health situations have helped shape the country's operational experience. In 2022, several cases of MPox were confirmed as part of the outbreak affecting many European countries. Health authorities responded with surveillance, contact management, and targeted access to vaccination.

In addition, during the winter of 2022-2023, a simultaneous circulation of respiratory viruses (bronchiolitis, influenza, SARS-CoV-2) generated increased pressure on paediatric and emergency services, illustrating potential seasonal strains on hospital capacity.

Other events have impacted Luxembourg's health emergency management system. Examples include heatwaves, flood-type weather events or specific situations such as a legionellosis outbreak in July 2025 (Luxembourg, 2025).

These experiences, although varying in nature and scope, have strengthened the dynamics of reflection and adaptation around health emergency preparedness, stakeholder

coordination, and the resilience of health services. They also identified opportunities for continuous improvement, notably in cross-sectoral planning, hospital pressure management and response to emerging health alerts.

Limited capacity for data collection and scientific research leads to a high dependence on clinical studies, scientific work and recommendations developed in neighbouring countries. However, these results are not always directly transposable to the Luxembourg context. The reasons for this lack stem from the structural specificities already mentioned, such as the small size of the country (small-scale clinical studies), the limited availability of specialised capacities, the lack of expertise in certain critical disciplines and the low interoperability of surveillance systems.

3. Presentation of the NAPHS process in Luxembourg

3.1. Methodology and general organisation of the NAPHS in Luxembourg

The organisation of the NAPHS is structured around the sixteen PHEPA priorities and their recommendations, which are the guiding thread and the structuring framework. An organisational approach similar to that adopted in PHEPA is introduced to capitalize on the expertise and contacts developed, while adapting it to integrate the structure and approach of the WHO NAPHS.

The governance of the NAPHS is organised in Luxembourg according to the scheme presented below.

Figure: 8 Governance of the NAPHS in Luxembourg. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

In this arrangement, the national focal point (NFP) for the IHR and the competent authority (CA) for the IHR shall play a role of national coordination of relevant information, assessment of events that may constitute a public health emergency of international concern, and communication and notification to international bodies in accordance with the obligations of the IHR. Their positioning and presence within the NAPHS organisation ensure consistency between international, European and national frameworks.

3.2. Secretariat

3.2.1. Missions

The main mission of the Secretariat is to support the entire NAPHS process. It is responsible for organising working meetings, compiling information relevant to the preparation of the plan, and for logistical coordination.

As a facilitator, it plays a cross-cutting role in supporting stakeholders, ensuring the smooth running of the work, and maintaining the collective dynamic.

During the implementation phase, it also monitors activities and provides ongoing administrative support.

3.2.2. Composition

The Secretariat shall be composed of the Emergency Preparedness and Response service (EPR). This is the group responsible for the overall organisation of the NAPHS process, from the planning phase to implementation.

3.2.3. Operation

A member of the EPR service is assigned responsibility for each capacity under PHEPA, serving as the contact point for that capacity.

All Secretariat communications and exchanges are made by the functional mailbox secretariat.naphs@ms.etat.lu managed by the EPR service.

The Emergency Preparedness and Response Assistant coordinates and supervises the Secretariat.

All documents related to the functioning of the Secretariat are archived on the SharePoint NAPHS.

3.3. Experts Coordinators and technical groups

3.3.1. Missions

In the preparation phase, the coordinating experts and technical experts provide expert advice and lead the working groups in their capacity. They analyse the recommendations from the PHEPA process in terms of impact, feasibility, available resources and timeline.

On this basis, they shall make proposals for actions tailored to each recommendation. Experts and coordinators also propose a feasibility analysis and prioritise actions in their area of expertise

During the implementation phase, they monitor the actions specific to their field, work closely with other experts to advance the expected results and mobilise, if necessary, additional technical and financial resources. Their role is therefore essential both for the

technical quality of the plan and for the implementation of the strategic choices on the ground.

3.3.2. Composition

Sixteen technical groups are formed, based on the capacities of PHEPA.

Each group is composed of an expert responsible for capacity (coordinating expert; preferably already responsible for its capacity during PHEPA) and technical experts.

Each group is coordinated by the coordinating expert and plays a central role in providing operational and technical expertise.

The composition and names of the expert groups and experts responsible by capacity have been decided and validated by the Steering Committee and the Director of Health (see Annex 10.1).

In practice, the experts are those largely involved in the PHEPA and some of whom contribute annually to the SPAR. Further experts were added as a result of the PHEPA discussions and the evaluators' suggestions in their recommendations.

3.3.3. Operation

The Steering Committee shall be responsible for identifying and appointing coordinating experts and technical experts for each working group. This selection takes into account the allocation of capacities established during the PHEPA and is subject to validation by the Director of Health.

The coordinating expert shall also have the possibility to propose names of technical experts.

The coordinating expert organises the meetings and exchanges, supported by the NAPHS Secretariat and guides the group in developing an appropriate operational strategy.

Technical documents responding to the recommendations shall be sent to the Steering Committee within the time limits set by the Steering Committee.

All documents related to the operation of the technical groups are deposited on the SharePoint NAPHS.

3.4. Steering Committee

3.4.1. Missions

During the preparation phase, the Steering Committee is responsible for validating the composition of the expert groups in order to ensure the best level of expertise.

It is also in charge of proposing a strategic direction for the NAPHS. It defines the overall strategy, identifies the main priorities of the plan and guides the work according to the capacities to be strengthened.

The Steering Committee is responsible for reviewing successive versions of the draft strategic plan and ensuring that they are aligned with European recommendations.

In addition, this committee acts as the national contact point for requesting support from the ECDC's *EU Health Task Force,* facilitating access to additional expertise when needed. He is also in charge of ensuring exchanges with the *EU Health Task Force* throughout the process.

Finally, this committee's mission is to ensure the coherence, transversality and complementarity of the actions through the different phases of the plan.

3.4.2. Composition

The Steering Committee is the strategic coordinating body of the NAPHS process.

By validation of the DISA Steering Committee (CODIR), it is composed of Dr Sébastien Français (Head of the EPR Service), Dr Anne Vergison (Head of Division of the Health Inspectorate - INSA) and Vera Azevedo Monteiro (Assistante emergency preparedness and response of the EPR Service).

3.4.3. Operation

The Committee meets regularly to monitor progress. Committee meetings can be held face-to-face, hybrid, or online.

Meeting dates are set in advance and the EPR Assistant organises the meetings, including preparing the agendas, taking the notes and drafting the minutes.

At the end of the preparation phase of the national plan, the Board shall forward the consolidated plan to the Decision-Making Committee for validation.

All documents relating to the functioning of the Steering Committee are deposited on the SharePoint NAPHS.

3.5. Decision-Making Committee

3.5.1. Missions

The committee ensures the authorities involved adhere to the process and that it is adopted by the decision-making bodies.

It formally validates the process as well as the strategy developed. Its role is not limited to approval: it also intervenes to ensure that recommendations are taken into account in a concrete and sustained manner.

It also plays an arbitration role in the NAPHS process, in particular in the event of technical or strategic disagreements.

It also ensures the institutional legitimacy of the NAPHS and facilitates the plan's anchoring in long-term public health policies.

3.5.2. Composition

The Decision-Making Committee is composed of the three DISA Directors and the DISA Cluster Leaders.

3.5.3. Operation

The decision-making committee is consulted by the steering committee on the occasion of a Steering Committee of the Health Directorate (CODIR), during which the strategic document transmitted by the steering committee is examined. It is then up to the members of the Decision-Making Committee to decide whether or not to approve the plan or to take corrective measures.

All documents related to the functioning of the decision-making committee are deposited on the SharePoint NAPHS.

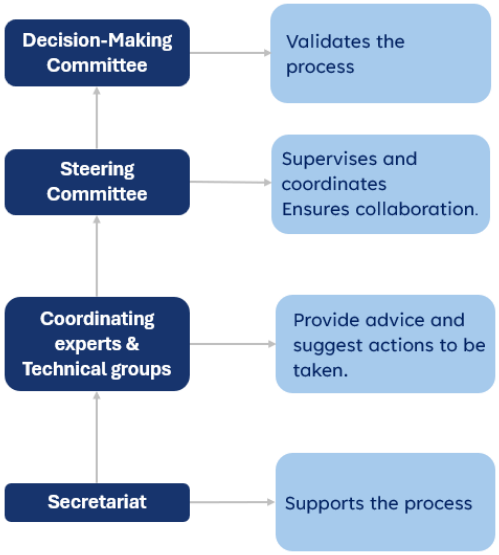

Figure: 9 Operational and decision-making flow of the NAPHS in Luxembourg. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

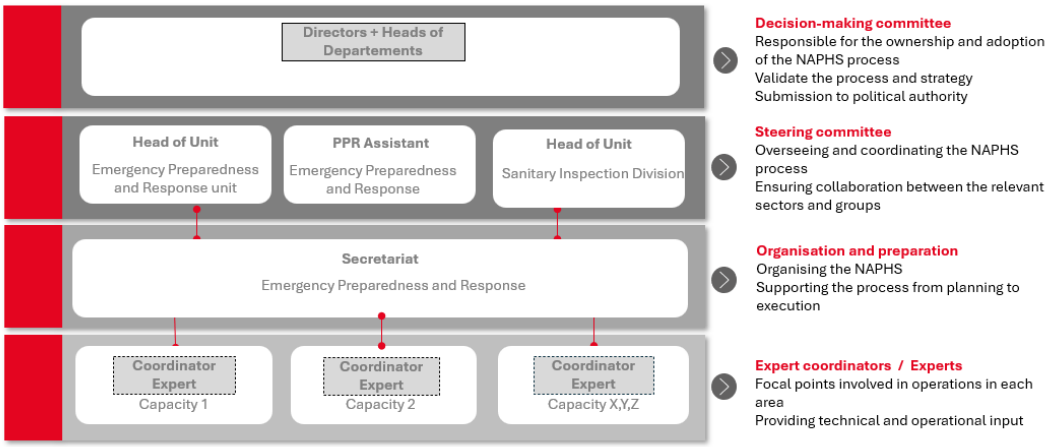

Figure: 10 Overview of the NAPHS organisation in Luxembourg. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

3.6. EU Health Task Force

Luxembourg requested the support of the EU Health Task Force of the ECDC. The work took place between September and December 2025 and was finalised by a Task Force mission to Luxembourg on 10 and 11 December 2025.

The Task Force was composed of a representative of the ECDC, as well as two national experts, respectively from Finland and Portugal.

The discussions focused on the analysis of the strategic axes defined in response to the recommendations of the PHEPA report, on the methodological approach adopted for the drafting of this report, as well as on the future implementation of the NAPHS.

This external expertise allowed Luxembourg to benefit from additional analysis and contributed to strengthening and improving its action plan.

4. National plan

4.1. Identification of operational axes

The technical expert groups, under the coordination of the coordinating experts, are responsible for responding to the specific recommendations of PHEPA. This work includes the analysis of the recommendations, the impact assessment of possible inaction on each recommendation, the definition of an operational strategy and its feasibility.

As a first step, the technical expert groups were consulted to discuss the recommendations of the PHEPA evaluation and to complement the Excel working tool (see Annex **Erreur ! Source du renvoi introuvable.**).

This exercise included, for each recommendation:

- An assessment of the expected impact (human, organisational, reputational, financial and legal), each dimension was rated on a scale from 0 to 3, supported by an evaluation guide. The criticality of the impact was calculated automatically by adding the five scores obtained.
- A summary description of the actions to be taken.
- A definition of the operational strategy (type of activities to be carried out, responsible, current status of taking into account the recommendation, feasibility and theoretical completion period).
- An assessment of the feasibility of achieving the recommendation, based on a rating on a scale from 0 (very difficult feasibility) to 4 (high feasibility).
- An automatic calculation of prioritisation, based on the criticality of impact and the feasibility of the actions in the recommendation. This theoretical prioritisation is determined by taking into account, on the one hand, the estimation of the various impacts and, on the other hand, the feasibility of the action, according to the following calculation method: sum of the impact scores (rated from 0 to 3) multiplied by the feasibility score (rated from 0 to 4).
- An assessment of the existence of a budget, specifying if it was already dedicated or not.

Impact if no action is taken to address the recommendation						
Level	Impact	Human (H)	Organisational (O)	Image (I)	Financial (F)	Legal (J)
0	None	No impact	No impact	No impact	No impact	No impact
1	Minor	Exposure of a population to negligible impact	One-off disruption in the organisation/waste of time	Event with little impact on the reputation of the organisation	Negligible financial loss	Liability Commitment with Negligible Consequences
2	Significant	Exposure of a population to moderate impact	Disorganization	Transient deterioration of the image of the organisation	Financial loss with moderate impacts for the organisation	Liability Commitment with Moderate Consequences
3	Important	Exposure of a population to a significant impact	Partial immobilisation of the organisation	Loss of confidence	Financial loss with significant impacts for the organisation	Liability Commitment with Significant Consequences

Figure: 11 instructions to assist experts in the scoring of non-implementation impacts of a recommendation

Score	Feasibility level	Definition
0	Very low	The necessary resources are either non-existent or very difficult to mobilise; implementation almost impossible in the current context.
1	Low	Several major obstacles have been identified; implementation possible but with significant external support or structural changes.
2	Average	Implementation possible with moderate efforts; some constraints, but surmountable in the short/medium term.
3	High	Few obstacles identified; resources and overall conditions for effective implementation.
4	Very high	All the conditions are met; implementation easily achievable in the current context.

Figure: 12 Instructions to assist experts in rating the feasibility of a recommendation

In a second step, the expert groups detailed, for each recommendation, the specific actions to be carried out, specifying the lead(s), stakeholders, expected deliverables and milestones, as well as the expected start and end of the action, thus ensuring operational

clarity and traceability between the recommendations and the planned actions (see Annex 0).

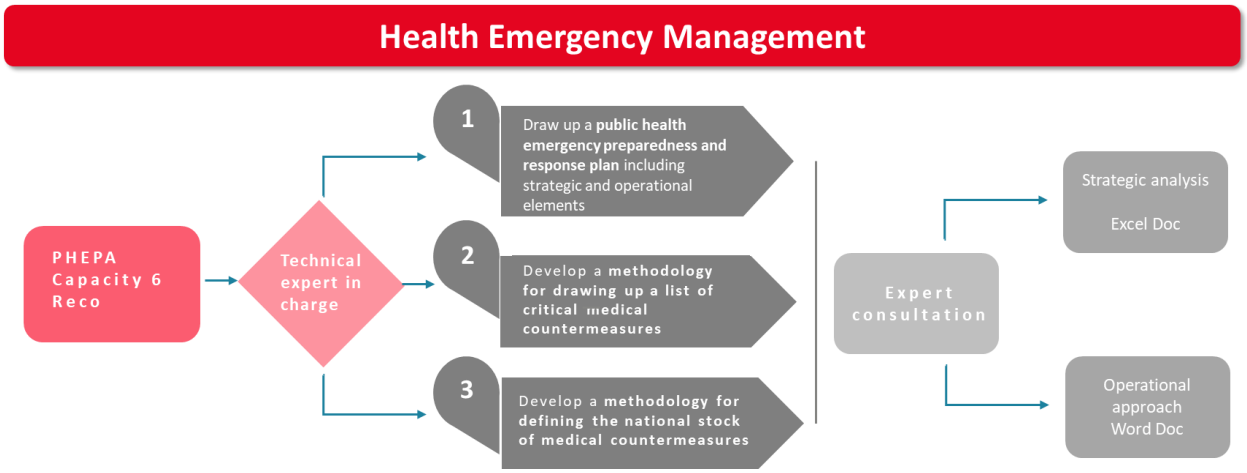

Figure: 13 Synthetic example of the preparation process - Capacity 6. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

4.2. Identification of strategic axes

On the basis of the consolidated technical proposals, the Steering Committee, taking into account the opinions and advice of the *EU Health Task Force,* draws up the strategic axes of the national plan. This step aims to structure a coherent, integrated and multisectoral vision of health security in Luxembourg.

The strategic guidelines take into account not only the technical recommendations, but also the national and international regulatory and legislative framework, feedback from previous evaluations, and priorities identified at national level as part of the NAPHS process.

4.3. Drafting and Consultation

The draft national plan shall be drawn up by the Steering Committee on the basis of an overall strategy and an operational plan developed in direct response to the recommendations resulting from the PHEPA process.

This work builds on all available inputs, including technical reports from expert groups, as well as existing evaluations (OECD, UHPR, etc.). The development process also takes into account the current health security priorities identified under the NAPHS, in order to ensure alignment between European and international requirements, global commitments and Luxembourg's specific needs. Finally, this work is based on the identification of strategic axes as developed by the Steering Committee.

4.4. Validation

The Steering Committee shall submit the national report to the Decision-Making Committee for validation.

In the event of comments from the Decision-Making Committee, the Steering Committee shall make all necessary amendments before they are forwarded to the European Commission.

In addition, if the report contains major strategic elements requiring an inter-institutional approach, a validation by the Minister of Health and Social Security may be requested, in order to ensure political coherence and commitment at the highest level.

4.5. Transmission

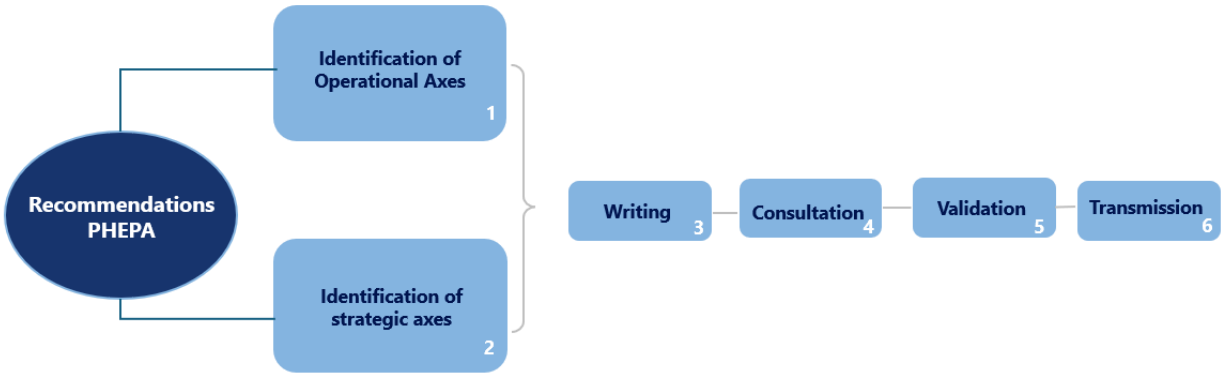

Figure: 14 Simplified NAPHS process in Luxembourg. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

The signed national plan shall be sent to the services of the European Commission and within the prescribed period of 9 months from receipt of the ECDC conclusions, i.e. before the 23rd of January 2026.

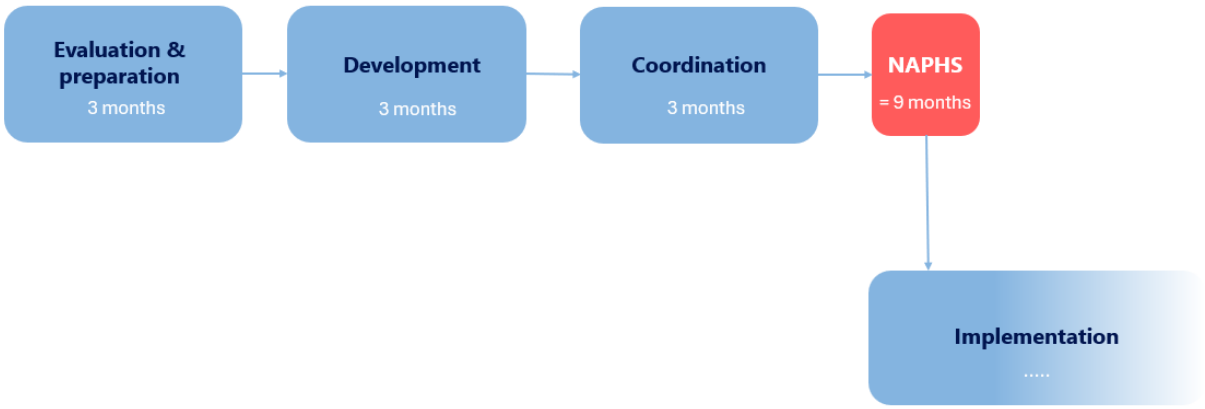

Figure: 15 NAPHS process and next steps. Source: Internal document, Emergency Preparedness and Response service, Health Directorate, Luxembourg

4.6. Methodology for drawing up the plan

In order to ensure compliance with Article 8 of Regulation (EU) 2022/2371, the NAPHS is drafted in two versions:

- A simplified public version, presenting the main strategic orientations and actions to be carried out by recommendation. This public version will serve as an official response to the PHEPA evaluation, ensuring transparency and alignment with EU expectations.
- A detailed and restricted version, providing national authorities and stakeholders with comprehensive technical and operational information (detailed action sheets, nominative designation of managers and participants, etc.).

5. NAPHS Global Strategic Direction

5.1. National Vision for Health Security

The national vision for health security aims to ensure sustainable protection of the population against all health threats, whether biological, chemical, environmental, radiological or emerging, taking into account the specificities of Luxembourg, in particular its strong cross-border integration and its dependence on daily mobility. This vision is based on a public health system capable of anticipating risks, detecting health events early, responding in a coordinated and proportionate manner to crises, and ensuring a rapid return to normal functioning. It is part of a resilience approach, based on preparedness, continuous learning and cooperation between all relevant sectors.

This NAPHS is a structured response to the findings of the PHEPA assessment, carried out in accordance with Article 8 of Regulation (EU) 2022/2371 on serious cross-border threats to health. As such, it aims to fill identified gaps, consolidate existing capacities and sustainably strengthen national preparedness and response, in line with European and IHR requirements. The plan is consistent with the principles of this Regulation and the IHR, including risk-based prevention and preparedness, cross-sectoral coordination, solidarity and cooperation between Member States, transparency, information sharing and alignment of national capacities with international monitoring, alert and response mechanisms.

National health security is thus conceived as a pillar of national security and resilience, based on a clear, evolving strategic framework aligned with European and international frameworks.

5.2. Basic principles

The national health security strategy is guided by several fundamental principles.

It is based primarily on clear and structured governance, with formalised roles and responsibilities, in particular as regards cross-sectoral coordination and the roles of the National Focal Point and the competent authority for the IHR.

It is also based on an approach that integrates the interdependence between human, animal and environmental health and the need for coordinated action between these sectors.

The strategy focuses on risk-based preparation, integrating generic and thematic planning, regular exercises and systematic use of feedback.

It focuses on the sustainable strengthening of national capacities, be it human resources, laboratory capacities, surveillance systems or strategic stocks.

Finally, it promotes transparency, data sharing, interoperability of information systems and effective communication with professionals, partners and the public to build trust and ownership of public health measures.

The final objective is to ensure the effective implementation of the priority actions in the evaluation processes by ensuring the sustainability of the structures and procedures put in place to ensure optimal risk management.

5.3. Strategic axes

The national strategy is structured around several interlinked cross-cutting axes.

The first axis concerns the strengthening of governance and coordination, through the formalisation of cross-sectoral communication mechanisms, the clarification of

institutional responsibilities and the legal anchoring of national coordination structures, including for cross-border risk management.

The second axis aims at strengthening and improving existing surveillance systems, building on the interconnection of existing systems, improving the quality and automation of reporting, as well as integrating clinical, microbiological, epidemiological and vaccine data to support rapid and data-driven decision-making. To this end, it is essential to develop the necessary interoperability, in particular in the context of the implementation of the European Health Data Space (EHDS).

The third axis focuses on strengthening laboratory capacity and technical preparedness. This includes strengthening the national reference laboratory and laboratory networks, developing emergency take-over protocols, improving sample logistics and strengthening typing, sequencing and analysis capacities for emerging, vector, antimicrobial and chemical threats.

The third axis focuses on strengthening laboratory capacity and technical preparedness. This includes strengthening the national reference laboratory and laboratory networks, developing emergency ramp-up protocols, improving the role of the national hub to collect and transfer samples and building capacity, including through collaborative diagnostic and typing agreements, for emerging, vector, antimicrobial and chemical threats.

The fourth axis is devoted to human resources, training and the health reserve, with the objective of having sufficient and mobilizable skills in crisis situations, thanks to skills planning, adapted training and clear ways of mobilizing without destabilising the healthcare system.

The strategy also includes an operational preparedness, response and resilience axis, which includes the development of generic and thematic plans, the development of replicable operational procedures, the management of national strategic stocks and the regular organisation of national and cross-border exercises, including lessons learned from past crises.

Finally, a cross-cutting axis is devoted to risk communication, community engagement and international cooperation, integrating the dimensions of Risk communication, community engagement and infodemic management (RCCE-IM), monitoring media and epidemic signals, building public trust and active cooperation with neighbouring countries and European partners.

5.4. Link with existing national policies and strategies

The NAPHS is fully in line with existing policies and policy instruments in Luxembourg and contributes to their coherence and operationalisation. It is closely linked to national health crisis preparedness and response plans. This strategy is designed in line with Luxembourg's draft public health law, led by the Ministry of Health and Social Security, aimed at modernising the legal framework for public health, strengthening prevention, surveillance,

preparedness and response to public health emergencies, and clarifying mechanisms for intersectoral coordination and data management. This strategy contributes to the operationalisation of this legislative framework, in particular for aspects relating to health security, crisis governance and the integration of the One Health approach.

The strategy is also a follow-up to Luxembourg's 2025 National Resilience Plan, (Le Gouvernement du Grand-Duché de Luxembourg, 2025) adopted by the Government, of which it is an essential component for Pillar 3, "Essential goods and services and critical infrastructure and entities". It contributes to strengthening national resilience to major shocks, ensuring the continuity of essential functions of the health system, preparedness for large-scale health crises and articulation with other dimensions of national resilience, including civil protection, logistics, critical supplies, crisis communication and cross-border cooperation.

The NAPHS also takes into account the findings and recommendations of Luxembourg's UHPR report. The proposed actions aim to address identified gaps in a structured way, strengthen existing capacities and place continuous improvement at the heart of the national health security framework.

Finally, the strategy is aligned with European and international frameworks, in particular Regulation (EU) 2022/2371 on serious cross-border threats to health and the IHR, and constitutes an operational response to the results of the PHEPA conducted in accordance with Article 8 of that Regulation.

This strategy is also consistent with the IHR and its requirements to prevent, prepare for and respond to any health threat with possible international repercussions, as well as with European surveillance, alert and coordination mechanisms and policies, in particular the Union prevention, preparedness and response plan for health crisis (EUROPEAN COMMISSION, 2025).

6. Review of recommendations and actions

The following chapter presents, capacity by capacity, the recommendations from the PHEPA report and summarises the actions identified by the expert groups to address them.

6.1. Capacity 1: International Health Regulation (IHR) implementation and coordination

Recommendation 1.1
Formalize mechanisms for intersectoral communication through the IHR NFP, as deemed necessary.

Actions	**1.Formalize intersectoral communication mechanisms through the National Focal Point (NFP)** Providing a legal basis in the public health law to regulate and make mandatory the exchange of information between sectors Then preparing the operational implementation (designation of contact points and development of practical procedures)
Responsible	Ministry of Health and Social Security (Legal Affairs) Health Directorate (Health Inspection Division)
Stakeholders	Ministry of Health and Social Security Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	< 1 year
Budget	No

Recommendation 1.2
Clarify the organization of the IHR NFP with clear roles and responsibilities for surveillance, communication, and coordination.

Actions	**Clarify the internal organisation of the NFP:** Define at the legal and administrative level the structure of the NFP and the main responsibilities, without creating new cumbersome internal procedures. The aim is to consolidate existing roles and ensure their formal recognition in the public health law.
Responsible	Ministry of Health and Social Security (Legal Affairs) Health Directorate (Health Inspection Division)
Stakeholders	Ministry of Health and Social Security Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	1-2 years
Budget	No

Recommendation 1.3
Strengthen the IHR NFP role as the central hub for coordination of public health related matters, ensuring effective collaborations with other relevant sectors as needed.

Actions	**Strengthen the role of the NFP and the national competent authority for the IHR as a coordination centre:** To enshrine in the Public Health Act the mandate of the NFP as the national coordination structure for cross-sectoral public health issues, in order to facilitate collaborations and ultimately support staffing or capacity building where necessary.
Responsible	Ministry of Health and Social Security (Legal Affairs) Health Directorate (Health Inspection Division)
Stakeholders	Ministry of Health and Social Security Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

6.2. Capacity 2: Financing

Recommendation 2.1
Maintain the one-line budget model for public health emergencies, to ensure Quick allocation of resources.

Actions	1) M3S budget: Maintenance of the budget article of the M3S (17.00.12.356 'Operating costs for managing health crises') and maintenance of the non-exhaustive credit statement without distinction as to the financial year for this article. 2) DISA budget: Maintenance of the budget article of the DISA (17.01.12.303) and maintenance of the non-limiting appropriation and without distinction of financial year for this article.
Responsible	Directorate of Health Ministry of Health and Social Security
Stakeholders	Directorate of Health Ministry of Health and Social Security
Status	Already done
Deadline enforcement	/
Budget	Yes

6.3. Capacity 3: Laboratory

Recommendation 3.1
Include in the general preparedness plan a description of how laboratory capacity can be scaled up in crisis situations

Actions	Conduct a retrospective analysis of laboratory operations during the SARS-CoV-2 pandemic to identify gaps, strengths and lessons learned, and ensure their integration into the national pandemic preparedness and response plan Establish communication between laboratories to facilitate regular exchanges on emerging health threats, identified operational gaps and advances in diagnostic technologies, thus enhancing collective preparedness and enabling early detection Develop and implement a comprehensive workforce strategy that strengthens laboratory capacity through staff assessments, recruitment of reserve staff, cross-training, flexible schedules and continuity planning to ensure the sustainability of diagnostic operations in Luxembourg. Develop and document a comprehensive laboratory upgrade protocol that describes the infrastructure, workforce, supply chain, technology and data systems needed to rapidly increase emergency/pandemic diagnostic capabilities in Luxembourg.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division National Health Laboratory Luxembourg Federation of Medical Analysis Laboratories
Status	Ongoing
Deadline enforcement	1-2 years
Budget	No

Recommendation 3.2
Identify and implement ways to ensure transfer of relevant isolates from the private laboratories to the National Health Laboratory and ensure the link with epidemiological data at the Sanitary Inspection Division of the Health Directorate. This can be done by providing protocols to the private laboratories with clear expectations on what isolates are to be transferred to LNS for further analysis.

Actions	Organize meetings with each hospital and show them the SARI data they provide via RASSUR to improve their engagement. Identify gaps in the identification of SARI cases between emergency services and hospital laboratories Set up an automated system allowing the hospital laboratory to identify SARI cases
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division National Health Laboratory Luxembourg Federation of Medical Analysis Laboratories
Status	Ongoing

Deadline enforcement	> 2 years
Budget	No

Recommendation 3.3
Describe better the process to ensure laboratory diagnosis, including typing, in case of an outbreak investigation or management.

Actions	Ensure the capacity of the National Reference Laboratory for Emerging and Vector Diseases: implement or improve diagnostic, typing and/or sequencing techniques, or find subcontracting laboratories at international level.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division National Health Laboratory Luxembourg Federation of Medical Analysis Laboratories
Status	To be done
Deadline enforcement	> 2 years
Budget	No

Recommendation 3.4
Finalise and implement the updated laboratory reporting system that allows for reporting of molecular typing and sequencing data.

Actions	Finalize SORMAS technical specifications to include molecular and other typing data, as well as sequencing data fields (e.g. metadata, ST, etc.)
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division National Health Laboratory Luxembourg Federation of Medical Analysis Laboratories
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 3.5
Ensure the availability of written agreement for services requiring BSL-4 facilities.

Actions	Re-evaluate and update the list of institutes dealing with pathogens below biosafety level 4 (BSL 4) and if necessary conclude new contracts (SLA) Organize the collection and transport of samples from hospitals to the LNS
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division National Health Laboratory Luxembourg Federation of Medical Analysis Laboratories
Status	To be done
Deadline enforcement	< 1 year
Budget	No

6.4. Capacity 4: Monitoring

Recommendation 4.1
Enhance the case reporting system, in consultation with relevant national stakeholders, in order to support and improve the reporting of epidemiological data by clinicians;

Actions	1. Provide clinicians with feedback on infectious disease reporting data 2. Develop extraction tools for software packages for general practitioners and hospitals to automate mandatory case reporting
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 4.2
Develop a plan to monitor healthcare capacity and continue efforts on the digitalisation of surveillance, including for Severe Acute Respiratory Infections (SARI), bloodstream infections (BSI), Sexually Transmitted Infections (STI), and all diseases planned to be implemented in SORMAS;

Actions	1. Extend the RASSUR surveillance system to all hospitals across the country 2. Adapt data collection for ARIs (severe acute respiratory infections) and bacteraemias 3. Improve surveillance of sexually transmitted infections (STIs) using claim data
Responsible	Health Inspection Division
Stakeholders	Directorate of Health Health Inspection Division
Status	Ongoing (PHRESH project)
Deadline enforcement	> 2 years
Budget	Yes

Recommendation 4.3
Identify and implement tools to improve the collection of routinely recorded health data on vaccination and immunisation, consulting and working with relevant national stakeholders. This should be aligned, as far as possible, with ongoing legislative and digitalisation initiatives for electronic health data interoperability across different healthcare levels.

Actions	1. Study the use of vaccination data from national health insurance claims 2. Study vaccination data from the central vaccination register (eHealth Agency)
Responsible	Directorate of Health
Stakeholders	Directorate of Health Health Inspection Division
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 4.4
Continue implementing SORMAS as a tool for epidemiological case and outbreak management.

Actions	1. Integration of notifications from doctors submitted via MyGuichet into SORMAS 2. Interoperability between NgSurvey (digital epidemiological survey tool) and SORMAS 3. Improved outbreak management with SORMAS Events module
Responsible	Health Inspection Division
Stakeholders	Directorate of Health Health Inspection Division
Status	Ongoing
Deadline enforcement	> 2 years
Budget	Yes

6.5. Capacity 5: Human Resources

Recommendation 5.1
Continue to evaluate which skills may be lacking in public health crises and develop pools of training personnel in those fields. Ensure pre-training and just-in-time training, especially for competencies in public health, applied epidemiology, and disease prevention and control. Consider the efforts needed for having volunteer pools updated and trained. The ECDC Learning Portal and other existing training platforms (e.g. WHO) should be leveraged.

Actions	1. Implementation of a reform of the responsibilities of health professionals 2. Establishment of indicators for monitoring skills that can be mobilised in crisis situations within the Sanitory Reserve (RESA) 3. Development of training programmes for RESA reservists and strengthening and adapting them to the needs identified during health crises
Responsible	Ministry of Health and Social Security Sanitary Reserve
Stakeholders	Emergency Preparedness Response Ministry of Health and Social Security
Status	To be done
Deadline enforcement	N/A
Budget	Yes

Recommendation 5.2
Large health crises are uncommon, so a fit-for-purpose program for human resources surge support requires a reliable assessment of potential uses and demands. This can be done for example by analyzing in which situations this mechanism could have been used in the last two years. A cost-benefit analysis could also be helpful to understand how much budget and resources to allocate and where to expand partnerships.

Actions	1.Develop RESA as a fit-for-purpose 2. SWOT analysis for partnerships 3. Report by the health observatory on health professionals: a quantitative assessment model (ongoing)
Responsible	Sanitary Reserve
Stakeholders	Emergency Preparedness and Response service Ministry of Health and Social Security
Status	Ongoing
Deadline enforcement	N/A
Budget	Yes

Recommendation 5.3
Understanding and assessing what type of volunteer profiles are needed in surge situations versus normal healthcare system functioning is important. Considering the limited human resources in Luxembourg and knowing that the volunteers will receive economic compensation, ensure that this mechanism does not cause issues during the management of a crisis due to competition for the same human resources.

Actions	Taking into account, in the RESA operational plan, the restricted use of reservists in order to avoid any destabilisation of the health system
Responsible	Sanitary Reserve
Stakeholders	Emergency Preparedness Response Ministry of Health and Social Security
Status	Ongoing
Deadline enforcement	N/A
Budget	Yes

6.6. Capacity 6: Health Emergency Management

Recommendation 6.1
Develop a Preparedness and Response plan for public health emergencies with strategic and operational components, as well as generic and topic-specific modules.

Actions	Develop and implement the concept of generic preparedness plan Development of generic preparation modules Development of reproducible generic procedures Development of thematic operational plans Development of tests and exercises
Responsible	Emergency Preparedness and Response service
Stakeholders	Emergency Preparedness and Response service Health Protection Cluster Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	> 2 years
Budget	Yes

Recommendation 6.2
Develop a Standard Operating Procedure for public health risk analysis and for independent, scientific assessment of serious (cross-border) threats to health, in collaboration with relevant institutions and
possibly ad-hoc involvement of experts or the High Council of Infectious Diseases.

Actions	Identification of experts capable of carrying out this risk analysis Development of standard operating procedures Setting up a collaborative platform Conducting tests
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Emergency Preparedness Response Health Protection Cluster Directorate of Health
Status	To be done
Deadline enforcement	> 2 years
Budget	No

Recommendation 6.3
Develop, in connection with the health emergency preparedness planning and IHR focal point (and the development of a public health reserve), the appropriate work environment to address health crises in the format of a Public Health Emergency Operations Centre and corresponding procedures.

Actions	Development of the generic EOC procedure and the health crisis unit Implementation of this procedure in PPRS-LU Implementation of tests and exercises
Responsible	Emergency Preparedness and Response service
Stakeholders	Emergency Preparedness and Response service Health Protection Cluster Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	< 1 year
Budget	Yes

Recommendation 6.4
Develop a methodology to draft the list of critical Medical Countermeasures.

Actions	Identification of current stocks Assessment of specific risks in Luxembourg Development of the national storage methodology
Responsible	Emergency Preparedness Response
Stakeholders	Emergency Preparedness Response Health Protection Cluster Health Inspection Division Directorate of Health
Status	Ongoing
Deadline enforcement	< 1 year
Budget	Yes

Recommendation 6.5
Formalise the process to collect data on supply from the industry and on demand from the terrain and make it more inclusive.

Actions	Development of the National Purchasing and Logistics Centre (CNAL)
Responsible	National Purchasing and Logistics Centre
Stakeholders	Emergency Preparedness Response Health Protection Cluster Health Inspection Division Directorate of Health
Status	To be done

Deadline enforcement	> 2 years
Budget	Yes

Recommendation 6.6
Once CNAL has been set up, assess the supply chain vulnerabilities and potential barriers.

Actions	Development of the CNAL
Responsible	National Purchasing and Logistics Centre
Stakeholders	Emergency Preparedness Response Health Protection Cluster Health Inspection Division Directorate of Health
Status	To be done
Deadline enforcement	> 2 years
Budget	Yes

Recommendation 6.7
Once CNAL has been set up, develop a business continuity plan to ensure enough Medical Countermeasures are available

Actions	Development of the CNAL
Responsible	National Purchasing and Logistics Centre
Stakeholders	Emergency Preparedness Response Health Protection Cluster Health Inspection Division Directorate of Health
Status	To be done
Deadline enforcement	> 2 years
Budget	Yes

Recommendation 6.8
Develop methodology on defining the national stock of Medical Countermeasures.

Actions	Finalisation of recommendation 6.4 Development of the CNAL
Responsible	National Purchasing and Logistics Centre

Stakeholders	Emergency Preparedness Response Health Protection Cluster Health Inspection Division Directorate of Health
Status	To be done
Deadline enforcement	> 2 years
Budget	Yes

6.7. Capacity 7: Health service

Recommendation 7.1
Consult with relevant national stakeholders to consolidate the legal instruments allowing for the monitoring of healthcare utilisation and capacity, such as hospital, primary care practices, and long-term care facilities, for public health purposes, and especially during public health emergencies.

Actions	1. Establishment of a multi-sectoral working group bringing together administrations, ministries and field representatives. 2. Synthetic mapping of current legal instruments on capacity monitoring and care use. 3. Analysis of existing legal frameworks, identification of possible needs for adjustments to facilitate public health monitoring and reporting.
Responsible	Division of Curative Medicine and Health Quality
Stakeholders	Ministry of Health and Social Security Division of Curative Medicine and Health Quality Federation of Luxembourg Hospitals Ministry of Family, Solidarity, Living Together and Reception
Status	To be done
Deadline enforcement	1 - 2 years
Budget	No

6.8. Capacity 8: Risk communications and community management (RCCE)

Recommendation 8.1
Document the risk communication, community engagement and infodemic management (RCCE-IM) strategy, especially in the context of the revision and update of plans. We suggest adding the RCCE-IM aspects to the generic preparedness and response plan that is under development. The HCPN is also in the process of developing a crisis management plan that should include an RCCE-IM component.

Actions	Integration of the RCCE-IM aspects specific to health in the Health Preparedness Plan of the Health Directorate to then integrate it into the national resilience strategy
Responsible	Emergency Preparedness and Response service

Stakeholders	Directorate of Health Ministry of Health and Social Security Office of the High Commissioner for National Protection Emergency Preparedness Response
Status	Ongoing
Deadline enforcement	< 1 year
Budget	No

Recommendation 8.2
Ensure the RCCE-IM strategy includes specific actions targeting the particularities of Luxembourg, such as the large number of commuters. We also encourage working closely with national authorities from neighbouring countries. Actions such as monitoring media and social media from neighbouring countries could help in understanding and complementing the messages commuters are receiving in their country of origin.

Actions	Regular exchanges with direct neighbouring countries/border regions. Organization of biannual meetings to strengthen relations and thus facilitate contact in the event of a crisis. It is necessary to define here if this is possible at the level of communication. Media monitoring: In particular, our social media manager could regularly monitor the health authorities of neighbouring countries and record his observations in a report. Creating an RSS feed. Establishment of an epidemic and media monitoring system, including monitoring of neighbouring countries (France, Belgium, Germany). Enhanced use of European platforms (EWRS, EpiPulse, RASFF, SOHO) for cross-border exchange of threat information and alerts. Chemical/radionuclear
Responsible	Health Inspection Division (EWRS, EpiPulse, IHR) ALVA (RASFF) Medicines Agency (SOHO) Environmental Health Service (Chemical Risks) Radiation Protection Division (Nuclear Hazards)
Stakeholders	DISA LNS
Status	Ongoing
Deadline enforcement	< 1 year
Budget	No

Recommendation 8.3

In between crises, develop activities to promote the engagement of different communities, especially those identified as vulnerable or hard-to-reach populations. Build trust and connect with key stakeholders that can engage during emergencies and help in the response in their communities.

Actions	Mapping of local communities and relays and creation of a health trust network
Responsible	Directorate of Health
Stakeholders	Directorate of Health Office of the High Commissioner for National Protection Ministry of Health and Social Security
Status	To be done
Deadline enforcement	1 - 2 years
Budget	No

Recommendation 8.4

Develop social listening and behavioral and social science to receive feedback from the population about the shared messages. This will help in understanding the limitations of the shared messages and in identifying knowledge gaps and reasons for not following recommendations.

Actions	Develop a concrete strategy for social listening
Responsible	N/A
Stakeholders	There is currently no strategy in place for this.
Status	To be done
Deadline enforcement	> 2 years
Budget	Develop a concrete strategy for social listening

Recommendation 8.5

Implement a more structured approach to infodemic management in the area related to health.

Actions	N/A
Responsible	N/A
Stakeholders	In our view, this can only be addressed once a social listening strategy is in place.

Status	To be done
Deadline enforcement	N/A
Budget	Develop a concrete strategy for social listening

Recommendation 8.6
Encourages training activities about risk communication, community engagement and infodemic management, for communication experts and experts in field of preparedness and response.

Actions	Organisation of RCCE-IM training courses
Responsible	Directorate of Health
Stakeholders	Ministry of Health and Social Security Office of the High Commissioner for National Protection
Status	Already done
Deadline enforcement	1 - 2 years
Budget	No

6.9. Capacity 9: Points of Entry (PoEs) and border health

Recommendation 9.1
Implement entomological surveillance at the Mertert river port, as planned.

Actions	1. Obtain authorisations for access to the Mertert river port and dispose of security clothing by INSA staff to carry out entomological surveillance activities. 2. Train the personnel concerned and ensure the establishment of the system for the collection, identification and transmission of entomological data.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division
Status	Ongoing
Deadline enforcement	1 - 2 years
Budget	Yes

Recommendation 9.2

Include management of non-biological hazards in plans and procedures for Points of Entry.

Actions	1. Establish PoE governance, risk profile and on-site risk registers (airport, river port, railway, main roadside checkpoints) 2. Publish multi-agency PoE standard operating procedures and annexes on site (airport/port/railway/road) 3. Deploy detection, screening and environmental monitoring systems at points of entry; sampling and referral to laboratories 4. Provide on-site response capacity at entry points: decontamination, isolation, clinical support and treatment of hazardous waste 5. Put in place risk communication at points of entry, inform travellers and integrate business continuity of operators 6. Train, exercise and continuously improve the management of non-biological risks at points of entry
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division CGDIS HCPN
Status	To be done
Deadline enforcement	> 2 years
Budget	No

Recommendation 9.3

Continue and reinforce the national aviation facilitation committee to share best practices and formalise actions.

Actions	1. Propose to the National Facilitation Committee to formally integrate public and animal health aspects. 2. Obtain access to the airport and train INSA staff to the security standards in force at the airport. 3. Increase the number of mosquito traps at the airport. 4. Carry out controls of disinsectisations carried out by airlines or freight carriers.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division
Status	To be done
Deadline enforcement	> 2 years
Budget	Yes

6.10. Capacity 10: Zoonotic diseases and threats of environmental origin, including those due to climate

Recommendation 10.1
Strengthen intersectoral and cross-border collaboration.

Actions	1. Formalize and strengthen the existing One Health working group. 2. Ensure harmonisation of prioritisation activities across sectors, e.g. by establishing common criteria for prioritisation. 3. Increase the involvement of the environmental sector in all activities by raising awareness of the relevance of multisectoral collaboration and coordination and their specific contribution. Encourage a comprehensive environmental approach (including, for example, ecosystem monitoring and land-use change) that could lead to key outcomes for environmental sectors and foster their ownership and commitment to the One Health approach. 4. Assess the need for the participation of the occupational health sector in various activities, including those related to training, infection prevention and control measures, and the implementation of worker protocols.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Luxembourg Veterinary and Food Administration National Health Laboratory Luxembourg Institute of Science and Technology Water Management Administration Ministry of the Environment Directorate of Health
Status	Ongoing
Deadline enforcement	>2 years
Budget	Yes

Recommendation 10.2
Embed the One Health approach into relevant legal frameworks as well as strategic and operational plans.

Actions	1. Integrate the One Health approach into the generic preparedness and response plan being developed, while maintaining agile and flexible coordination across sectors. 2. Developing a "One Health" action plan or integrating "One Health" aspects into a broader action plan can help define and prioritize needs to implement the "One Health" approach across different activities. 3. Develop standard operating procedures (SOPs) or practical guidelines to define aspects of emergency response, such as a One Health crisis management plan or a risk assessment strategy with a joint approach. 4. Formalize collaboration between animal and human health laboratories to ensure mutual support when needed (e.g. increased laboratory capacity, need for a specific technical requirement with limited availability).
Responsible	Health Inspection Division

Stakeholders	Health Inspection Division Luxembourg Veterinary and Food Administration National Health Laboratory Luxembourg Institute of Science and Technology Water Management Administration Ministry of the Environment
Status	Ongoing
Deadline enforcement	1-2 years
Budget	Yes

Recommendation 10.3

Enhance emergency preparedness and response.

Actions	*1. Continue to develop a communication platform (PHRESH) and integrated monitoring to ensure that all the requirements of the different sectors are taken into account. Consider adding a module to the communication platform to facilitate the joint risk assessment process.* *2. Standardising data collection instruments for different sectors or ensuring compatibility between reporting frameworks are measures that can facilitate integration.* *3. Carry out an assessment of training needs in the different sectors and map training capacities, which will help plan future training as part of a "One Health" approach and understand who should be the target audience.* *4. Organize joint simulation exercises involving the human, animal and environmental health sectors to test response plans for zoonotic outbreaks.* *5. Increase public awareness, strengthen community engagement and engage with the public to inform them of zoonotic risks and prevention measures under the One Health approach.*
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Luxembourg Veterinary and Food Administration National Health Laboratory Luxembourg Institute of Science and Technology Water Management Administration Ministry of the Environment
Status	Ongoing
Deadline enforcement	1-2 years
Budget	Yes

Recommendation 10.4
Explore options for pooled funding and agile working structures to prevent, prepare for and respond to zoonotic diseases.

Actions	1. Include the budget for One Health activities in the annual budget proposals. 2. Submit joint applications for EU-funded direct grants and other EU-funded projects and national projects (e.g.: HORIZON grants and National Research Fund grants).
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Luxembourg Veterinary and Food Administration National Health Laboratory Luxembourg Institute of Science and Technology Water Management Administration Ministry of the Environment
Status	Ongoing
Deadline enforcement	< 1 year
Budget	No

Recommendation 10.5
Address environmental and climate factors: include One Health approach in climate change adaptation strategies and ensure alignment between different plans. Ensure the implementation of the plan is facilitated by the allocation of resources and the monitoring is possible by identifying indicators.

Actions	1. Integrate "One Health" principles into the national climate change adaptation plan. 2. Identify existing strategies for health, agriculture and the environment, ensure their alignment with the climate change adaptation strategy and adapt them as necessary. 3. Allocate specific funds and technical resources to the activities of the human health sector as part of the climate change adaptation strategy. 4. Implement specific actions on human health in the climate change adaptation strategy and strengthen communication and collaboration with the Ministry of the Environment and associated partners.
Responsible	Health Inspection Division
Stakeholders	Health Inspection Division Ministry of the Environment Luxembourg Institute of Science and Technology
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

6.11. Capacity 11: Chemical events

Recommendation 11.1
Strengthen chemical risk assessment capabilities in collaboration with experts in Luxembourg, neighbouring countries, and at EU level (e.g. ECHA).

Actions	1. Establish the national framework for chemical risk assessment and the network of experts (including liaison with ECHA) 2. Develop the National Chemical Risk Register and Threat Profile 3. Implement tools and data integration for risk assessment (models, geographic information system, secure data flows) 4. Create epidemiological protocol for major incidents and links to real-time reports 5. Strengthen impact assessment for decision support (health impact assessment and socio-economic impact assessment) 6. Establish secure data sharing protocols for emergency responders and stakeholders
Responsible	Health Inspection Division
Stakeholders	Health Protection Pole National Health Laboratory Luxembourg Institute of Science and Technology Grand Ducal Fire and Rescue Corps
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 11.2
Describe the role of the Health Directorate and operational aspects regarding chemical hazards in the Preparedness and Response plan.

Actions	1. Define the command, control and coordination role of the Health Directorate (operations concept and operational roles) 2. Integrate modular chemical risk procedures into the national preparedness and response plan 3. Establish the Health Directorate's Rapid Response Team and Clinical Support Functions 4. Legal certainty, data protection and security of emergency responders under the responsibility of the Health Directorate 5. Training, risk communication, community preparedness, monitoring and evaluation
Responsible	Health Inspection Division
Stakeholders	Health Protection Pole National Health Laboratory Luxembourg Institute of Science and Technology Grand Ducal Fire and Rescue Corps
Status	Ongoing

Deadline enforcement	> 2 years
Budget	No

Recommendation 11.3
Actively engages in EU and cross-border cooperation to test response procedures to chemical events, for instance through a simulation exercise.

Actions	1. Formalise cross-border and intra-EU operational partnerships (link with ECHA, bilateral focal points and strengthening/referencing laboratories) 2. Plan and conduct a multi-country chemical simulation exercise (on the table and then functional) 3. Ensuring cross-border interoperability of data and systems 4. Joint training, peer review and retrospective analysis with the EU and neighbouring partners
Responsible	Health Inspection Division
Stakeholders	Health Protection Pole National Health Laboratory Luxembourg Institute of Science and Technology Grand Ducal Fire and Rescue Corps
Status	Pending
Deadline enforcement	> 2 years
Budget	No

6.12. Capacity 12: Antimicrobial resistance (AMR) and healthcare-associated infections

Recommendation 12.1
Strengthen intersectoral and interdisciplinary collaboration by establishing regular exchanges on antimicrobial resistance (AMR) strategies. During these regular exchanges, focus on examining the available data together and translating data into actions for each AMR prevention and control stakeholder. Periodic reassessment of participants invited to the NAP AMR Steering Committee and working groups can help ensure that all relevant stakeholders are actively participating in the NAP AMR as it evolves.

Actions	1. Drafting of NAP2 (ongoing), integrating the results of the AMR and AMC monitoring data reports 2022-2023 to define objectives and actions. 2. Regular exchanges between NAP2 officials, stakeholders and sectors will ensure a One Health approach, fostering active participation in NAP2 actions, which will be assessed by indicators, with corrective actions if needed, are planned.
Responsible	Coordination National Antibiotic Plan
Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals

Status	Ongoing
Deadline enforcement	>2 years
Budget	No

Recommendation 12.2
When developing indicators and targets for the next NAP AMR, focus on a few targets that can be leveraged to engage all stakeholders. The targets should be easily translated into actions that can be adapted by actors in the human health, animal health, and environmental sectors. When considering mortality as an indicator, bear in mind that it is an extreme outcome of AMR and could be difficult to monitor annually as it needs to be estimated by modelling studies. Consider the TrACCS indicators for identifying areas for improvement and benchmarking as well.

Actions	1. Development of a national antibiotic resistance plan focused on a few key objectives, mobilising all actors in the three One Health sectors and easily translated into concrete actions. 2. Analysis of the current NAP2 draft indicators, currently based on the Donabedian model, with a view to their possible conversion into TrACSS indicators.
Responsible	Coordination National Antibiotic Plan
Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals
Status	Ongoing
Deadline enforcement	1 – 2 years
Budget	Yes

Recommendation 12.3
Incorporate actions to strengthen infection prevention and control (IPC) in the NAP AMR. Other recommendations below should also be considered for the NAP AMR.

Actions	1. Strengthen infection prevention and control as part of the next National Antibiotic Plan in Luxembourg through targeted actions (Excluding HAI).
Responsible	Coordination National Antibiotic Plan
Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals
Status	Ongoing
Deadline enforcement	>2 years
Budget	No

Recommendation 12.4

Ensure that there is capacity at national level to obtain and analysis laboratory and epidemiological data for high-priority multi-drug-resistant organisms (MDRO). This is necessary to understand the epidemiological risk factors for MDROs in Luxembourg. Understanding the role of long-term care facilities in the potential spread of MDROs is particularly important. ECDC's Learning Portal and other training programmes can support this capacity. Ensuring a legal basis for obtaining necessary laboratory and epidemiological data in a timely manner is also vital for understanding the risks and impacts of AMR.

Actions	1. Improve the capacities of the National Reference Laboratory at the National Health Laboratory for the identification, characterization and typing of resistance mechanisms in MDROs. 2. Establish a priority list of samples to be sent by private laboratories to the National Health Laboratory. 3. Investigate MDRO outbreaks and transmission routes between long-term care facilities and hospitals. 4. Improve surveillance of MDRO infections by including clinical data (from electronic medical records and BOD) in the data collected by the Health Inspection Division and linking it to microbiological data from the National Health Laboratory. 5. Complete the legal basis for the collection of clinical data and its linking to microbiological data (see Capacity 1 and Public Health Act). 6. Increase the number of personnel trained in the laboratory.
Responsible	Health Inspection Division
Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals
Status	Pending
Deadline enforcement	>2 years
Budget	No

Recommendation 12.5

As carbapenem resistance becomes in increasing concern in Europe, practice multidisciplinary MDRO alert and response at a national level: investigate cases of carbapenem resistance at a national level to understand how spread can be ruled and controlled. Consider investigating cases beyond the scope of EU-level surveillance (invasive cases, limited bug-drug combinations) for an understanding of MDRO outbreaks in Luxembourg.

Actions	1. Study carbapenem resistance, epidemics and pathways of transmission. 2. Improve surveillance of carbapenemase-producing strains, ensure collection of these strains at the National Health Laboratory, ensure their characterization and sequencing, and link them to epidemiological and clinical data (from electronic health records and BOD) of the Health Inspection Division. 3. Communicate the results of the analysis in the NAP AMR Annual Monitoring Report and the Health Inspection Division Annual Epidemiological Report (epidemics only).
Responsible	Health Inspection Division

Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals
Status	Pending
Deadline enforcement	>2 years
Budget	No

Recommendation 12.6

Explore strategies and future mechanisms for antibiotic prescriber feedback, as this is an evidence-based strategy for optimising antibiotic prescribing practices. It would be ideal to incorporate the collection of data on indications for antibiotic prescriptions in community and hospital electronic prescribing platforms.

Actions	1. Evaluate the feasibility of a pilot study on feedback to prescribers in the NAP2, then use its results to measure effectiveness and prepare for large-scale deployment.
Responsible	Coordination National Antibiotic Plan
Stakeholders	Directorate of Health Health Inspection Division National Health Laboratory Robert Schuman Hospitals
Status	Pending
Deadline enforcement	>2 years
Budget	No

Recommendation 12.7

Document the national strategy for Hospital-Acquired Infections (HAI) and Infection Prevention and Control (IPC) to facilitate stakeholder engagement. Initiatives of the Division of Curative Medicine and Health Quality, High Council for Infectious Diseases, and the Scientific Council for Health should be clearly distinguished to healthcare professionals and other communities.

Actions	1. Conduct an inventory of the missions, responsibilities and skills of stakeholders involved in the control of healthcare-associated infections (CAIs) and infection prevention and control (ICP). 2. Develop and implement a communication plan.
Responsible	Division of Curative Medicine and Health Quality
Stakeholders	Division of Curative Medicine and Health Quality
Status	Ongoing

Deadline enforcement	1-2 years
Budget	No

Recommendation 12.8

National HAI surveillance data should be used to identify priorities for national IPC initiatives.

Actions	1. Design and deploy a national IAS surveillance system 2. Establish a standardised mechanism for collecting IAS data. 3. Establish a standardised mechanism for analysing IAS data.
Responsible	Division of Curative Medicine and Health Quality
Stakeholders	Division of Curative Medicine and Health Quality
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 12.9

Evaluate the national IPC programme to ensure that WHO's Core Components are addressed. Furthermore, the hospital IPC programs can be studied to identify areas for improvement. Existing assessment tools can be used such as the WHO assessment tool of the minimum requirements for IPC programmes at the national level and the WHO IPC assessment framework at the facility level.

Actions	1. Conduct a regular national evaluation of the IBD programme using the WHO tool for assessing minimum IBD requirements. 2. Promote the conduct of self-evaluations of IBD programmes by hospitals by applying the WHO framework for assessment at facility level.
Responsible	Division of Curative Medicine and Health Quality
Stakeholders	Division of Curative Medicine and Health Quality
Status	Ongoing
Deadline enforcement	1-2 years
Budget	No

6.13. Capacity 13: Union level coordination and support functions

Recommendation 13.1
Continue to actively participate in the HSC, through generous topics for discussion as well as contributing to the discussions.

Actions	Continued participation of Luxembourg in HSC meetings, including those of the High-Level Group, the General Working Group and the Technical Working Groups.
Responsible	Directorate of Health
Stakeholders	Directorate of Health Health Inspection Division Ministry of Health and Social Security
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 13.2
Disseminate reporting on HSC information and questions, contributing to the HSC Opinions and continuing using them according to the national context.

Actions	Establishment of an exchange platform between the various Luxembourg actors involved in the HSC Continuation of Luxembourg's actions concerning the decisions and recommendations of the HSC
Responsible	Directorate of Health
Stakeholders	Directorate of Health Health Inspection Division Service Emergency preparedness and response
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

6.14. Capacity 14: Research development and evaluations to inform and accelerate emergency preparedness

Recommendation 14.1
Strengthen the strategic collaboration and the coordination between the Directorate of Health and the research community, both for preparedness and response to public health emergencies.

Actions	Improve coordination and exchange of information

Responsible	Directorate of Health
Stakeholders	Directorate of Health Health Inspection Division University of Luxembourg Ministry of Higher Education and Research Ministry of Economy Luxinnovation Luxembourg Institute of Health National Research Fund Neuropsychiatric Hospital Center Epidemiological and Clinical Investigation Centre Luxembourg Institute of Science and Technology
Status	Ongoing
Deadline enforcement	< 1 year
Budget	Yes

Recommendation 14.1
Strengthen the strategic collaboration and the coordination between the Directorate of Health and the research community, both for preparedness and response to public health emergencies.

Actions	Improve networking and visibility of research capacities
Responsible	Directorate of Health and Research Community
Stakeholders	Directorate of Health Health Inspection Division University of Luxembourg Ministry of Higher Education and Research Ministry of Economy Luxinnovation Luxembourg Institute of Health National Research Fund Neuropsychiatric Hospital Center Epidemiological and Clinical Investigation Centre Luxembourg Institute of Science and Technology
Status	Pending
Deadline enforcement	> 2 years
Budget	No

6.15. Capacity 15: Recovery elements

Recommendation 15.1
When developing the recovery plan, describe the intra- and after-action review methodology and link to related methodologies, e.g. made available by ECDC, for a consist approach.

Actions	Development and testing of an AAR and IAR module as part of the generic health preparedness plan
Responsible	Directorate of Health
Stakeholders	Directorate of Health Health Inspection Division
Status	On-going
Deadline enforcement	1-2 years
Budget	No

Recommendation 15.2
In future outbreaks, consider intra-action review to improve the response while the outbreak is ongoing.

Actions	Integration of the IAR procedure into health emergency response plans
Responsible	Directorate of Health
Stakeholders	Directorate of Health
Status	On-going
Deadline enforcement	< 1 year
Budget	No

6.16. Capacity 16: Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans

Recommendation 16.1
Finalizes the internal Health directorate after-action review.

Actions	Action already completed
Responsible	Directorate of Health

Stakeholders	Directorate of Health Health Inspection Division
Status	Completed
Deadline enforcement	< 1 year
Budget	No

Recommendation 16.2

Consider a COVID-19 pandemic after-action review beyond the Health Directorate, including more stakeholders.

Actions	In addition to the OECD report and the ongoing evaluation of the UHPR, no further evaluation is planned at this time.
Responsible	Directorate of Health
Stakeholders	Directorate of Health
Status	Pending
Deadline enforcement	< 1 year
Budget	No

Recommendation 16.3

Consider, prioritise and implement the recommendations from the COVID-19 after-action review and the OECD reports, as well as the recommendations from the PHEPA visit and the WHO UHPR, when developing the action plan.

Actions	These elements are already taken into account in the action plan.
Responsible	Emergency Preparedness and Response Service Health Inspection Division
Stakeholders	Directorate of Health Health Inspection Division
Status	Ongoing
Deadline enforcement	> 2 years
Budget	No

Recommendation 16.4
Consider table-top simulation exercises as exercise type with low resource demand, to enhance preparedness and response to health emergencies.

Actions	Develop an exercise module as part of the generic preparedness plan Set up a first table-top exercise, the theme of which remains to be defined Develop exercises of all sizes, according to an implementation and rotation plan to be defined
Responsible	Emergency Preparedness and Response service
Stakeholders	Directorate of Health
Status	Ongoing
Deadline enforcement	> 2 years
Budget	Yes

6.17. Cross-cutting recommendations

In addition to the above-mentioned capacity recommendations, Luxembourg has received a series of cross-cutting recommendations aimed at further strengthening preparedness and response capacities at the global level. These relate mainly to:

- Improving the speed and structure of communication with neighbouring countries
- Taking account of the interoperability of information systems, where cost-effective
- Strengthening decision-making processes to support an effective response to large-scale epidemics or crises
- Continued efforts to address human resource shortages and ensure effective implementation of business continuity plans

In response, the country considers that a robust overall legal and institutional framework for crisis management is already in place at national and European level, supported by existing national crisis legislation, European law and public health legal obligations. Therefore, the establishment of an additional comprehensive health-specific legal framework is not considered necessary at this stage. Informal cross-border communication mechanisms are already operational and have proven useful. Although further formalisation of exchanges, including legal and political preparation, is envisaged, it will be carried out in a pragmatic and proportionate manner, rather than in the form of a major and comprehensive reform.

As regards risk assessment, the current process of adapting international and European risk assessments to the national context is functional, but the need to clarify and formalise

written procedures has been recognised in order to improve transparency, accountability and decision-making in more complex or large-scale crises.

Finally, several operational challenges underlying these recommendations have been identified. Information on reinforcement resources and capacities remains fragmented between ministries and institutions, and efforts are planned in the area of relevant capacities to consolidate available data and identify exploitable gaps, subject to limited human resources capacity. Business continuity planning is mandatory for hospitals as critical entities, and a broader national approach is being developed, although still at an early stage.

Vulnerabilities persist, including shortages of healthcare workers and dependence on cross-border healthcare workers without legal safeguards in the event of a crisis recall by their country of origin.

The inclusion of these cross-cutting issues is already addressed in the proposed measures in the relevant PHEPA capacities, alongside measures such as the establishment of stand-by mechanisms and the improvement of documentation and training, which will be essential to further strengthen preparedness and response capacities.

7. Monitoring, evaluation and accountability

This chapter presents the monitoring and evaluation (M&E) approach to the implementation of the NAHPS recommendations. Given the scale of the NAHPS, which covers 16 capacities and a large number of associated actions, implementation will be managed as a coordinated programme composed of multiple individual projects. This programmatic approach aims to ensure consistency, prioritisation and effective oversight of all capabilities.

The M&E framework is created for monitoring progress at both the recommendation and action levels, allowing managers to assess progress, identify risks or interdependencies, and adjust the implementation methodology if necessary.

Recognising the capacity constraints specific to a small country context, the M&E approach focuses on feasibility, proportionality and integration into existing processes.

The M&E framework supports accountability and learning, to ensure that implementation efforts remain focused on achievable results and that progress towards national health security objectives can be demonstrated over time.

7.1. Implementation of recommendations

The monitoring process described in this chapter is not intended to replace the operational implementation of the actions or to detail the practical arrangements. Responsibility for implementing the NAPHS recommendations rests with each designated official. The main

objective of the monitoring and evaluation framework is to have a harmonised set of information, allowing regular monitoring of the progress of actions and structured exchanges between stakeholders.

In this context, each expert group has already communicated for each action an indicative timetable for their implementation, as well as a few key milestones with their deadlines.

Officials also indicated whether additional resources are needed, whether they are available or whether their mobilization is currently limited or blocked. This information will be updated over the years to reflect developments.

Finally, managers will be asked to clarify the main interdependencies between the recommendations. This will identify possible cascading effects when a recommendation is delayed or blocked.

7.2. In-depth and non-in-depth capacities

During PHEPA, capacities were grouped into two categories: capacities analysed in depth and capacities not analysed in depth.

The in-depth capabilities have been analysed in more detail and are associated with a larger number of recommendations and actions. They therefore require a higher level of coordination and will be further monitored in the current reporting period.

Non-deep capabilities were assessed more generally and include a more limited number of recommendations. Their follow-up will therefore be lighter.

This approach allows for proportionate and appropriate monitoring, while focusing efforts on the most complex areas.

7.3. Monitoring methodology

Monitoring the implementation of the NAHPS is based on a structured and consolidated approach. A single consolidated monitoring document will be put in place covering all the recommendations of the plan. For each recommendation, this document will gather the mandatory follow-up information to be completed by the responsible entity (as described in Chapter 7.1 Implementation of recommendations), including progress made, difficulties encountered and next steps. This document will be the main tool for monitoring progress and will ensure a harmonised approach between different capacities.

In addition to the desk follow-up, it is planned that regular coordination meetings will be held with the implementing entities. These meetings will take stock of progress, clarify expectations, identify possible obstacles and identify corrective actions if necessary.

Capacities classified as in-depth will be subject to monthly monitoring meetings, taking into account the level of detail and the increased complexity of the associated recommendations. Capacities managed by the same institution may be discussed at the

same meeting. These meetings are not intended to be long; their main purpose is to regularly monitor the progress of capacity development and to ensure that there are no unnecessary delays in their implementation.

Capacities classified as non-deep will be monitored at quarterly meetings.

Even if these meetings remain brief, they will play a key role in maintaining the momentum of implementation and will allow problems to be quickly identified and resolved.

The monitoring framework will also support national and international reports. The information collected will feed directly into the SPAR annual report and will be integrated into future PHEPA monitoring exercises. In addition, the results of the monitoring will support the report to the ECDC, which will be ensured and coordinated by the NAHPS programme managers.

7.4. Roles and responsibilities

For each capacity, an Expert Coordinator has been defined in the NAPHS.

For each action, one or more responsible entities or experts, as well as one or more stakeholders, have been identified.

7.4.1. Responsible entities

The responsible entities shall be responsible for coordinating the implementation of the actions for which they are designated. They shall ensure that all their actions are carried out effectively, manage the implementation process and report on progress to the responsible expert and to the NAPHS Steering Committee.

Responsible entities are responsible for ensuring the consistent progress of the actions of their actions. They regularly exchange with stakeholders and the NAPHS Steering Committee.

They shall inform that committee of any delays or implementation problems.

7.4.2. Stakeholders

Stakeholders are the experts involved in the implementation of the actions. They carry out the operational work necessary to achieve the objectives, in collaboration with the responsible entities.

7.4.3. Steering Committee

The Steering Committee of the NAPHS, is responsible for the overall coordination of the follow-up. This includes the management of the consolidated monitoring document, the organisation of periodic meetings with the responsible entities, as well as the coordination of the report with the ECDC.

7.4.4. Decision-making Committee

The decision-making committee shall be referred to it by the steering committee.

The decision-making committee may arbitrate strategic decisions, in particular in the event of difficulties in implementing actions.

7.5. Evaluation

The implementation of the NAPHS will be monitored and evaluated through nationally and internationally recognised mechanisms.

A new PHEPA assessment will be carried out in 2027, in compliance with Regulation (EU) 2022/2371, to update the capacity analysis and assess the progress made since the initial assessment that served as the basis for the plan.

In addition, the annual State Party Self-Assessment (SPAR) under the IHR (WHO, 2024) will monitor capacity developments over time and measure progress in relation to priorities and actions under the NAPHS.

8. Review and next cycle in the context of Regulation (EU) 2022/2371

8.1. Inclusion of NAPHS in the European cycle

Luxembourg’s NAPHS is fully part of the European cycle of prevention, preparedness and response to serious cross-border threats to health, as defined by Regulation (EU) 2022/2371.

In accordance with Article 7 of the Regulation, Luxembourg participates in the process of self-assessment of national capacities through the European questionnaire, which is a key step of regular and harmonised monitoring at EU level. This self-assessment makes it possible to measure the evolution of national capacities and to identify, at an early stage, the areas in need of strengthening.

In addition, Article 8 provides for the periodic conduct of an in-depth external assessment of national capacities, conducted by the ECDC in the framework of PHEPA. This assessment, organised in a three-year cycle, results in a structured set of recommendations to strengthen preparedness and response to public health emergencies.

In this context, the NAPHS is the central tool to ensure continuity between European assessment cycles and national implementation, translating PHEPA recommendations into concrete, planned and followed-up actions. It thus guarantees the consistency, traceability and accountability of Luxembourg's response to the requirements of the European framework.

8.2. Provisional timetable at Luxembourg level

Luxembourg's NAPHS calendar is aligned with the European cycle provided for in Regulation (EU) 2022/2371 and is structured around the following main stages:

- **December 2026:** Luxembourg's participation in the next round of the self-assessment questionnaire provided for in Article 7 of the Regulation, allowing for an update of the state of national capacities.
- **Second half of 2027:** organisation of the next PHEPA led by ECDC, resulting in a new evaluation report and updated recommendations.
- **Early 2028:** development of a new NAPHS, based on the findings of the PHEPA, the results of the interim monitoring cycles and lessons learned from the implementation of the previous plan.

This schedule ensures a smooth transition between cycles, avoiding any break between capacity assessment, action planning and operational implementation. It also provides sufficient visibility for national stakeholders to anticipate the work to be carried out and integrate the NAPHS into strategic and budgetary planning processes.

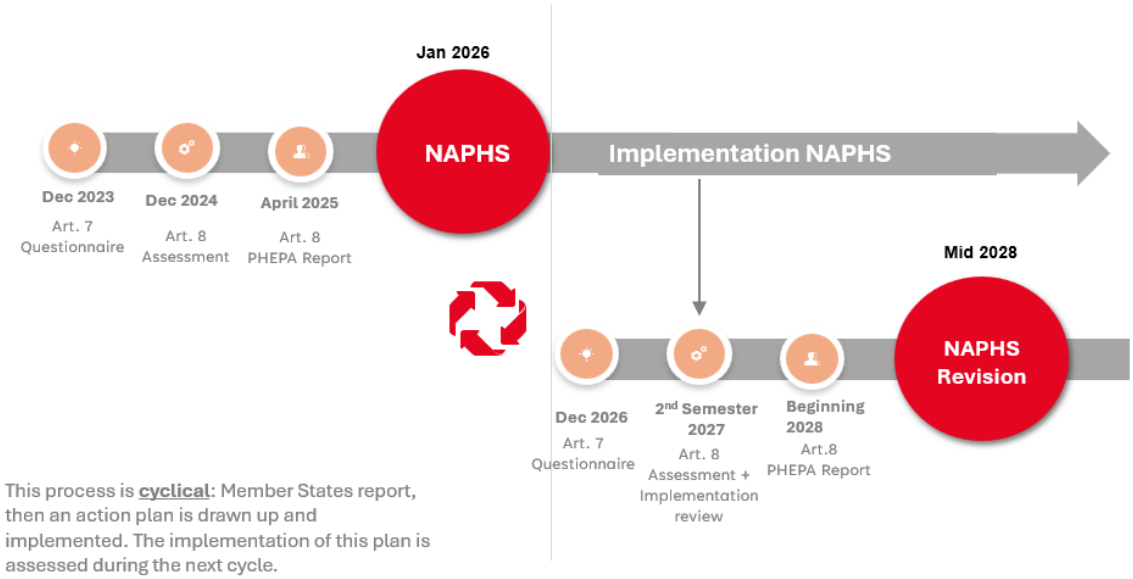

Figure: 16 Synthesis of the revision cycle of the NAPHS in Luxembourg. Source: Service Emergency Preparedness and Response, Ministry of Health and Social Security, Luxembourg

8.3. NAPHS review mechanism in Luxembourg

As each new cycle approaches, a comprehensive review of the NAPHS is carried out in order to:

- Take stock of the progress of recommendations and actions, distinguishing between those completed, ongoing or not implemented.
- Analyse lessons learned from the implementation of the plan, including challenges encountered and good practices identified.
- Integrate new PHEPA recommendations or other relevant assessments.
- Take into account changes in the health context, crises that have occurred, exercises carried out and post-action reviews.

This review mechanism ensures that the NAPHS remains a relevant, up-to-date tool adapted to national and European priorities. It also capitalises on achievements from one cycle to the next and strengthens the overall coherence of Luxembourg's preparedness and response to health emergencies.

The coordination of the NAPHS review is under the responsibility and authority of the NAPHS Steering Committee.

9. Conclusion

This NAPHS is a structuring step in strengthening Luxembourg's preparedness and response to health threats. Developed in direct response to the PHEPA recommendations, conducted in accordance with Article 8 of Regulation (EU) 2022/2371, it translates the findings of the evaluation into concrete, planned and monitored actions over time.

The NAPHS is part of an integrated and coherent approach, articulating international, European and national health security frameworks. It aligns with the requirements of the International Health Regulations, the European framework for preventing, preparing for and responding to serious cross-border threats to health, and national resilience priorities. As such, it is a tool for convergence between evaluation mechanisms, national governance and operational implementation.

The plan is based on an in-depth analysis of national capacities, structured around the 16 capacities assessed under PHEPA. It shall identify priorities for action in a transparent manner, specify institutional responsibilities, set realistic deadlines and, where appropriate, reflect on the resources needed. This approach makes it possible to strengthen the legibility, consistency and traceability of the national response, while promoting a coordinated mobilisation of the actors concerned.

The NAPHS also reflects the specificities of the context of Luxembourg, including its strong cross-border integration, its dependence on daily mobility, its international openness, as

well as its direct response routes. These features, which are assets in normal times, imply increased requirements for coordination, surveillance, communication and regional cooperation in crisis situations. The plan thus aims to strengthen national capacities while strengthening mechanisms for cross-sectoral and cross-border collaboration.

Beyond the response to the PHEPA recommendations, the NAPHS is part of a continuous improvement approach. Designed as a living document, it foresees regular monitoring, review and revision mechanisms to integrate lessons learned from crises, exercises and after-action reviews, as well as recommendations from future European evaluation cycles. It is thus a strategic and operational steering tool, which is expected to evolve at the pace of risks, capacities and the regulatory framework.

Finally, the NAPHS contributes to strengthening Luxembourg's accountability and transparency vis-à-vis its European and international partners. It provides a clear framework for reporting on progress, supporting technical and policy dialogue, and preparing future evaluation and planning cycles, including for the next PHEPA cycle and the development of a new 2028 action plan.

With this plan, Luxembourg reaffirms its commitment to health security based on anticipation, coordination and solidarity, and provides a structured framework to sustainably strengthen the protection of the population against current and future health threats.

10. Annexes

10.1. List of entities by capacity

CAPACITY	ENTITIES CONCERNED
1	Ministry of Health and Social Security, Health Inspection Division, Health Directorate
2	Directorate of Health, Ministry of Health and Social Security
3	Health Inspection Division, National Health Laboratory, Luxembourg Federation of Medical Analysis Laboratories
4	Health Inspection Division
5	Emergency Preparedness Response - Sanitary Reserve, Ministry of Health and Social Security
6	Emergency Preparedness Response, Health Protection Unit, Health Inspection Division, Health Directorate, National Purchasing and Logistics Centre
7	Ministry of Health and Social Security, Division of Curative Medicine and Health Quality, Federation of Luxembourg Hospitals, Ministry of Family, Solidarity, Living Together and Hospitality
8	Directorate of Health, Ministry of Health and Social Security, Office of the High Commissioner for National Protection, Emergency Preparedness Response
9	Health Inspection Division

10	Health Inspection Division, Luxembourg Veterinary and Food Administration, National Health Laboratory, Luxembourg Institute of Science and Technology, Water Management Administration, Ministry of Environment, Climate and Biodiversity, Health Directorate, Ministry of Health and Social Security (Legal Affairs), Health Protection Unit
11	Pôle Protection Sanitaire, Laboratoire National de Santé, Luxembourg Institute of Science and Technology, Grand-Ducal Fire and Rescue Corps of Luxembourg
12	Directorate of Health, Division of Health Inspection, National Health Laboratory, Robert Schuman Hospitals, Coordination Plan National Antibiotics, Division of Curative Medicine and Health Quality
13	Emergency Preparedness Response, Health Directorate, Health Inspection Division, Ministry of Health and Social Security
14	Health Directorate - Emergency Preparedness Response, Health Inspection Division, University of Luxembourg, Ministry of Research and Higher Education, Ministry of Economy, Luxinnovation, Luxembourg Institute of Health, Luxembourg National Research Fund, Neuropsychiatric Hospital Centre, Centre D'Investigation Clinique & Epidemiologique (Luxembourg Institute of Health), Luxembourg Institute of Science and Technology
15	Emergency Preparedness Response, Health Inspection Division
16	Emergency Preparedness Response, Health Inspection Division

10.2. Glossary and acronyms

ACRONYM	FULL NAME
AAR	Post-Action Reviews
AGE	Water Management Agency
ALVA	Luxembourg Veterinary and Food Administration
BSI	Bloodstream Infections
CA	Authority Competence
CBRN	Radiological and Nuclear Biological Chemicals
CNS	National Health Fund
CNAL	National Purchasing and Logistics Centre
CODIR	Steering Committee
COVID-19	Coronavirus disease 2019
DISA	Health Directorate
ECDC	European Centre for Disease Prevention and Control
EHDS	European Health Data Space
EOC	Emergency Operations Center

EPR	Emergency Preparedness and Response
EU/EU	European Union/European Union
EWRS	Early warning and response system
FHL	Federation of Luxembourg Hospitals
HCPN	Office of the High Commissioner for National Protection
HERA	Health Emergency Preparedness and Response Authority
UHPR	Universal Health and Preparedness Review
IGSS	General Inspectorate of Social Security
INSA	Health Inspection Division
IHR	International Health Regulations
JEE	Joint External Evaluation
LIST	Luxembourg Institute of Science and Technology
LNS	National Health Laboratory
LTPS	Technical High School for Health Professions
MFVSA	Ministry of the Family, Solidarity, Living Together and Reception
M3S	Ministry of Health and Social Security
NAPHS	National Action Plan for Health Security
NFP	National Focal Point
OECD	Organisation for Economic Co-operation and Development
PHEPA	Public Health Emergency Preparedness Assessment
GDP	Gross domestic product
POES	Points of Entry
PPA	Purchase Price Allocation
PPRS-LU	Luxembourg Health Crisis Preparedness and Response Plan
RASSUR	Automated collection Syndromic monitoring system in emergency services. Designed to automatically collect data from hospital emergency services to improve early detection of health threats and provide near real-time alert to health authorities.
RCCE-IM	Risk communication, community engagement and infodemic management
RESA	Sanitary reserve

RESCEU	EU Strategic Reserves under the Union Civil Protection Mechanism
RSI	International Health Regulations
SARI	Severe Acute Respiratory Infections
SARS	Severe acute respiratory syndrome
S&E	Monitoring and Evaluation
SOP	Standard Operating Procedure
SORMAS	Monitoring Outbreak Response Management and Analysis System. Open-source digital platform used for epidemiological surveillance and operational management of alerts and outbreaks, from case detection to contact follow-up and response.
SPAR	States Parties Self-Assessment Annual Report Tool
TSIS	Sexually Transmitted Infections
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UHPR	Universal health and preparedness review
USD	United States Dollar
WHO	World Health Organization

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10.4. Excel working tool

	Capacité 6 : Health Emergency Management Coordinateur : [redacted]		Analyse d'impact						Actions	Stratégie opérationnelle					Priorisation
			Veuillez évaluer la criticité des impacts (humain, organisationnel, financier/logistique, juridique) si la recommandation n'est pas mise en œuvre, en vous référant à l'onglet Matrice de cotation.						Reporter pour chaque recommandation les actions de la fiche Action	Veuillez décrire votre stratégie opérationnelle pour mettre en œuvre la recommandation, en listant les principales activités prévues (ex. : étapes de mise en œuvre, méthodes, outils, séquençage, etc.).					
	Recommendations	Experts	Humain (H)	Organisationnel (O)	Image (I)	Financier (F)	Juridique (J)	Criticité d'impact	Action	Type d'activité	Responsable	Statut	Faisabilité	Durée d'achèvement théorique	Priorité
6.1	Develop a Preparedness and Response plan for public health emergencies with strategic and operational components, as well as generic and topic-specific modules.		0	0	0	0	2	2					2		4
6.2	Develop a Standard Operating Procedure for public health risk analysis and for independent, scientific assessment of serious (cross-border) threats to health, in collaboration with relevant institutions and possibly ad-hoc involvement of experts or the High Council of Infectious Diseases.		0	0	3	0	1	4					4		16
6.3	Develop, in connection with the health emergency preparedness planning and IHR focal point (and the development of a public health reserve), the appropriate work environment to address health crises in the format of a Public Health Emergency Operations Centre and corresponding procedures.		0	0	0	0	0	0					0		0
6.4	Develop a methodology to draft the list of critical Medical Counter-measures.		0	0	0	0	0	0					0		0
6.5	Formalise the process to collect data on supply from the industry and on demand from the terrain and make it more inclusive.		0	0	0	0	0	0					0		0
6.6	Once CNAL has been set up, assess the supply chain vulnerabilities and potential barriers.							0							
6.7	Once CNAL has been set up, develop a business continuity plan to ensure enough Medical Counter-measures are available							0							
6.8	Develop methodology on defining the national stock of Medical Counter-measures.														

10.5. Template of an action sheet

Expert coordinateur	
Experts	

Recommandation : (reprendre ici le wording exact de la recommandation PHEPA)

1. Liste de(s) action(s) à mener

Lister ici le(s) action(s) à effectuer pour répondre à la recommandation. Il n'est pas nécessaire d'entrer dans les détails afin de garder une vision synthétique des différentes étapes à suivre lors de la phase d'implémentation. Cette vision synthétique facilitera également la décision stratégique de mise en œuvre du plan.

- Action ou actions :
    1. XX
    2. XX

2. Détail de(s) action(s)

Reprendre l'action ou dans le cas de plusieurs actions nécessaires reprendre une par une afin d'en définir les points concrets. Les parties prenantes, livrables et dates sont indicatifs et permettront de faciliter la décision stratégique de mise en œuvre du plan d'action et de suivre son implémentation. Copier/ coller un modèle de tableau