

# Climate change and health: the national policy overview in Europe

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## 1. Introduction

Preventing or mitigating climate change impacts on health in national policy can be tackled from the perspective of climate change adaptation, through public health policy, or numerous other policy topics, in particular those related to social care for vulnerable groups; living environment, as a buffer between climate hazards and people (housing, urban planning and design); and other.

This report summarises the investigation carried out into the EEA's member and collaborating countries' policies on climate change adaptation and national health strategies, as the key policy areas through which climate change impacts on health can be addressed.

The policy documents were analysed to identify the coverage of various climate hazards, climate-related impacts on health (physical, mental, and social, see Appendix 1) and types of interventions addressing them (institutional, social, and structural, see Appendix 1). The scope of the study and its limitations are presented in Box 1.

### **Box 1. Scope of the study**

#### **Focus on adaptation and health policies**

This report presents findings of the review of content of the national adaptation strategies and national health strategies. It therefore does not provide a full overview of the countries' activities reducing health impacts of climate change planned by the countries. In addition, other policy areas can play a key role in addressing climate change effects on health or adapting health sector to climate change. For instance, increasing healthcare facilities' resilience could be addressed via policies on infrastructure or buildings; increasing the green and shaded areas in cities may fall under the spatial planning policy. Further, many adaptive actions are implemented at subnational and local levels, which are the means for implementation of climate change adaptation for many of the EEA member and cooperating countries (EEA, 2020).

#### **Recording of policy contents**

Climate hazards in national adaptation strategies (NASs) and national health strategies (NHSs) were recorded if they were described in the policy document explicitly as a risk to human health. Measures and interventions were recorded if they were clearly described as actions tackling the impacts of climate change on health, or intended to increase resilience of the population, the institutions, or of health systems, facilities, and professionals to climate change impacts. Therefore, the various adaptive actions that may have health co-benefits but were not openly stated as such are not recorded here.

#### **Examples of actions planned in the adaptation and health policies**

In section 5, some examples of the activities planned through the national adaptation or health strategy documents are provided. These do not provide a complete overview of these activities across Europe and are meant for illustrative purposes only.

The policy documents for review were obtained via [Climate-ADAPT country profiles](#) (which provide links to national adaptation policies for EEA-32 member countries); through online search; and via outreach to the EEA's European Environment Information and Observation Network (Eionet), as well as health ministries of individual countries. Table 1 presents how the relevant documents were identified. In total,

37 national adaptation strategies (NAS)<sup>1</sup> and 34 national health strategies (NHS) were reviewed, as for some countries the policies were not available (see Table 1).

The country-specific information on climate hazards, health impacts and policy measures included in the reviewed documents can be found in the individual [climate and health country profiles](#) within the European Climate and Health Observatory. The overview of the coverage of health impacts and policy measures in national policies across Europe is available in [a map viewer](#).

**Table 1. Obtaining the national policies reviewed in this study (see Appendix 2 for links to documents)**

Country	Adaptation policy	Health policy	Country	Adaptation policy	Health policy
Albania	c	b	Latvia	a	a
Austria	b	d	Lithuania	a	a
Belgium	a	a	Liechtenstein	b	c
Bosnia and Herzegovina	d	c	Luxembourg	b	a
Bulgaria	b	d	Malta	b	d
Croatia	b	d	Montenegro	b	a
Cyprus	b	c	Netherlands	a	a
Czechia	b	b	North Macedonia	b	b
Denmark	b	c	Norway	a	a
Estonia	a	a	Poland	a	a
Finland	a	a	Portugal	a	a
France	a	a	Romania	b	b
Germany	a	a	Serbia	d	d
Greece	a	a	Slovakia	a	a
Hungary	a	a	Slovenia	a	a
Iceland	d	d	Spain	b	a
Ireland	a	a	Sweden	a	a
Italy	a	a	Switzerland	a	a
Kosovo	a	d	Turkey	b	a

Note:

- a - Policy reviewed, based on information provided or confirmed by the country representatives.
- b - Policy reviewed, based on the identification of the document(s) via online search.
- c - Policy does not exist (confirmed by country representatives).
- d - Policy reviewed, but no links between climate change and health are present.

<sup>1</sup> The majority of the reviewed adaptation policy documents were national adaptation strategies, some were national adaptation plans or climate risks or vulnerability assessments, and in some cases communications on climate change under the UNFCCC were included (see Appendix 2). However, for simplicity, this document uses the umbrella term 'national adaptation strategy' (NAS). The term 'national health strategy' (NHS) in this document refers to both general health policies and specific plans on climate change and health.

## 2. Insights from previous studies

In the 2018 EEA report on national climate change impact and vulnerability assessments (the assessments used by the EEA member countries as a basis for development or revision of national adaptation strategies and plans), human health emerged among the most frequent thematic areas addressed (EEA, 2018). WHO (2018) study, based on a review of the Seventh National Communications to the UNFCCC and survey of 20 EU member states, concluded that EU countries seem to have well-established governance mechanisms to integrate climate action into health policy and all countries reported activities to strengthen the health system in relation to climate change. Nevertheless, the report also found that even though general awareness of climate change is high, consciousness of its impacts on health appears comparatively lower (WHO, 2018). The European Climate and Health Observatory country profiles compile an overview of EEA member countries' references to health in national adaptation strategies and plans, and considerations of climate change in national health policies.

A recent WHO (2021) report analysed the overall progress governments around the world have made in including health risks to climate change in policy and institutional arrangements. Within the scope of the report, 15 EEA member and cooperating countries<sup>2</sup> responded to a voluntary survey. The survey was completed by ministries of health in consultation with other ministries and health stakeholders. The results indicate that 9 out of 15 EEA member and cooperating countries had conducted health vulnerability and adaptation assessments and two were planning on doing so. National health and climate change plans or strategies were in place in 12 countries; only one country did not indicate to have such a plan and two were developing them. The survey results suggest that among the ten analysed climate-related health impacts, vector-borne diseases were most addressed in surveillance, early warning systems and/or response plans (14 out of 15). In contrast, climate change impacts on health care facilities were considered to a relatively small extent (5 out of 15 countries).

Institutionally, there seems to be a disconnection between institutions responsible for health and for climate adaptation. A meeting among representatives from 12 European countries<sup>3</sup>, the WHO European Centre for Environment and Health, and EuroHealthNet identified the need for national public health institutes to engage in climate change related issues through, e.g., research, training, and knowledge-sharing (EuroHealthNet, 2021). In agreement, a report by the International Association of National Public Health Institutes (IANPHI, 2021) emphasised National Public Health Institutes (NPHIs) as key actors within the context of climate change. IANPHI conducted a global survey among its members on the role of NPHIs in climate change adaptation and mitigation, which revealed that in most of the respondent countries in Europe, NPHIs had been involved in developing national adaptation policies. However, when compared to respondents from other regions of the world, in Europe there was less involvement of NPHIs and the health care sector in issues of climate change and health. Collaborations of NPHIs within the health care sector overall appears common in Europe, whereas they appear to work less with the urban planning and land use sector. Globally, NPHIs seemed to prioritise risks from vector-borne diseases, followed by heat-related morbidity and mortality.

This brief report is adding to those earlier analyses by specifically analysing the content of national adaptation strategies and national health strategies with regards to their coverage of climate change impacts on health across 38 EEA member and cooperating countries. It identifies the specific climate hazards and health impacts addressed through the available documents (37 national adaptation policies; 34 national health policies), as well as the adaptive measures established in policies.

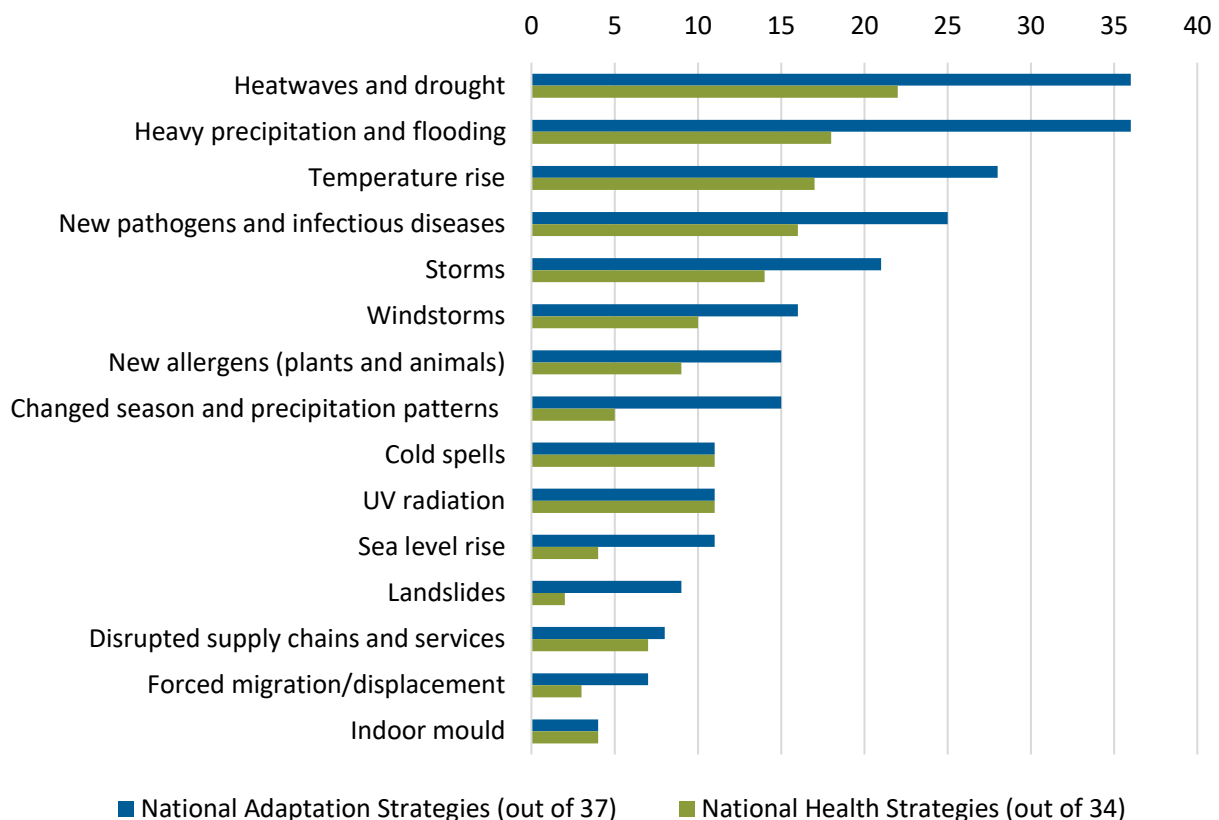
<sup>2</sup> Bulgaria, Croatia, Czechia, Cyprus, Estonia, Germany, Italy, Lithuania, Netherlands, North Macedonia, Poland, Portugal, Serbia, Slovakia, Sweden

<sup>3</sup> Austria, Bulgaria, Finland, France, Germany, Latvia, Netherlands, Spain, Sweden and UK (Scotland, Wales)

### 3. Climate hazards

#### 3.1 Types of climate hazards included in policies

Climate hazards in national adaptation strategies (NASs) and national health strategies (NHSs) were considered as “included” if they are depicted in the policy document as a risk to human health. In general, NASs include a larger number of climate change induced health hazards compared with NHSs. The most frequently covered hazards are [heatwaves and drought](#), [precipitation and flooding](#), general temperature rise, increase in occurrence of [pathogens and infectious diseases](#), and more intense and frequent storms (Figure 1).



**Figure 1. Climate-related hazards to health included in national policies**

In addition to the hazards in Figure 1, some policies also included country-specific climate hazards relevant to health in their climate change adaptation strategies. Examples include fish and seafood-related diseases caused by changes in algal and plankton growth conditions in Norway; effects on drinking water availability due to intensification of erosion and salination of coastal zones in parts of Poland; and the physical threat to human lives from potentially higher precipitation leading to increased rockfall, landslides and avalanches in mountainous areas such as in Liechtenstein.

#### 3.2 Climate scenarios and timeframes covered

Most countries (32) take into consideration future projections of climate change impact in their climate adaptation policy documents, although to differing levels of detail. In this regard, they commonly display future expected climate changes (e.g., changes in air temperature, precipitation, or season patterns) based on one or more scenarios. The choice of these scenarios varies greatly from one European country

to another, but the IPCC scenarios are used in the largest number of documents (16 NASs), most frequently RCP 4.5 and the RCP 8.5 (see Appendix 1 for definitions). The timeframes used by countries mostly focus on 2030, 2050 and 2100. Some countries (e.g., Iceland or Sweden) use the baseline scenarios combined with projections by national environmental and climate agencies to estimate future climate change.

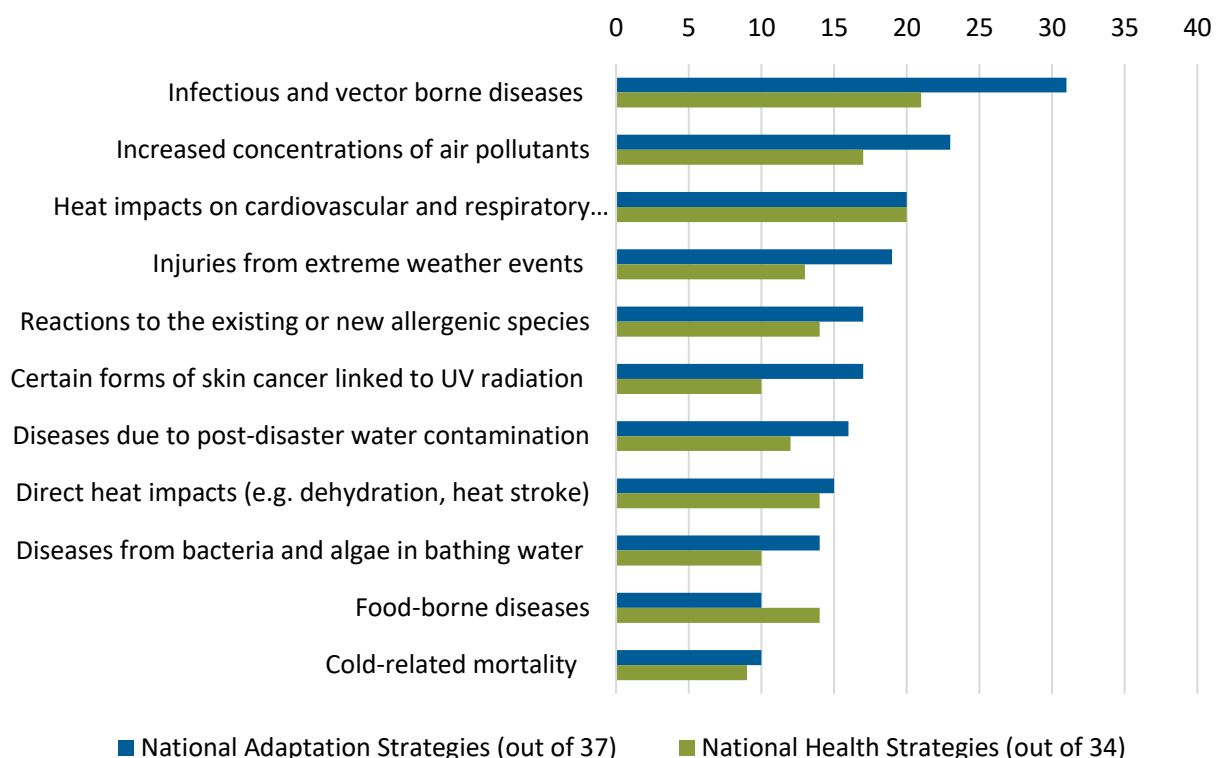
Climate scenarios are less often cited in the national health strategic documents than in the NASs. Some countries mention the IPCC RCP scenarios but do not elaborate on them or specify the projections for their territories.

## 4. Health impacts

The physical, mental, and social health impacts of climate change (see Appendix 1 for definitions) were considered as “included” if they were explicitly described as health threats in the strategy documents (but not necessarily addressed in actions). In general, NHSs were integrating climate change-related health impacts to a significantly lesser extent than NASs (Figures 2 – 4 below).

### 4.1 Physical health impacts

NASs and NHSs largely focused on physical health impacts. The impacts of infectious and vector-borne diseases were included in the highest number of documents, followed by increased concentrations of air pollutants; heat impacts on cardiovascular and respiratory systems, and exacerbation of existing conditions by heat; and injuries from extreme weather events (Figure 2).



**Figure 2. Physical health impacts of climate change included in the national policies reviewed**

## 4.2 Mental health impacts

There is visibly less emphasis on mental health impacts in both types of strategies, and NASs include them more frequently than NHSs: 20 of the analysed NASs considered one or more mental health impacts related to climate change, whereas only 10 of the NHSs did so. The trauma associated with extreme weather events was the most frequent considered type of impact (Figure 3).

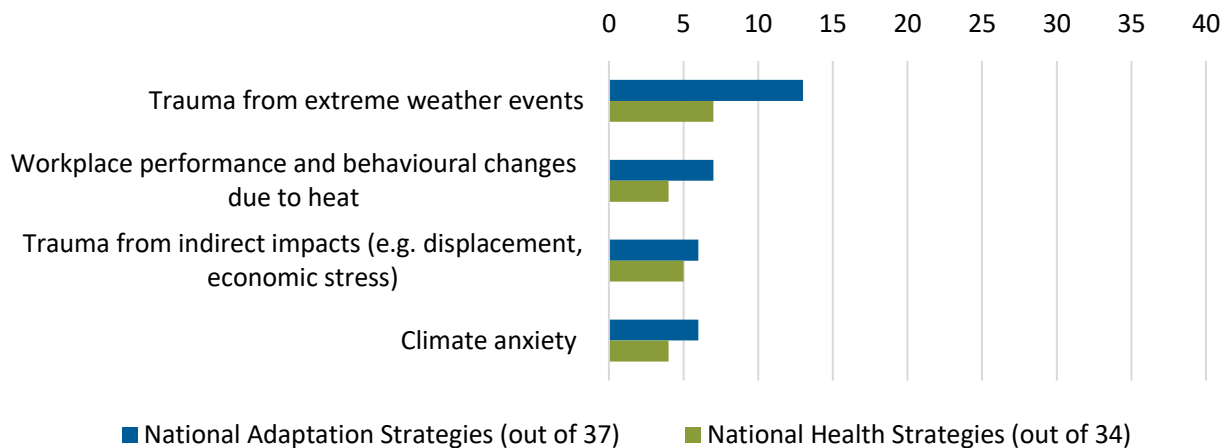


Figure 3. Mental health impacts of climate change included in the national policies reviewed

## 4.3 Social health impacts

Among NASs, 23 addressed some social health impacts of climate change, among which unmet basic needs due to climate change impacts on provision of shelter, food and water were most frequently mentioned (Figure 4). Countries such as Germany, Ireland, Italy, and Malta included also other aspects in their policies, for example, loss of community, displacement, or widening of socio-economic disparities. Fewer examples of social health impacts were found in NHSs; only nine health policy documents addressed at least one. For example, *Health impacts of climate change in Sweden - a risk and vulnerability analysis* (2021) states that warmer winters affect the culture, living conditions and reindeer herding industry of the Sami community.

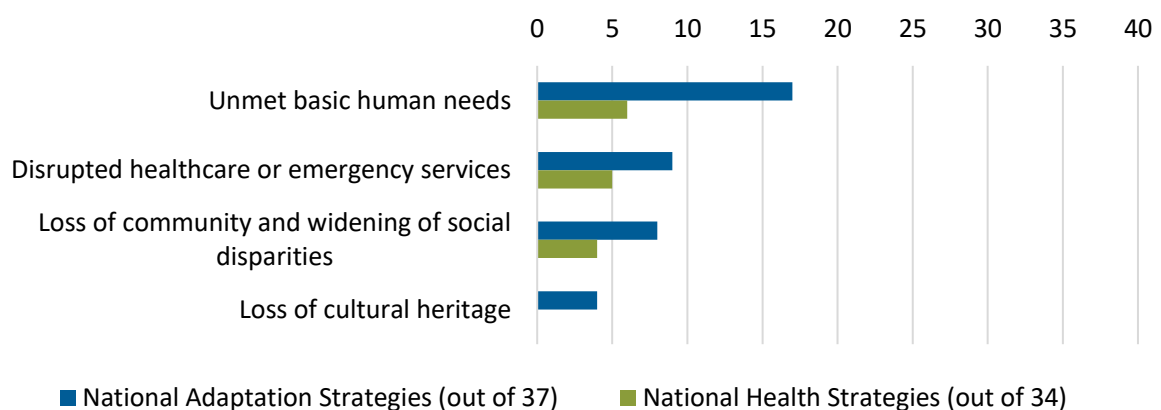


Figure 4. Social health impacts of climate change included in the national policies reviewed

## 5. Planned policy measures

### 5.1 Types of policy measures

The actions to prevent or reduce the climate impacts on human health in NASs and NHSs commonly included a mix of structural/physical, social, and institutional interventions (IPCC, 2014; see Appendix 1). Among these three types, social interventions were the most common for both NASs (included in 35 documents) and NHSs (in 24 documents). Institutional interventions were present in 31 NASs and 18 NHSs. Structural/physical category of measures was the least common (in 18 NASs and 12 NHSs).

The most common measure planned to address climate change impacts on health in both NASs and NHSs is development of monitoring and surveillance systems to track climate change related impacts, including the implementation of early warning systems (Figure 5). The EU legislative frameworks may be a driver here; for example, Austria noted that strategies were developed on the basis of the EU Surveillance Systems TESSy (now known as EpiPulse)<sup>4</sup>.

Awareness-raising campaigns and outreach to the public was the second most frequently listed type of measure in NASs, followed by continuous research. In the NHSs, the pattern was reversed as research into climate change impacts on health was the second most frequently listed measure, followed by awareness raising actions.

Education and training of health professionals on climate change impacts on health was the 4<sup>th</sup> most frequently included measure in NHSs, whilst for NASs changes in governance structures, including setting up of new working groups, were at the fourth place.

The individual types of measures are described in the sections 5.2 – 5.12.



Note: EWS – early-warning systems; NBS – nature-based solutions

**Figure 5. Measures to address climate change impacts on health in the national policies reviewed**

<sup>4</sup> EU Surveillance Systems TESSy- European Network for Diagnostics of Imported Viral Diseases (ENIVD)  
<https://www.ecdc.europa.eu/en/publications-data/epipulse-european-surveillance-portal-infectious-diseases>



## 5.2 Monitoring, surveillance, and early-warning systems

The development of integrated national structures for public health surveillance and response were frequently identified in NASs and NHSs as vital elements for an effective health system. Almost all NASs and around two-thirds of the NHSs considered such measures (Figure 5). In many cases, they entail systematic monitoring and reporting systems for surveillance of invasive species and infectious or vector-borne diseases. For example, the Belgian NAS mentions the MODIRISK initiative, aimed at monitoring and eradicating exotic mosquitoes that may transmit infectious diseases. Norwegian NAS highlights a plan to implement a reporting system dedicated to the monitoring of diseases associated with climate change. The reporting system is to be operated by the Norwegian Institute of Public Health, where health professionals have the duty to report every case of more than 50 communicable diseases. In Italy, Heat Health Watch Warning System has been implemented since 2005 to provide advance warnings for heatwaves that activate preventive actions at the local level.

In NASs, early warning systems were exemplified as a key component of climate change adaptation and disaster risk reduction in relation to various hazards impacting human health. For example, North Macedonia's NHS states its goal to establish an early warning system for heatwaves in relation to climate change. Among other things, it highlights the need to monitor not only heatwave related morbidity, but also how vulnerable groups (e.g., outdoor workers) are affected. Montenegro has developed an early warning system for periods of very cold weather. The Maltese NAS stated that early warning systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently to ensure preparedness and enable timely action.

## 5.3 Public awareness campaigns

Outreach to the general public and information campaigns to increase awareness of climate change impacts on health was a frequently listed measure, incorporated by a large majority of NASs and just over half of NHSs (see Figure 5). This commonly includes the development of information materials such as brochures, media campaigns, or information booths/events that inform citizens on the risks and actions that can be taken by individuals in relation to different hazards.

For example, France's 4<sup>th</sup> *National Health and Environment Plan* cited actions aimed at educating citizens on how to adopt behaviours that reduce the risk of experiencing climate change induced health impacts e.g., from ticks, or extended allergy seasons. Bulgaria's NAS noted a national media campaign on climate change and health. In Luxembourg, according to the NAS, a brochure titled 'How to react to a high pollen load' was developed to prepare citizens for extended pollen seasons. The Swiss climate change adaptation plan describes several measures in place to improve citizens' awareness of health risks from high heat, including a public website, where the Federal Office of Public Health provides an overview of and behavioural recommendations on the subject. Similarly, in Italy, following the National Prevention Plan 2020-2025, the Ministry of Health website publishes bulletins on heat waves, also available through a mobile application.

The Polish NHS mentions developing information and education activities to increase awareness of the risks associated with overexposure to ultraviolet radiation. In Denmark and Portugal, the information on how to prevent health risks from the sun is provided by the national health ministries to municipalities for further dissemination. *The Second Progress Report on the German Strategy for Adaptation to Climate Change* plans for multiple activities on public awareness, communication, and information. Among others, it includes activities aimed at adaptation of curricula for schools and early childhood education institutions; provision of information materials for vulnerable groups; or establishment; development of warning systems for ticks and tick-borne infections.

#### 5.4 Research on climate change impacts on health

Developing knowledge on the health impacts of climate change and how adaptation measures might affect health was described by around three-quarters of the NASs and two-thirds of the NHSs (see Figure 5) as crucial in the development of appropriate adaptation responses. For example, the Latvian NHS mentioned research to identify and map the most-at-risk populations; the development of methods and models for studying climate change and its impacts on public health; and the improvement of knowledge about effective modes of communication and education about risks tied to climate change. In Germany, *the Second Progress Report on the Strategy for Adaptation to Climate Change* includes several ongoing, planned, and proposed research projects. These include, among others, trend analyses of imported vector-borne infectious diseases in Germany or analyses of the effectiveness of health adaptation measures in the context of heat action plans, and many others. The Czech NAS mentions participation in developing new vaccines, e.g., against Lyme disease. Research was also stated as a means to design more effective monitoring and surveillance systems. For example, the NAS of Luxembourg, included the development of a database with information on populations impacted by extreme weather events.

#### 5.5 New governance structures

Many NASs stated the need for cross-sectoral, interdisciplinary teams to address climate change impacts on health, while the NHSs did so to a lesser extent. The aim in many NASs was to design and implement programmes, policies, legislation, and research activities in which multiple sectors collaborate to achieve better public health outcomes. Hence, the establishment of cross-sectoral and multi-level working groups specifically addressing climate change issues was often identified.

For example, in Norway, a working group of the relevant ministries and government agencies has been set up to consider potential problems related to drinking water and its supply and distribution network. In Bulgaria, the Ministry of Health established an inter-disciplinary coordination working group on climate change and health. *The Second Progress Report on the German Strategy for Adaptation to Climate Change* describes how the Federal/Länder Ad hoc Working Group on Adaptation to the Impacts of Climate Change in the Health Sector that was set up in 2017 is now established on a permanent basis to facilitate inter-agency dialogue on human health under climate change. Further plans are in place to intensify and establish health sector cooperation between the federal government, the Länder and the local authorities.

In Ireland, a cross-sectoral working group in the Department of the Environment, Climate and Communications has been initiated to align policy and initiatives with the 'Healthy Ireland' policy. The objective of such initiatives, as highlighted in the Spanish 'A Sola Salud' initiative, is to increase communication and strengthen cooperation among all public administrations and departments to develop coherent and efficient joint policies. The Italian NAS, for example, described how the 'One Health' approach (developed by the World Health Organization) is being translated into an interdisciplinary and cross-sectoral approach to the health system climate policy through the spread of advocacy interventions from Ministry of Health to other ministries and sectors such as environment, agriculture, urban planning, transport, and education.

#### 5.6 Legislative developments

A proportion of NASs expressed the necessity to adjust the legal frameworks to better address climate change impacts on health, either through the amendment of existing policies (e.g., on health or infrastructure), or through development of new policies. The latter was the case in Bulgaria, where the NAS concludes that none of the legal, strategic, and policy documents governing the status and activities of Bulgaria's health sector directly address the impact of climate change on human health. Consequently, the strategy suggests development of a specific climate change and health strategy, considering a range

of global warming scenarios. Only few countries have a specific sectoral climate adaptation strategy for health sector, for example Finland, Ireland, North Macedonia, or Sweden.

In Austria, the NAS highlights the continued examination and, where necessary, amendment of legal framework conditions, for example, for laws on epidemics and zoonoses. Some NASs and NHSs additionally detail plans to develop and implement municipal strategies addressing climate change impacts on health. This is for example the case in Portugal, where the NAS notes the necessity for localised intervention to strengthen civil protection emergency plans and land-use planning instruments.

## 5.7 Identifying vulnerable groups

In around one-third of all the policy documents reviewed, an emphasis was put on identifying vulnerable population groups, i.e., citizens over 65 years old, children, pregnant women, chronically ill people, or people at risk of poverty or social exclusion (such as migrants or asylum seekers). The aims were to better consider these groups' needs when deciding on the adaptation measures; to provide particular care to the vulnerable populations; or to specifically target communication and awareness campaigns to those groups.

In Malta, the *National Climate Change Adaptation Strategy* states that the Department for the Care of the Elderly will endeavour to have all health-care facilities and homes for the elderly equipped with air-conditioning facilities and/or cool rooms to prepare for more frequent and prolonged heat waves in the future. In the Italian health strategy, the national heat health action plan includes the identification of vulnerable elderly persons through administrative and health information systems. Specific actions, tailored to these subgroups during heat waves, include active monitoring by the general practitioners; home assistance for the elderly at risk from health and social services; an awareness-raising campaign for care givers; and training for health care professionals. The Czech national health strategy underlines the overall need to address health and social services in an integrated manner and highlights the objective of strengthening overall health, also with regards to risks from climate change, particularly for specific groups, such as young people, women, elderly, socially excluded persons and people with chronic illnesses and disabilities.

Finally, to better identify and evaluate the impacts of climate change on health for vulnerable population groups, several national policy documents (e.g., in Romania, Slovakia, or Poland), identify the necessity to engage in additional research and to build awareness among medical personnel how health impacts from climate change are intensified by pre-existing vulnerability. The Irish climate change sectoral adaptation plan for health aims to improve education for vulnerable populations (those suffering from asthma or chronic obstructive pulmonary disease) on the causes of air pollution and aeroallergens, which are expected to aggravate in the context of climate change. This includes guidance on what individuals can do to reduce their exposure, and how to use the EPA's Air Quality Index for Health.

## 5.8 Education and training of health professionals

The plans to provide additional education and training for health professionals on climate change impacts on health in NASs include both the development of new training materials and modules, as well as continued education for already qualified health professionals. For example, the Belgian *National Adaptation Plan (2017-2020)* includes a project to teach new students and health professionals about both short- and long-term impacts of climate change on health systems and health care provision through targeted e-training modules. The Turkish NAS includes plans to increase awareness among public health providers of climate-related health impacts in areas vulnerable to infectious diseases. The Bulgarian NAS describes plans to provide thematic information materials (such as brochures, booklets, placards etc) to healthcare professionals, and to include modules on climate change and health in the education programs of MSc and PhD students. In Slovakia, the NAS notes the necessity to complement the in-service medical training on the health consequences of climate change. This would increase the level of knowledge among

medical staff, allowing early detection of symptoms from heat-related diseases, for instance. *The Second Progress Report of the German Strategy for Adaptation to Climate Change* plans for development of information and training for health sector professionals on climate change, and design of professional training programmes for the social, health and nursing care sectors regarding specific aspects of climate change.

Examples of actions aimed at education and training of health professionals were also found in NHSs. Czechia's NHS noted the necessity to improve the capacity of health professionals to diagnose and treat diseases that are becoming more widespread under the changing climate. Romania's NHS identifies staff training priority areas which include topics related to environmental health, occupational health, food safety. The training aims to increase the degree of readiness and ability to respond to environmental risks, with specific reference to climate-related threats. The Finnish NHS suggested that, due to dependence of the health system on digital information structures, preparedness and education should be developed to ensure that public health providers can function and carry out the research and monitoring activities also when digital infrastructure is threatened by power outages caused by extreme weather events.

## 5.9 Resilient infrastructure and nature-based solutions

Physical climate change adaptation interventions included actions in both built and natural environment. Commonly mentioned infrastructural interventions in NASs and NHSs were focussing on climate-proof urban planning and design, for instance through landscaping of public spaces to withstand, and protect people from, extreme weather. Austria's NAS details a plan to develop medium- and long-term strategies to reduce heat exposure in buildings and increase the summer suitability of buildings through renovation. In addition to addressing the general need to make critical infrastructure (e.g., roads, power, and water supply systems) resilient to the risks posed by climate change, Bulgaria's NAS specifically aims at adaptation of health care facilities. German NAS highlights the need of improving building insulation and introducing passive cooling systems in hospitals and other care facilities. Similarly, the Maltese NAS aims to safeguard nursing homes and healthcare facilities against higher temperatures and more frequent heatwaves.

Nature-based solutions were often identified as means to reduce health risks of heat and flooding. Several countries' NASs included measures to create fresh air corridors and 'cool islands' of green spaces in cities. For example, the Dutch NAS highlights a plan to strengthen natural networks in cities to simultaneously improve biodiversity and to use the natural cooling effect of green areas as a "climate buffer" for people. *Climate Impact and Risk Assessment 2021 for Germany (2021)* plans for the definition and implementation of guidelines for selection of tree species and other vegetation, considering both the drought- and heat-resilience of the plants, and their low allergenicity. In Czechia, the NAS plans to engage architects, developers, and construction agencies to implement architecture and greening aimed at reduction of the urban heat island effect, and therefore heat stress. The Netherlands' NAS similarly describes the involvement of built environment and spatial planning professionals in its 'heat and health' initiative aimed at protection of vulnerable people (such as the elderly) from heat stress.

## 5.10 Emergency response preparation and drills

The action to strengthen emergency response systems and preparedness of public health institutions was included in some national policies. For example, NHSs of Albania and Sweden plan for strengthening of national emergency services to build resilience to climate change impacts. The German NAS sets out to strengthen and re-develop emergency plans to prepare for possible health threats from extreme events such as storms and flooding, in addition to preventative measures to protect coasts and control floods. One of the planned outputs of Bosnia and Herzegovina's NAS is the development of disaster management plans specifically for extreme heat events and their implication for health, e.g., through capacity building, workshops, and joint planning by different agencies.

In Hungary, the NHS emphasises the importance of communicating the threats of disasters not only when specific events occur, but also as a preventative measure to prepare the population by informing them about potential threats and recommended behaviours and responses. The Swedish NHS describes a general need for climate-adapted crisis preparedness in the context of extreme weather events such as torrential rain, heat waves and floods, and has issued guidance on health effects of high temperatures for local and regional preparedness and information material for healthcare providers.

### 5.11 Partnerships with various organisations

In just under one-third of the policy documents reviewed, partnerships with non-governmental or international organisations were planned. For example, in Lithuania, according to the *National Climate Change Management Agenda (2021)*, cooperation is under way between public authorities and academia to find ways for the health sector to adapt to climate change. The Bulgarian NAS and Belgian NHS detail plans to engage first aid organisations, humanitarian aid providers, hospital operators, the army, and disaster protection management. The German NHS notes the importance of cross-sectoral approaches, platforms to engage with non-state actors, and international cooperation to promote exchange of expertise. Under the 'One Health' Approach, outreach is planned to jointly address health risks caused by global environmental and climate change. In Austria, procedures for improving existing emergency plans and coordination in the NAS include the implementation of a volunteer system. The initiative, called 'Team Austria', is implemented by the radio station Hitradio Ö3 and the Red Cross, with the objective of rapidly supporting disaster relief efforts with on-site professional assistance. According to *the Second Progress Report on the German Adaptation Strategy*, recommendations on cooperation between spontaneous helpers, and volunteer responders in extreme weather event situations will be expanded and supplemented with a compilation of best-practice examples.

### 5.12 New strategies and procedures for healthcare facilities

Some of the national policy documents reviewed included procedures to ensure that hospitals can accommodate the increased numbers of heatstroke victims or asthma patients; or that public healthcare providers have access to the necessary equipment to detect new viral pathogens. For example, the German NAS details plans to develop and improve laboratory procedures for the detection of climate-sensitive pathogens to ensure appropriate diagnoses. In Austria, the NAS includes plans to develop and implement measures to raise awareness of post-traumatic stress disorder for doctors and public health services to ensure early diagnosis and adequate treatment after disasters.

## 6. Acknowledgements

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## Appendix 1: Definitions

### Climate change impacts on health

**Physical health impacts** include all health effects on the physical body, e.g. occurrence or worsening of respiratory and cardiovascular disease; injuries and premature deaths related to extreme weather events; changes in the prevalence and distribution of food- and water-borne illnesses and infectious diseases, etc.

**Mental health impacts** include PTSD and trauma from direct impacts of extreme weather events due to loss of habitat, property, or relations; climate change related anxiety; mood, behavioural and cognitive effects of hot or cold spells; or increased variation in weather patterns impacting the day-to-day capacity for healthy mental functioning.

**Social health impacts** are the indirect effects mediated through societal systems, such as loss of community or cultural heritage due to displacement or destruction of habitat; undernutrition and mental illness from altered agricultural production and food insecurity; stress and violent conflict caused by population displacement; economic losses due to lower workforce productivity caused by heat; widening socio-economic disparities; or damage to health care systems by extreme weather events.

### Types of adaptation interventions (after IPCC, 2014a)

**Structural/Physical interventions** include “concrete”, often tangible measures implementing engineered, technological, ecosystem-based solutions and services. While this category includes a wide range of options, those especially relevant for the health context are, e.g., the integration of green infrastructure to regulate air quality and cooling in cities, improved building insulation and cooling technologies, or vaccination programmes.

**Social interventions** are measures that adopt educational, informational, and behavioural approaches. Many of the adaptation measures addressing health included in this analysis fall into this category. Some examples include identification of vulnerable populations, awareness-raising and educational initiatives, and knowledge-sharing and learning platforms. While early warning systems can also be considered technological solutions, monitoring and early warning systems are here included in the social category.

**Institutional interventions** mainly alter the institutional and legal context for adaptation. They concern economic measures, laws and regulations, and government policies and programs. Sectoral adaptation plans, or disaster planning and preparedness are some examples.

### Climate scenarios

The RCP scenarios are named after the 21st-century peak of radiative forcing, also called stabilisation value, expressed in watts per square meter of surface ( $W/m^2$ ). The RCPs include a stringent mitigation scenario (RCP 2.6), two intermediate scenarios (RCP 4.5 and RCP 6.0) and one scenario with very high GHG emissions (RCP 8.5). These scenarios used in the IPCC Fifth Assessment Report (2014) were superseded by newer SSP scenarios in the IPCC Sixth Assessment Report (2021).

**RCP 4.5 (moderate emission scenario)** is an intermediate scenario pathway with a stabilised radiative forcing at approximately  $4.5 W/m^2$  before 2100. The reduced concentrations are achieved by employment of a range of technologies and strategies for reducing GHG emissions. RCP 4.5 is more likely than not to result in a global temperature rise of between 2 and 3 °C by 2100.

**RCP 8.5 (high emission scenario)**. In the RCP 8.5 pathway, GHG emissions continue to rise throughout the 21st century. The radiative forcing exceeds  $8.5 W/m^2$  by 2100 and continues to rise thereafter (the corresponding extended concentration pathways assume constant emissions after 2100 and constant concentrations after 2250). This scenario delivers a global temperature increase of about 4.3 °C by 2100.

## Appendix 2: Policy documents reviewed

Country	Adaptation to climate change policy	Health policy
Albania	-	<a href="#">National Health Strategy (2016-2020)</a>
Austria	<a href="#">The Austrian Strategy for Adaptation to Climate Change Part 1</a>	<a href="#">Österreichischer Strukturplan Gesundheit 2017</a>
Belgium	<a href="#">Belgian national adaptation plan (2017-2020)</a>	<a href="#">Climate Change and Health - Set-up of monitoring of potential effects of climate change on human health and on the health of animals in Belgium (2009)</a>
Bosnia and Herzegovina	<a href="#">Climate Change Adaptation and Low Emission Development Strategy for BiH (2014)</a>	-
Bulgaria	<a href="#">Bulgaria National Climate Change Adaptation Strategy and Action Plan</a>	<a href="#">National Health Strategy (2014–2020)</a>
Croatia	<a href="#">Draft Climate Change Adaptation Strategy in the Republic of Croatia for the period to 2040 with a view to 2070 (2017)</a>	<a href="#">National Health Care Strategy (2012-2020)</a>
Cyprus	<a href="#">National response for preparation to climate change (2017)</a> <a href="#">Cyprus 7<sup>th</sup> National Communication to the United Nations Framework Convention on Climate Change (2018)</a>	-
Czechia	<a href="#">Climate change adaptation strategy in the Czech Republic (2015-2019)</a>	<a href="#">Health Strategy Framework 2030</a>
Denmark	<a href="#">Strategy for adaptation to climate change in Denmark (2008)</a>	-
Estonia	<a href="#">Climate Change Adaptation Development Plan until 2030</a>	<a href="#">National Health Plan (2009-2020)</a>
Finland	<a href="#">Finland's National Climate Change Adaptation Plan 2022 (2014)</a>	<a href="#">Climate change in the social and health sector: Ministry of Social Affairs and Health's climate change adaptation plan (2021–2031)</a>
France	<a href="#">French Strategy for adaptation to climate change (2006)</a> <a href="#">First National Adaptation Plan (2018)</a> <a href="#">Second National Adaptation Plan (2018)</a>	<a href="#">The National Health Strategy (2018-2022);</a> <a href="#">4th National Health and Environment Plan</a>



Country	Adaptation to climate change policy	Health policy
Germany	<a href="#">German Climate change adaptation strategy (2008)</a> <a href="#">2019 Monitoring Report on the German Strategy for Adaptation to Climate Change</a> <a href="#">Second Progress Report on the German Strategy for Adaptation to Climate Change (DAS) (2020)</a> <a href="#">Climate Impact and Risk Assessment 2021 for Germany. Sub-report 5: Risks and adaptation in the thematic clusters Economy and Health</a>	<a href="#">Global Health Strategy of the German Federal Government 2020</a>
Greece	<a href="#">National Strategy for Adaptation to Climate Change (2016)</a>	<a href="#">National Action Plan to Address Environmental Risks to Health (2008-2012)</a>
Hungary	<a href="#">2nd National Strategy on Climate Change</a>	<a href="#">Climate change and health Report – 2020</a>
Iceland	<a href="#">Iceland’s 7th national communication and 3rd biennial report on climate change under the UNFCCC (2017)</a>	<a href="#">Health Policy A policy for Iceland’s health services until 2030</a>
Ireland	<a href="#">National adaptation framework (2018)</a> <a href="#">Health. Climate Change Sectoral Adaptation Plan 2019-2024. Prepared under the National Adaptation Framework</a>	<a href="#">Healthy Ireland Strategic Action Plan 2021-2025</a>
Italy	<a href="#">National strategy for adaptation to climate change</a>	<a href="#">National Plan of Prevention 2020-2025</a>
Kosovo	<a href="#">Outlook on climate change adaptation in the Western Balkan Mountains (2016)</a> <a href="#">Climate Change Strategy 2019-2028. Action Plan on Climate Change 2019-2021 (2018)</a>	<a href="#">Health Sector Strategy 2017-2020</a>
Latvia	<a href="#">Latvia National Adaptation Plan (2019)</a>	<a href="#">Public Health Guidelines 2014-2020</a>
Liechtenstein	<a href="#">Adaptation Strategy to Climate Change in Liechtenstein (2018)</a>	-
Lithuania	<a href="#">The National Strategy for Climate Change Management Policy (2012)</a> <a href="#">National Climate Change Management Agenda (2021)</a>	<a href="#">Lithuanian Health Strategy (2014-2025)</a>
Luxembourg	<a href="#">Strategie et plan d’action pour l’adaptation au changement climatique au Luxembourg (2018-2023)</a>	-
Malta	<a href="#">National adaptation strategy (2012)</a>	<a href="#">National Health Systems Strategy for Malta 2014-2020</a>

Country	Adaptation to climate change policy	Health policy
Montenegro	<a href="#">The second communication on Climate Change of Montenegro to UNFCCC (2015)</a>	<a href="#">Program for Climate Change Adaptation of the Healthcare System 2020-2022</a>
Netherlands	<a href="#">National Climate Adaptation Strategy (2016)</a> <a href="#">Implementation programme 2018-2019</a> <a href="#">National Delta Programme 2022</a>	<a href="#">National health policy memorandum/Landelijke nota gezondheidsbeleid 2020-2024</a>
North Macedonia	<a href="#">Climate Change Health Adaptation Strategy and Action Plan of Macedonia (2011)</a>	<a href="#">Strategy for Health sector adaptation to climate change (2011-2015)</a>
Norway	<a href="#">Climate change adaptation in Norway (2012-2013)</a>	<a href="#">National health preparedness plan 2014</a> <a href="#">Nasional Helseberedskapsplan (2018)</a>
Poland	<a href="#">Polish National Strategy for Adaptation to Climate Change by 2020 with the perspective by 2030</a>	<a href="#">National Health Program (2016-2020)</a>
Portugal	<a href="#">National Adaptation to Climate Change Strategy (ENAAC 2020) and the respective extension until 2025</a> <a href="#">Action Plan for Adaptation to Climate Change (P-3AC)</a>	<a href="#">National Health Plan 2020</a>
Romania	<a href="#">National Action Plan for the implementation of the National Strategy on Climate Change and Low Carbon Growth 2016-2020</a> <a href="#">Romania 7th national communication and 3rd biennial report on climate change under the UNFCCC (2017)</a>	<a href="#">National Health Strategy 2014-2020</a>
Serbia	<a href="#">Draft of Adaptation Plan (2015)</a>	<a href="#">National health strategy (2016-2025)</a>
Slovakia	<a href="#">Adaptation strategy to climate change of the Slovak republic (2018)</a> <a href="#">Adaptation plan for implementation of the Adaptation strategy to climate change of the Slovak republic (2021)</a>	<a href="#">Strategic framework for health for 2014 - 2030</a>
Slovenia	<a href="#">Strategic framework for climate change (2016)</a> <a href="#">Slovenia 7th national communication and 3rd biennial report under the UNFCCC (2018)</a>	<a href="#">National Health Plan 2016-2025</a>
Spain	<a href="#">National Plan for the adaptation to climate change 2021-2030</a>	<a href="#">Strategic Plan for health and environment/ Plan Estratégico de Salud y Medioambiente 2022 – 2026</a>

Country	Adaptation to climate change policy	Health policy
Sweden	<a href="#">National strategy for climate adaptation (2018)</a>	<a href="#">Public health in a changing climate. The Public Health Agency's goals and action plan for climate adaptation 2021–2024</a> <a href="#">Health impacts of climate change in Sweden – a risk and vulnerability analysis (2021)</a>
Switzerland	<a href="#">Adaptation to Climate Change in Switzerland: Action Plan 2020-2025</a>	<a href="#">Health 2030 Strategy</a>
Turkey	<a href="#">Turkey's National Climate Change Adaptation Strategy and Action Plan (2011-2023)</a>	<a href="#">National Program and Action Plan for Reducing the Negative Effects of Climate Change on Health</a>