

Environmental health: A comparative analysis of the Euregion-Meuse-Rhine

Status-quo of policies, best practices, promising tools and projects that promote a healthy public space.

On behalf of the cross-border collaboration of **Logo Limburg** and **euPrevent**

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List of Abbreviations

APUG	Aktionsprogramm Umwelt und Gesundheit
BZga	Bundeszentrale für gesundheitliche Aufklärung
DAS	German Adaption Strategy
EU	European Union
EEA	European Environment Agency
EMR	Euregio-Meuse-Rhine
DIFU	Deutsches Institut für Urbanistik
GGD	Gemeentelijke of Gemeenschappelijke Gezondheidsdienst
HiAP	Health in all Policies
NGO	Non-governmental organization
WHO	World Health Organization
NRW	North-Rhine Westphalia
MPUG	Masterplan Gesundheit und Umwelt
MULNV	The Ministry for Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia
RIVM	Rijksinstituut voor Volksgezondheid en Milieu
RKI	Robert-Koch-Institut
UN	United Nations
VIA	Association for intercultural work
VPO	Flemish Environmental Planning Office department
VVM	Vlaamse Milieumaatschappij
VWS	Ministerie van Volksgezondheid, Welzijn en Sport

1. Introduction

1.1 Relevance

According to the WHO, “healthier environments could prevent almost one quarter of the global burden of disease” (WHO n.d). Moreover, the COVID-19 pandemic is a further reminder of the delicate relationship between people and our planet.

The environment is a major determinant of health and closely linked to climate change. The WHO defines climate change as “the biggest health threat facing humanity [...]” (WHO 2021). Beside severe effects on multi-level biodiversity, the impact on individuals’ health and well-being is tremendous. Globally, the WHO estimates around 7 million deaths due to climate-related events annually (WHO 2022). While pursuing international conventions to reduce morbidity and mortality rates of infectious diseases and non-communicable diseases (NCD’s), the dynamic of the climate crisis reverses previous achievements and efforts into concerning forecasts. For instance, the increasing outdoor air pollution alone is responsible for 3.7 million deaths worldwide every year, due to cancer, respiratory and cardiovascular diseases (NCD Alliance 2019). In Europe, almost 370.000 premature deaths were attributable only to PM_{2.5} in the 27 EU Member States (EEA 2022), illustrating the single largest environmental health risk in this region. To fight against global warming effectively, national and international stakeholders have to consider the environments citizens live in. These have substantial consequences on the progressing climate change and citizens’ health. Already in 1989, concerned about the growing evidence of the impact of hazardous environments on human health, WHO/Europe initiated the first ever environment and health process, towards a broad primary prevention public health approach, and to facilitate intersectoral policymaking. Today, many international policies, such as the Paris Agreement, aim to combat the dimensions of global warming and to promote healthy living environments. On a European level, the [Green Deal](#) comprises different concepts to achieve zero pollution and to create a toxic-free and healthy environment for all until 2050 (EU Commission 2019). However, by applying EU law into national law, the Member States are bound to take necessary measures at national level to accomplish healthy and sustainable environment.

1.2 Thematic focus

The European territory is characterized by transnational cooperation structures between two or more countries, commonly defined as Euregions (Durà et al. 2018). It represents a unique type of cross-border collaboration and has an influential role on the quality of life of citizens living in Euregions. Hence, the European Union aims to strengthen the potentially more vulnerable peripheral regions of the involved Member States. The **Euregion-Meuse-Rhine (EMR)** is one of the most important cross-border cooperation structures within the EU and has around 3.9 million inhabitants in three involved countries (Durà et al. 2018). The population living in the EMR differ

significantly from citizens who are not resident in border regions. Beside a broader cultural and geographical way of thinking, citizens experience contrasting determinants of a qualitative life and individual health. In this regard, EMR citizens are more frequently exposed to health-related stressors, as experienced in varying national policies during the COVID-19 pandemic. Thus, when addressing environmental health in Euregions, different national policy structures put the EMR citizens in a challenging situation. Having these aspects in mind, the necessity and dimension of transnational collaboration regarding environmental health and climate change is more important than ever. In all European countries, including the EMR countries, the challenges posed by environment on our health are mainly tackled at the national level. However, our living environment does not stop at national borders, and the environmental factors/elements are often transboundary, such as air and water. For instance, the windmills established at one side of the border (in an open area) can produce noise that has adverse effects on the health of the population living of the other side of the border (close to a living area). The sole national action is not sufficient in tackling the transboundary nature of many environmental risks. Therefore, it is necessary to deal with the environmental health topics in a cross-border setting. The WHO Global Strategy 2020 recognized that: “The current situation and the challenges ahead call for a transformation in the way we manage our environment with respect to health and well-being. Current approaches have laid the foundations, but they have not proven sufficient for sustainably and efficiently reducing environmental risks to health and building health-supportive and enabling environments – hence the call for a new strategy on health, environment and climate change.” (Strategy 2020: 4). Very often, the setup of the living environment (city design/planning) is authorized and undertaken at the municipal level, complying with national standards. Therefore, in the border region, the local environment may take on different features due to different national/municipal policies. Their influences or consequences for health of the population need to be further explored.

This report comprises a normative analysis and comparison on current policies, best practices and promising tools in Belgium, Netherlands and Germany on the topic of environmental health. It aims to give an overview and provides a fundament for further investigation in the EMR.

2. Status-quo

This report is neither complete nor gives a representative picture about the overall situation but provides a basic understanding to certain environmental aspects and important policies. Moreover, the countries carry out their powers within their respective national territories in compliance with existing European/international standards and national rules.

2.1 WHO guidelines

To address the issue of environmental health, WHO has been issuing various guidelines and documents. The most recent ones are published in 2020 and 2022. Overall, they serve as

guidance for the national, federal, regional and local decision-making process on the topic of environmental health.

- [WHO Global Strategy on Health, Environment and Climate Change](#) (2020)

This strategy provides a vision on “how the world and its health community need to respond to environmental health risks and challenges...and to ensure safe, enabling and equitable environments for health by transforming our way of living, working, producing, consuming and governing”.

- [Compendium of WHO and other UN Guidance on health and environment](#) (2022 update)

This Compendium is based on different environmental risk factors: air pollution, WASH (water, sanitation and hygiene), solid waste, chemicals, radiation, climate change, nature and health, safe environment and mobility, safe and healthy food, environmental noise. The Compendium stresses the importance of multiple sector involvement, multi-level implementation, and multiple instruments. First, all sectors principally involved in planning/implementation cover health, environment, agriculture, transport, industry, food, water/sanitation, waste, energy, housing, construction, land use planning, education, sports and leisure, civil defense. Second, the implementation is at multiple levels including national/community level, school, healthcare, workplace. Third, the various instruments can be used include governance, regulation, taxes and subsidies, infrastructure, technology and built environment, other management and control, assessment and surveillance, information, education and communication. For each environmental factor, WHO has published separate guidelines:

- Water: [Guidelines for drinking-water quality \(2022 update\)](#)
- Air: [WHO global air quality guidelines: particulate matter \(PM2.5 and PM10\), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide](#) (2021)
- Noise: [Environmental noise guidelines for the European Region](#) (2018)
- Urban planning: [Urban design for health: inspiration for the use of urban design to promote physical activity and healthy diets in the WHO European Region](#) (2022)

2.2 EU guidelines vs. Member State implementation

2.2.1 EU framework on environmental issues

At the European level, when it comes to environmental health, it is rather complicated. First, the standards for specific environmental factors are laid down in the EU environmental legislations. The EU tried to align the European standards with those as prescribed in the WHO guidelines.¹ In most recent years, the EU has been striving for higher standards beyond the WHO standards.

¹ E.g. water: [Drinking Water Directive 2020/2184](#) (revised 2020), air: Directive 2008/50/EC, Noise: [Environmental Noise Directive 2002/49/EC](#)

For instance, the proposed revision of the Ambient Air Quality Directive aims to set interim 2030 EU air quality standards aligned more closely to the WHO guidelines and put the EU on a trajectory to achieve zero air pollution by 2050, in synergy with the climate-neutrality efforts.² More examples of EU efforts in this respect:

- [Green Deal Going Local](#)

A political engagement and communication campaign launched in June 2020. It includes a political working group, composed of thirteen local and regional leaders and chaired by Rafal Trzaskowski, mayor of Warsaw. Green Deal Going Local also comprises a set of communication and engagement tools to accelerate the green transition at the local and regional level.

- [Environment Action Program \(8th\)](#)

Protecting, conserving and enhancing the Union's natural capital, to turn the European Union into a resource-efficient, green, and competitive low-carbon economy and to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing. The program contains the priority to help the Union address international environmental and climate challenges more effectively. The Member States are obliged to proactively engage in emerging international environmental issues.

2.2.2 EU regime on health

The complication arises when the EU standards are transposed in Member States national laws. As the European Directives cannot be applied in Member States directly, the Member States need to implement the standards prescribed in the Directive through the adoption of national laws. This means different States may have different approaches and different focuses due to different infrastructure and policy focuses. Moreover, in the environmental regulations, health is not a major priority when addressing various environmental factors, neither in the EU framework, nor in the domestic laws and policies on environmental standards. Very often, health concern is only mentioned briefly as the health effect of the environmental factors needs to be taken into account. The specific health-related measures are not defined in this type of (environmental) regulatory framework. Therefore, for health-specific issues, one still needs to resort to the regulatory regime on health.

In the EU, due to the competence issue, it is mainly the Member States that have the competence to define and deliver their national health system, and the European Union only plays a supporting and supplementary role. Therefore, when it comes to the particular issue of

² See [Press Release](#) of the European Commission of 26 October 2022.

environmental health, different health infrastructure and health policies in one country means different approaches are adopted in each country and the protection of the health from environmental factors may also take on different forms.

2.2.3 Observations

The health consequences arising from environmental factors may come from other policy areas such as the spatial planning, transport and housing. To rely solely on the health sector does not address the issue of environmental health sufficiently. Therefore, it is important to integrate the health factor in other policy domains that might have consequences or impacts on the health of the population – thus health in all policies (HiAP). When health concern is integrated in policy and decision making in other areas, the negative effects of other major development trends can be ameliorated, mutual benefits can be generated across sectors, and hopefully the ultimate goal of health protection and promotion can be reached.

2.3 Germany

2.3.1 Current policies

National level

Environmental Health: Air, Noise, Vibration and others

- [Federal Immission Control Act \(Bundes- Immissionsschutzgesetz, BImSchG\)](#)

The Act on Protection against Harmful Effects on the Environment Caused by Air Pollution, Noise, Vibration and Similar Precedents.

- [Act on Environmental Impact Assessment \(Umweltverträglichkeitsprüfung, UVPG\)](#)

The purpose of this Act is to ensure that for projects (e.g., urban planning) effective preventative environmental protection, based on uniform principles, are performed:

1. The effects on the environment are identified, described and assessed in time and comprehensively (e.g., construction noise or air pollution by materials).
2. The results of the environmental impact assessment are considered as early as possible in all cases in which authorities decide upon the approval of projects.

Environmental Health: Water

- [Federal Water Act \(Wasserhaushaltsgesetz, WHG\)³](#)

³ Implementation of the EU Water Framework Directive (2000/60/EC) in Germany (also applicable to Belgium and the Netherlands)

The goal is to achieve good status for all water bodies by 2027 at the latest, not just in terms of pollutant levels but also with regard to the status of native aquatic animal and plant species. To this end, federal management plans must be drawn up.

Health prevention

- [Health Prevention Law \(Präventionsgesetz\)](#)

The Prevention Act, passed in 2015, aims to strengthen health promotion and prevention. The main targeted of this reform are the health insurance funds. The Prevention Act comprises many single measures. It focuses on two aspects: First, it creates new institutions and structures (federal and state framework agreements, National Prevention Conference, National Prevention Forum) that are intended to improve cooperation between social insurance providers, regional authorities and other actors in health promotion and prevention policy. Secondly, it provides for a significant increase in the funds to be spent by the health insurance funds on this scope of intervention.

Federal level

"United for Environment and Health in North Rhine-Westphalia" (The Ministry for Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia 2017) (MULNV).

- See below: Local Action Plan

Local level

In terms of state organization law, the municipalities are part of the Länder and not a "third level" in the federal state structure. Therefore, the federal legislative situation about environmental health defines tasks for the executive bodies (e.g., implementing programs). These executing authorities are e.g., public health authorities (more expertise on the general health of citizens) or municipalities (more expertise on urban planning/healthy environments). They are responsible to introduce federal laws into their community and to initiate respective strategies. Moreover, executing is also characterised by a variety of activities, guidelines and actors (e.g., associations, welfare organisations, municipal providers, private providers).

2.3.2 Important actors

- [Federal Association for Prevention and Health Promotion](#)

Focuses on HiAP, strengthens the environment/setting and the public health service and health and safety competencies.

- [German Federal Environment Agency](#)

Early warning system. In charge for a healthy environment and to prevent its population from harmful environmental impacts. Evaluation of the environment and status-quo, advising government and health authorities.

- [Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection](#)

Shaping legislations in respective areas, national and international cooperation in climate change and other relevant topics. Protecting the public from environmental toxins and radiation, to promote the wise and efficient use of raw materials, to advance climate action and to ensure that natural resources are used in a way that protects the diversity of animal and plant species and preserves their habitats.

- [Robert-Koch-Institute](#)

German federal government agency and research institute responsible for disease control and prevention. Predominantly, it acts as an advisor in health-related issues, e.g., COVID-19 recommendations in national policymaking that are mostly adopted by the Federal states.

- [Federal Ministry of Health](#)

Responsible for a variety of policy areas, whereby its activities focus predominantly on the drafting of bills, ordinances and administrative regulations. The sphere of activities pursued by the Federal Ministry of Health can be condensed into the areas of health, prevention and long-term care.

- [Federal Ministry for Housing, Urban Development and Building](#)

Deals with international and national strategies and measures for the sustainable and climate-adapted design and development of cities and municipalities and with urban planning law.

- [FONA](#)

FONA is the platform of the Federal Ministry of Education and Research (BMBF) for research for sustainability. With the FONA strategy published at the end of 2020, the BMBF has aligned its research funding for climate protection and greater sustainability with the United Nations' 2030 Agenda. The FONA Strategy focuses on the global Sustainable Development Goals (SDGs) and formulates three strategic goals to which research can make a decisive contribution.

- [The Ministry for Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia \(MULNV\)](#)

New silviculture concepts, green infrastructures, water and flood protection, climate adaptation measures and the future of agricultural animal farming characterise the current work. The preservation of biodiversity and natural livelihoods is also a priority topic - as are healthy food, fair services and safe consumer products.

- Public Health Service (Öffentlicher Gesundheitsdienst)

The Public Health Service (ÖGD) includes health administration institutions at federal, state and municipal level. At the federal level, for example, the Federal Ministry of Health, federal authorities such as the Federal Centre for Health Education, the Robert Koch Institute or the Paul Ehrlich Institute (vaccines) belong to the ÖGD. The ÖGD performs a wide range of tasks with the aim of maintaining and improving public health (health protection), including health promotion tasks. Many of the framework conditions for health are shaped or at least helped to shape locally, at the municipal level, e.g., in urban development or transport planning, the provision of local childcare, education, sports and leisure facilities, local environmental protection or municipal business promotion. Municipalities are central actors in the arena of health promotion. Due to the diverse and complex determinants of health, the health-promoting engagement of the public health service cannot be carried out on its own. Rather, it needs municipal partners, for example in the youth, education, urban development or health care sectors. In the sense of integrated municipal strategies, the ÖGD can keep an eye on the whole range of health-relevant fields of action together with its municipal partners. In this way, the ÖGD can contribute to the implementation of "Health in all Policies."

2.3.3 Best practices

As described in the introduction, there is a close link between environmental health and climate change. For this reason, the following best practices not only refer directly to environmental health, but also consider projects and tools dealing with climate change.

Climate change: Heat/Water/Air

- Klimalotse

Among others, the online guide Klimalotse offers step-by-step guidance on the development of adaptation strategies for cities and municipalities. With tips, background information, templates, examples and references to further sources, the Klimalotse offers comprehensive and practical assistance. It supports the handling of heat, heavy rain and floods as well as other climate impacts. According to a survey on the impact of the German Adaptation Strategy (DAS) from 2019, the Klimalotse is one of the best-known instruments among municipalities for supporting municipal adaptation activities: Analysis of how your municipality is affected by climatic influences such as heat and drought periods, heavy rainfall or high and low water levels.

Actors	Federal Environment Agency
Target group	Policy decision-makers in cities and municipalities, environmental agencies or in urban planning.

Climate change: Heat/Water

- [SMARTilienceGoesLive](#)

In order to better protect cities and municipalities from heat and heavy rain, solutions for climate-resilient urban planning are needed. But how can these solutions look like? And how can the planning of measures be sensibly integrated into existing processes? This is where the BMBF-funded project SMARTilienceGoesLive acts and supports municipal decision-makers in implementing climate-resilient urban development.

Actors FONA – Research Institute for Sustainability Germany, University of Stuttgart.

Target group Municipal policy decision-makers.

Climate change: Heat

- [GoingVis](#)

"With a cool head in hot times": How governments can support cities on their way to heat resilience through integrative envisioning. GoingVis uses own resources of municipalities (e.g., social networks) and puts the urban community and its ideas at the centre of climate change adaptation in small municipalities. The provincial community of Boizenburg/Elbe in Mecklenburg-Western Pomerania have developed exchange platforms that mediate between the administration and citizens. They enable citizens and local actors to jointly develop visions of the future and test behavioural approaches for adapting to heat risks.

Actors Federal Ministry of Education and Research, FONA, Provinces in Mecklenburg-Western Pomerania.

Target group Citizens and local policymakers in municipalities.

Climate change: Urban Planning/Water/Heat/Air

- [Tatenbank](#)

Contains mainly local and regional practical projects and individual measures in Germany. It comprises numerous measures for adapting to the consequences of climate change in Germany. With search and filter options, one can specifically search for examples of good adaptation practice and hence find inspiration for one's own work. If you have implemented measures yourself, you can enter them in the database and thus become a good example for others.

Actors Federal Environment Agency.

Target group Citizens, local policymakers, NGO's, ministries, universities etc.

Climate change: Urban planning/Heat/Water

- [KLINMA](#)

The overall goal of the project KLINMA is to draw the attention of the population with a migration background to the consequences of climate change in Germany and to give them strategies and impulses on how we as citizens can deal with the changing conditions. The selection of topics is based on the living situation of the target groups. In addition to general information on the topic of climate change, the focus is on specific tips that enable adaptation to climate change in buildings, the living environment, gardening and health.

Actors	Association for Intercultural Work (VIA), Federal Ministry for the Environment, Nuclear Safety and Consumer Protection, Energy Agency NRW, communal institutions dealing with climate change, migrants, public health and environment.
Target group	Citizens with migration background and/or living in a deprived

Environmental Health: Noise/Air

- [Prevention campaign initiated by hessian police](#)

Noise-displays for motorcyclists and car drivers on busy roads and neighbourhoods saying, “less noisy” or “slower”. The aim is to create awareness and to sensitize the impact of traffic noise and air pollution for citizens’ health and environment. When respective drivers slow down their vehicle, the display says, “Thank you”.

Actors	Hessian Ministry of Inner Security and Sports, Hessian Police Department.
Target group	Motorcyclists and car drivers.

Environmental Health: Urban Planning/Noise/Air

- [StadtRaumMonitor NRW](#)

Evaluation of living environments considering housing, provision of healthcare, traffic and access to nature. Every user can add suggestions for improvement and/or concrete proposals.

Actors	NRW State Centre for Health, Federal Ministry of Health, Ministry for Social Affairs, Health and Integration Baden Wurttemberg, BZgA.
Target group	Citizens living in NRW

Environmental Health: Local Action Plan

- [MPUG NRW \(Masterprogramm Umwelt und Gesundheit\)](#)

The APUG NRW has proven itself in the past as a cross-departmental instrument in which it was able to ensure the transfer between science, politics and practice due to its hands-on orientation. The MPUG NRW represents an integrated action concept for the various activities at state and

municipal level and serves as an instrument for an integrated overall view of the environment, health and social situation in NRW. The MPUG NRW primarily addresses the administrative levels (municipalities), defines selected priority fields of action, contains initial recommendations for action and describes structures and processes for implementation. For example, how to ensure environmental justice (e.g., higher socioeconomic areas vs. deprived neighbourhoods) and react on noise-related burden.

Actors The Ministry for Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia, participating municipalities in NRW.

Target group Local policymakers.

2.3.4 Tools combining data with health effects

Air/Heat/Water

- [DWD GesundheitsWetter-App \(Nation-wide\):](#)

Supplies the vulnerable population groups, health care system and the general society with recent information's about alerts and weather situations related to expected health impacts. Not yet used in local politics. Costs: One-time 0,99 Euro.

Functions:

- Overview about the health-weather for every region in Germany:
- UV-Index, UV-Warning for children
- Official heat-alerts
- Pollen forecasts
- Weather sensitivity related to cardiovascular diseases, chronic pulmonary diseases and rheumatic issues
- Individual configuring warning elements and -levels
- Features for people with visual impairments
- Text-to-speech

Actors The German Meteorological Agency, Federal Ministry of Digital Affairs and Transport.

Target group General population, citizens with allergies, chronic diseases or other vulnerable conditions, elderly, universities, local policymakers and/or public service providers.

Air

[Schadstoffbelastung \(Immissionen\)](#)

It indicates the level of various pollutants.

Air/Water:

[Umweltindikatoren](#)

Health indicators such as air and water.

Environmental health in general (various environmental factors):

[Umweltportal](#)

The health portal gives current data and information on the environment at a particular location.

[NRW Umweltdaten vor Ort](#)

2.4 Belgium

2.4.1 Current policies

Categorization

The federal and Flemish legislation distinguishes between three types of mandates delegated to the municipalities, where **environmental health** belongs to the second and **health promotion** to the third:

1. **Implementation mandates:** Imposed by central governments on local governments, with no policy flexibility in their implementation. These are compulsory tasks or co-management tasks.
2. **Missions of mixed interest:** Imposed by central governments, but policy flexibility is provided among and between the Regions, e.g., environmental health, health prevention and spatial planning.
3. **Assignments of self-government:** Full policy freedom for municipalities. These are independent municipal competences that the municipality finances entirely with its own resources, e.g., health promotion.

Some examples:

- [Environmental Health Policy \(2nd mandate\)](#)

In this area, the federal government and the regions share responsibility for implementation. This also means that a large number of stakeholders and partners implement environmental policy in the country and contribute to environmental protection at national, European and international levels. Therefore, cooperation between the various government agencies in the environmental field is of the utmost importance.

- Health Prevention Policy (2nd mandate)

This Flemish act aims to improve public health, more specifically to achieve health gains at the Flemish population level and to increase the efficiency of health policy to increase in the quality of life. This is done by taking initiatives within healthcare (preventive healthcare) and beyond (Facettenbeleid). Both facets together constitute the Flemish preventive health policy. All Logos, municipalities, partner organisations and individual healthcare providers, which are recognised and/or subsidised by the Flemish Government for preventive healthcare missions, must be accountable and subject to supervision.

- Health Promotion Policy (3rd mandate)

Because there are neither resources nor obligations from the federal or Flemish government, health promotion belongs to the third category: missions of self-government. As a result, health promotion in the municipality often receives less attention than topics belonging to the second category, such as mobility, environment or sports. However, even these topics obviously have an important influence on the health of the inhabitants.

Federal level

Belgium is a country with complex institutional mechanisms. There are three levels of authority: The federal government, federated states (three regions based on territory and three communities based on language), and local governments (provinces and municipalities). Based on the division of powers between the federal government and the three regions (Flemish, Walloon and Brussels Metropolitan), **environmental powers are divided between the federal state and the regions (2nd mandate)**. Thus, the federal state - the GD Environment - is in charge of the environmental health topics belonging to its exclusive competence or of coordinating the preparation and certain aspects of the implementation of mixed competence matters, in cooperation with the regions. The regions are competent to prioritize and implements its own environmental and climate policy agenda, although their (and federal) priorities are predominantly aligned to international and EU-guidelines. However, for good cooperation between the federal government and the federated states, inter-ministerial conferences are organised regularly to unify policy agenda. The Federal government is, amongst others, in the field of **environment and climate change** responsible for:

- Coordination and implementation of international environmental policy
- Policy on the marketing of chemicals and pesticides/biocides

- Protection against ionizing radiation, including radioactive waste
- The protection of the marine environment
- National strategies and monitoring frameworks, monitoring environmental violations

Flemish Region

The Flemish government consists of the Flemish Parliament, the Flemish Government and the Flemish administration (overheid). The administration is divided into 10 policy domains and consists of a department which is supplemented by independent agencies. The Flemish government, which consists of nine ministers, jointly **establishes** policies together with the parliament. They decide on regulations on the matters for which Flanders is competent. The Flemish administration (overheid) is responsible for **implementing** policies on environmental health. It puts into practice the concrete measures decided by the government and parliament.

Flanders (and the other regions Wallonia and the Brussels-Capital Region) perform their competences in the field of:

- Spatial planning
- Nature protection and conservation
- Protection of soil, water and air, and combating noise pollution
- Waste policy
- Water production and supply
- Control of industrial activities

The issue of environmental health is addressed in the Department of Welfare, public health and family with the Agency for Care and Health. As governmental agency of Flanders, they are addressing healthy public space and the impact on health as first official authority.

Local level

The Agency for Care and Health further delegates the topic of environmental health to the third political level and organisations. These are the local governments (municipalities and smaller communities) and partners, e.g., Logo's who support and provide advice for local governments. The role of Logo (stands for Loco-regionaal gezondheidsoverleg en -organisatie) is to **spread knowledge** on a regional level and to support local authorities to implement Flemish preventive health objectives into their communal policies. Moreover, with their expertise on environment and health, they are an important actor to achieve a healthy and sustainable public space on a local level. For example, local governments have the possibility, supported by Logo and Sciensano, to conduct a municipal health survey that enables them to undertake an even better environmental analysis on which they can then base their local preventive health policy. Local authorities are, amongst others, in the field of environment and climate change responsible for:

- The implementation of the legislation (health policies) by the national federal government or the Flemish region/community and the development of environmental protection initiatives
- Municipal governments as an essential partner in achieving health promotion and disease prevention in Flanders, supported by the Logos
- Local inter-sectoral cooperation, health in all policies and evidence-based strategies

2.4.2 Important actors

- Vlaams Instituut [Gezond Leven](#)

The institution has one goal: a healthier Flanders. Supporting citizens to live healthier in an accessible way and create healthier living environments, together with the people and policies. It is an independent centre of expertise and has no commercial interest.

- [Federal Public Service for Health, Food Chain Safety and Environment](#)

It is a government agency responsible for developing and implementing policies related to environmental health, including monitoring and assessment of environmental risks to public health, such as exposure to pollutants in air, water, soil, and food. Striving for a high-quality environment for all. The management of, amongst others, integrated policy, the reduction of greenhouse gas emissions, the REACH Convention (Registration, Evaluation, Authorisation and Restriction of Chemicals), the coordination of the international environmental (health) policy, the protection of the North Sea, and the CITES convention (European Directive on Restriction of Hazardous Substances (RoHS)). Their position could be described as an inter-federal department, working together with the regions and communities on the topics of health, food security, environment which they are responsible for.

- [Sciensano](#)

Linked to the Federal Public Service for Health, Food Chain Safety and Environment. Carrying out research into policy-supporting matters or issues advisory reports.

- [Vlaamse Milieumaatschappij](#)

The VMM aims to have a positive impact on the Flemish living environment and contribute to make it climate-proof. Together with partners and stakeholders, we strive to achieve thematic results in the field of policy and to respond quickly to changing social needs. Highlighting indicators such as water and air, mapping out relevant data and predictions.

- [Bond Beter Leefmilieu](#)

General environmental pressure and lobby group, mainly active in the Flemish Region.

- [Department Welfare, Public Health and Family](#)

Prepares relevant policies of the Flemish Minister for Welfare, Public Health and Family, evaluates it and supports the minister in directing and monitoring policy implementation that is carried out by the agencies.

- [Infopunt publieke ruimte](#)

The contact partner for professionals, policy makers and citizens who want to do more with their living [environment](#). It represents 48 Flemish local authorities, over 90 companies and organizations active in the field of public space and 11 Flemish government institutions and professional federations.

2.4.3 Best practices

As described in the introduction, there is a close link between environmental health and climate change. For this reason, the following best practices not only refer directly to environmental health, but also consider projects and tools dealing with climate change.

Climate change: Heat

- [Hittekwetsbaarheidskaarten](#)

The HKK maps where target groups with increased sensitivity to heat stress live in locations with elevated heat exposure. The highest heat vulnerability regions can be seen as priorities in terms of spatial interventions.

Actor	Agency for Care and Health.
Target group	Local policymakers, universities, citizens, spatial planners.

- [Website climate and space \(Department environment\)](#)
- [Website climate adaption toolbox \(Burgermeestersconvenant\)](#)

Environmental Health: Air/Noise/Heat

- [Healthy Public Space \(Gezonde Publieke Ruimte\)](#)

A support offer for local boards and associations to help them achieve a healthy public space. Besides environmental health, other health indicators such as mental health, nutrition and cigarette smoke are considered.

Environmental Health: Urban Planning/Noise

- [Luwte-oasis](#)

Addressing the link between a green, biodiverse and high-quality environment and health as a function of silence. The oases offer invisible resources that are important for health and well-being. They offer oases of sensory calm, stillness and slowing down, but also functions as a place of retreat and concentration. Moreover, providing a safe feeling to take refuge or hide away

from all impulses for a while and form a place accessible to everyone (permanently or temporarily) and created in a supported and participatory way.

Actors Agency for Care and Health, Agency for Nature and Forest, Flemish Environmental Planning Office department (VPO), Waerbeke.

Target group General population that lives nearby a Luwte-oasis.

Environmental Health: Urban Planning

- [Ruimte voor gezondheid – practical instruments](#)

An initiative to support spatial professionals to consider the impact of the physical environment on health more in spatial visioning, plans and projects.

Actor Flemish Environmental Planning Office department (VPO).

Target group Local policymakers.

Further websites:

- [Local health indicator mobility \(Lokale gezondheidsindicator mobiliteit\)](#)
- [Developing sustainable and healthy housing environments \(Ontwerpen van toekomstbestendige en gezonde woonomgevingen\)](#)
- [Greenblue spaces as a pillar of healthy and resilient living environments \(Groenblauwe ruimtes als bouwsteen van gezonde en veerkrachtige leefomgevingen\)](#)

2.4.4 Tools combining data with health effects

Air/Noise

- [Environment Health Impact Simulator \(EHIS\)](#)

Visual illustration of the exposure to air pollution and traffic noise translated into health endpoints and health costs.

Actor Agency for Care and Health.

Target group Local policymakers, health-related institutions (e.g., health insurances).

2.5 Netherlands

2.5.1 Current policies

National level

Environmental Health

- [Environment Law \(Omgevingswet\)](#)

Within the framework, the environment plan outlines the concrete measures the municipality will take to protect, manage, use and develop the environment to improve the health of their citizens.

Health prevention

- [Prevention Act \(Preventieakkoord\)](#)

Contains agreements and strategies to make Dutch people healthier by reducing smoking, problematic alcohol use and obesity. Some strategies are related to the living environments of citizens. The central government made these agreements with more than 70 cross-sectional civil society organizations.

- [Public Health Law \(Wet publieke gezondheid\)](#)

Public health care focuses on caring for the health of society and risk groups. The law distinguishes collective prevention, infection control and youth health care. Within the legal framework, national support (VWS, RIVM etc.) focuses on the dissemination, distribution and use of knowledge. It includes websites, products such as e-magazines and fact sheets, network meetings, learning circles, webinars and customised advice and skills training courses. However, the accountability for implementing the Public Health law lies within the local health authority (GGD). The extent of support is provided in other frameworks as well, e.g., Environment Law, although in this case, the municipalities (and not the GGD) are the responsible institution.

2.5.2 Important actors

- National Institute for Public Health and the Environment ([RIVM: Rijksinstituut voor Volksgezondheid en Milieu](#))

A Dutch research institute that is an independent agency of the Ministry of Health, Welfare and Sport. RIVM performs tasks to promote public health and a safe living environment by conducting research and collecting knowledge worldwide. RIVM – department environmental health and safety: In charge for a healthy, safe and sustainable environment and supports public health authorities (GGD).

- Ministry of Health, Welfare and Sport (Ministerie van Volksgezondheid, Welzijn en Sport [VWS](#))

The Ministry of Health, Welfare and Sport is the Dutch Ministry responsible for public health, health care, quality of life, social work and sport. It is responsible for public health policy and promoting healthy living environments.

- The Ministry of Infrastructure and the Environment

Responsible for national policies and standards and oversees environmental legislation and regulation. Rijkswaterstaat Environment (RWS) is part of the Ministry of Infrastructure and the Environment, and is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands. It performs various knowledge and implementation tasks relating to the environment. Rijkswaterstaat Environment also manages programmes for other clients than the Ministry of Infrastructure and the Environment, such as local authorities and other ministries.

- [ZonMw](#)

Stimulates the entire innovation cycle with a range of grant programmes, since 2001. From fundamental research to the implementation of new treatments, preventive interventions and improvements to the structure of healthcare. ZonMw is an intermediary between research, policy and practice.

- [Health Council of the Netherlands \(Gezondheidsraad\)](#)

An independent scientific advisory body for government and parliament, on issues related to public health, including environmental health.

- [Municipal or Community Health Service \(GGD\)](#)

As an advising partner, the public health authority strives to collaborate with other departments and regions of GGD (25 authorities in 5 regions) to develop an integrative approach, as environmental health covers multiple policy domains. Moreover, they are debating how to refer results of already piloted tools (e.g., rekentool luchtkwaliteit) effectively to local policymakers.

2.5.3 Best practices

As described in the introduction, there is a close link between environmental health and climate change. For this reason, the following best practices not only refer directly to environmental health, but also consider projects and tools dealing with climate change.

Environmental Health: Urban Planning/Air/Noise/Soil

- [LEGO research](#)

Answering the question what integrative knowledge and support is needed for a health-promoting and protecting living environment at local and regional level?

- Integrated collaboration requires a clear framework for cooperation, skills and shared vision
- Although there is a lot of knowledge available, it is not always easy to use, insufficiently integrated and difficult to find
- Need of good practices
- Strengthen advisory role of various advisers by increasing capacity, skills and knowledge

Actor The Ministry of Health, Welfare and Sport, RIVM.
 Target group Local policymakers, spatial and urban planners.

Environmental Health: Air/Noise/Heat/Water/Radiation

- [Brabantscan](#)

The Brabantscan is a knowledge hub for health information on the province of North Brabant and is a collaboration between GGD Brabant-Zuidoost, GGD Hart voor Brabant and GGD West-Brabant. The Brabantscan is primarily a dashboard, with health information for adults, the elderly, children and young people. In addition, data on the environment are available.

Actors Public Health Authorities Brabant (GGD).
 Target group General population with access to an internet connection.

Environmental Health: Air

- [Hollandse Luchten](#)

The aim of *Hollandse Luchten* is to gain insight into air quality by setting up the broadest possible measurement network. Analysing the results together with experts that creates a shared picture of the situation. Thus, the province aims to build the basis for a conversation about causes of air pollution and possible solutions. This project focuses also on citizen science and measuring the living environment with sensor technology.

Actors Province of North-Holland, RIVM, Public Health Authority Amsterdam (GGD).
 Target group Scientists, universities and local policymakers.

Environmental Health: Urban Planning

- [Advisering over gezondheid bij ruimtelijke plan- en visievorming](#)

Aims to prevent and promote health of society in a sustainable matter, supporting municipalities with the implementation process of national frameworks, advisory function for topics with a greater public health impact.

Actors Public Health Authority Brabant (GGD), spatial urban planners and architects.
 Target group Local policymakers.

2.5.4 Tools combining data with health effects

- [Environmental Health Atlas \(Atlas Leefomgeving\)](#)

The atlas is a web-based tool that provides information on the environment and health in NL, including the quality of air, water, and soil, as well as various health indicators. It also provides information on health outcomes such mortality and morbidity rates.

Air

- [GGD Rekentool Luchtkwaliteit](#)

GGD received questions from municipalities on the evidence of the impact of air quality on health, including the request to provide insight into the impact of air quality on health. Therefore, GGD started investigating exposure to air pollution and its health effects as air quality is the environmental factor with the largest impact on health.

Actors	GGD Brabant and other GGD regions (e.g., GGD Gelderland).
Target group	Local policymakers.

Water

- [BlueHealth \(2016-2020\) \(Nation-wide\)](#)

Pan-European research initiative that has increased understanding of how urban blue spaces can affect people's wellbeing. The BlueHealth project has developed scenarios to identify these drivers, their interaction and contribution to water and health. The scenarios offer policymakers and stakeholders a platform for discussion on the health benefits of water spaces and what risks need to be remediated. RIVM coordinated the BlueHealth scenarios and carried out a case study on the health effects of urban swim waters.

Actor	National Institute for Public Health and the Environment (RIVM), European Union Funding Program Horizon 2020, different multidisciplinary philanthropies.
Target group	Scientists, local policymakers, citizens.

3. Environmental Health Programs

The mentioned environmental health programs act as an example for how programs and policies are implemented on a local level.

3.1 Germany

- [APUG: Action Program Environment and Health \(Aktionsprogramm Umwelt und Gesundheit\)](#)

The action program links policy fields of environmental, health and consumer protection at the relevant ministries, higher federal authority level as well as in municipalities and additionally, involves non-governmental organizations (NGOs/NGOs). The Action Program Environment and

Health' (APUG NRW) message is environment and health belong together - environmental protection is sustainable health care. APUG contains strategies, measures and goals for comprehensively addressing the health consequences of environmental impacts on humans. As the program ended in 2010, a follow-up strategy was developed called "Master Plan Environment and Health" (MPUG). In so doing, the program is delegated further to the federal states and introduced on a community level. In 2021, the program got renamed due to political changes and debates.

Federal level

The implementation of national environmental health recommendations and laws occur on a federal level by the MULNV, with own legislative competencies and resulting autonomy. For example, the national APUG program was adopted in the federal state NRW by implementing its own [APUG NRW](#). The measures, projects and working materials initiated and implemented in the past dealt with traffic noise and air pollutants, communication strategies on the relationship between environment, health and traffic, concepts for **more environmentally friendly and healthy urban areas**, as well as with the topics of **mobility management and health promotion** (2000-2010). For the MPUG NRW (2013-2021), an evaluation and assessment of the results and experiences of APUG NRW was carried out on behalf of the MULNV. As a result, the structures and forms of work developed within the framework of APUG NRW were assessed as sustainable and recommended for further development.

Local level

Within the APUG/MPUG program, different projects about 'how to locally implement the program' were conducted. For example, a project focusing on the municipal cooperation structures for the consideration of environmental and health concerns in planning procedures ([Deutsches Institut für Urbanistik DIFU 2007](#)). Several municipalities in NRW participated, including Kreis Düren, an engaging partner within the euPrevent network.

3.2 Belgium

- [National Environment and Health Action Plan \(NEHAP\)](#)⁴

This is a cooperation agreement between all the ministers of health and environment (as well as their respective administrations). The NEHAP has a **political part** (collaboration of ministers) where strategic lines are set out. In the **administrative part** (i.e., collaboration between governmental administrations), these strategic lines are translated into specific projects and working groups. Each government pays a part for these projects. Examples of these 'all-Belgian'

⁴ Based on the European Action Plan (WHO 1994), about 40 EU National Environment and Health Action Plans (NEHAPs) have been developed.

projects are an ozone and heat plan, the monitoring of exotic mosquitoes, the education of health professionals in environment-health topics, a national plan on endocrine disruptors etc. The responsible stakeholders are currently working on a third version of NEHAP (2nd until 2018), to set out the strategic ambitions for the coming years. Unfortunately, it is still under development on a political level. In this regard, the Belgian NEHAP should not be considered as a governmental strategy but as a **policy consulting mechanism** (Forbat 2015: 9).

This action plan provides real added value by providing a coherent framework for all public partners in Belgium. Within NEHAP, considerable potential is created for collaborations, for example between the administrations involved, the authorities and civil society or between authorities and researchers. NEHAP is multidisciplinary and aims to cover all fronts - from politics and science to administration, information and education. NEHAP also encourages a multisectoral approach by building bridges between all policy programs related to environment and health (agriculture, transport, energy, industry).

To sum up, it contains an overview of the scientific data currently available on environmental health issues. It comprises an inventory of actions implemented at the municipal, regional, and federal levels. It reports on the general situation of environment-health relations in the country. Finally, it proposes priorities for action and a general framework applicable to all actors. The cooperation agreement of December 2003 defines the framework for cooperation between the federal government, the Regions and the Communities, thus enabling the concrete implementation of NEHAP. NEHAP provides real added value by providing a coherent framework for all public partners in Belgium. Within NEHAP, considerable potential is created for collaborations, for example between the administrations involved, the authorities and civil society or between authorities and researchers. NEHAP is multidisciplinary and aims to cover all fronts - from politics and science to administration, information and education. NEHAP also encourages a multisectoral approach by building bridges between all policy programs related to environment and health (agriculture, transport, energy, industry).

Local level

Regional and local authorities are important actors in the practical application of NEHAPs by implementing thematic prioritized [projects](#). In their framing, **civil society is considered as an essential partner**, participating in the decision-making process whenever possible.

3.3 Netherlands

- [PGGL: Healthy Green Environment \(Gezonde Groene Leefomgeving\)](#)

This national program is based on the Environment Law. The ministry of VWS has mandated the National Institute for Public Health and the Environment (RIVM), to set up a national healthy green living environment program, in collaboration with ZonMw. In doing so, RIVM assists in establishing the strategic lines around healthy living and continues to build on the existing

initiatives in place⁵. The objective is to tackle environmental health issues from an integrative perspective. Moreover, the program aims to provide policymakers at municipalities, GGDs and other professionals with knowledge, data, infrastructure and practical tools to be able to include health more integrally in their policy on the physical living environment. However, the central government - in addition to its normative and regulatory tasks - can also facilitate regional and local parties in the field of healthy green living. This is done with a focus on the social domain, such as the Healthy School, the Prevention Act, the National Heat Plan or the Green Deal for a sustainable future.

Provincial level

Cooperation with GGD's to identify cross-provincial issues and develop 'transnational' concepts and approaches related to environmental health. With providing preparatory frameworks and approaches, provinces can support their municipality and communities in environmental health questions, but also vice versa.

Local level

The national program Healthy Green Environment aims to provide local policymakers with guidance on how to develop a healthy green living environment together with its citizens, considering different indicators (e.g., heat, water, air). Resulting, municipalities can embed health in environmental visions, environmental plans and programs independently. To implement the program on a community-level, a connection with and cooperation between different policy sectors and stakeholders is essential: governments, provinces, regions and municipalities, accompanied with non-governmental organizations (HiAP approach). In so doing, the local public health authorities (GGD) have an advisory function for the executive organ, the municipalities and communities. For example, quantitative data (e.g., air pollution) is demanded which can be easily used for advising communities in policymaking.

⁵ www.groenvoorgezondbeleid.nl

4. Comparison

4.1 Policies

Country	Policy implementation structure
Germany	Frameworks and regulations on environmental health are determined on a national level. However, they are implemented through a federal structure with own legislative competencies. This means that the Länder have the legal responsibility to implement national guidelines on a federal level. In so doing, public authorities, municipalities and smaller communities are executive bodies (e.g., implementing projects). However, they are part of the federal states and do not illustrate a third level with wide-ranging autonomy.
Belgium	The responsibility of health-related topics, legislative competencies and the implementation of such laws are fragmented. In terms of environmental health, the federal government (represents whole Belgium) and the regions share competencies. These competencies are further delegated to the respective communal and local governments (e.g., communities).
Netherlands	Pursuing a decentralized approach with municipalities as the responsible actor to design and implement frameworks and guidelines for healthy environments (Environment Act). National support focuses on the dissemination, distribution and use of knowledge and regional support from the GGD. However, the government is authorized to implement laws for a healthy public space as well (e.g., Program Healthy Green Living PGGL).

Table 1 - Policy implementation structure

Country	How do national environmental health policies reach the local level?
Germany	National government → Federal State → Municipalities APUG/MPUG ⁶ → APUG NRW → Projects e.g., Klimalotse Public Health Authorities as advising and supporting actor
Belgium	Federal government/Flemish government (shared) → Agency for Care and Health → Municipalities NEHAP ⁷ → strategic lines of NEHAP → Working groups on different health topics (e.g., heat) Logo's as advisory as advising and supporting actor

⁶ Aktionsprogramm/Masterplan Umwelt und Gesundheit (2000-2020)

⁷ National Environment and Health Action Plan (2002-Present)

Netherlands	National government → Province → Municipalities PGGL ⁸ → No active role ⁹ → Integrative approach GGD's as advisory as advising and supporting actor
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Table 2 - How do national environmental health policy reach the local level?

Country	Program	Responsible authority	Which environmental health topics?	Based on which legal framework(s)?
Germany	APUG/MPUG	Legislation: Federal Environment Agency, MULNV and other relevant ministries Implementation: MULNV, German municipalities	APUG: Focus on Children and Adolescents regarding air pollution, chemical burden, noise radiation, environmental health risks MPUG: Focus on action plans for municipalities, environmental justice	Federal Immission Control Act Act on Environmental Impact Assessment National Prevention Act ...
Belgium	NEHAP (until 2018)	Legislation: Federal government, Belgian Regions and Communities Implementation: Belgian municipalities	Ozone and heat, human biomonitoring, exotic mosquitoes and other vectors, impacts of environment on health in educational curriculums, chemicals.	NEHAP
Netherlands	PGGL	Legislation: RIVM, VWS Implementation: ZonMw, Dutch municipalities	Focus on general population: spatial and urban planning, heat, biodiversity, (indoor) air pollution, security and safety	Environment Law Public Health Law Act on Environmental Impact Assessment National Prevention Act ...

Table 3 - Overview on national environmental health programs

4.2 Projects and Tools

Indicator	Resources	Applied in
Heat	SMARTIienceGoesLive, Hittekwaarsbaarskaarten, GoingVis	DE, BE
Air	Hollandse Luchten, GGD rekentool luchtkwaliteit, prevention campaign	NL, DE, BE

⁸ Programma Gezonde Groene Leefomgeving (Start 2022)

⁹ No active role = monitoring, guiding, advising

	Hesse, EHIS tool	
Noise	Luwte-oasis, prevention campaign Hesse, EHIS tool	NL, DE, BE
Water	BlueHealth	NL
Urban planning	Advisering over gezondheid bij ruimtelijke plan- en visievorming, ruimte voor gezondheid – praktische instrumenten	BE, NL
General	StadtRaumMonitor, Klimatolse, KLINMA, Brabantscan, LEGO-research, Gezonde Publieke Ruimte, Tatenbank	BE, NL, DE

Table 4 - Included projects and tools categorized according to indicator

- The implementation of environmental health policy is decentralized in all countries (not the legislation)
- Based on an EU Directive, every country implemented an environmental permit, a prerequisite for the construction and changes of major infrastructures such as oil refineries, nuclear power plants, chemical plants, roads, railways, and oil and gas pipelines.
- Every country has introduced a national prevention act to promote and strengthen population health to reduce morbidity and mortality rates. It is indirectly associated with environmental health, e.g., introduction of a smoke-free school.
- Every country has a comparable local public health authority, with minor differences in strategic orientation, e.g., primary prevention vs. secondary prevention.
- The legislation of environmental health policy in Germany is centralised with the national government as responsible actor. However, federal states have the authority to implement their own perspective of a passed national guideline.
- Compared to Germany and Netherlands, the Belgian policy structure is complex and therefore, legislation and implementation of environmental health policies is spread across several political levels and associated with many stakeholders and different autonomy.

Table 4 provides an overview about included projects and tools in all three countries, listed per indicator. All projects and tools with a research or database focus, regardless of the country, have similar methods and approaches, e.g., addressing local policymakers. The development of materials or measures have the intention to support and to provide evidence for certain environmental health issues that are considered in policymaking. For example, the *GGD Rekentool Luchtkwaliteit* supplies relevant stakeholders with facts about health impacts of air pollution on vulnerable groups.

On the German side, the database *Tatenbank* is inspiring for local policymakers to determine what kind of e.g., air pollution measures they can implement in their community. An interesting difference between Germany and the Netherlands is the provision of a database to share best practices and local projects about environmental health. In Germany, the Federal Environment Agency provides with *Tatenbank* a valuable and inspiring overview of project examples in the field of environmental health, which is an important resource for policymakers, other health professionals and anyone who is interested (free accessible and also available on a local level¹⁰). It is not only helpful to get new project ideas, but most important, how the cooperation between relevant actors took place, how did they work together and what are the main learnings. Currently, in the Netherlands, local policymakers are requesting such a database comprising concrete project examples and guidance on how to create a healthy green environment: importance of a cross-sectional collaboration (HiAP), responsibilities and capabilities that are necessary to consider when planning and carrying out relevant projects (Kamerbrief VWS 2021). Especially the implementation of the Environment Law (*Omgevingswet*) intensified the demand for a supportive database or exchange platform.

Similar to the *GGD Rekentool Luchtkwaliteit*, the Belgian *EHIS tool* illustrates a promising instrument in theory, as it transfers air pollution data into health endpoints and economic costs. However, even though it provides the end-user (mainly policymakers) with a lot of detailed information, it is very complex to use in practice and therefore not accessible by citizens. In order to use this tool properly, guidance from a health professional is necessary.

Structural based interventions acknowledge that people's health and their health-related behaviour are determined by factors that they cannot influence themselves. In more detail, the included structural projects and tools focus on localities like crowded neighbourhoods, busy cities or roads with a high traffic density, but also on recommendations for municipalities to implement adaptive measures to improve citizens' environments and health. Again, the main target group in this category are local policymakers as they have the political power to change citizens' settings and public environments. For example, a successful structural project initiated from Belgian policymakers with early-on citizen participation are the Belgian *Luwte-oases*, calming and green zones of silence within crowded and noisy neighbourhoods or busy working environments.

All the projects and tools that are addressing local policymakers or authorized institutions are essential to create healthy public spaces, to adapt to climate change, but also to incentivize citizens to make healthier choices in their personal life (e.g., visiting the new green park by foot instead of E-scooter, walking 10k steps a day). Yet, it seems to be effective to supplement this approach with behavioural interventions to directly activate actions that indirectly contribute to a healthier environment. For example, the *KLINMA* project in NRW incorporates citizens with migration background and deprived socio-economic status to create awareness for a healthy and

¹⁰ www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/werkzeuge-der-anpassung/tatenbank

sustainable living environment. The project focuses on indicators like housing, gardening and biodiversity. Although similar awareness projects in the Netherlands and Belgium are not included in this research, the current debate in the Netherlands about reinventing citizens' gardens to a more climate friendly and greener environment (plants instead of stone slabs¹¹) is another example of action. To summarize, these types of projects can also have an impact on accomplishing a healthier environment and creates awareness regarding the importance of environmental health in the general society at the same time.

5. Conclusion

This normative analysis deals with the current environmental health policy situation in Germany, Belgium and Netherlands, entailing respective policy structures, national programs and policies, best practices, tools and important actors. Moreover, a visual comparison between above-mentioned aspects was done. The overall emphasis in this report were the cross-border regions within the EMR.

First, the policy implementation structures on environmental health are likewise in terms of a decentralized approach, meaning the implementation of acts and frameworks on a municipal responsibility. Moreover, in every country, it became obvious that introducing environmental health acts on a national level is defined by an overarching and overlapping system with many ministries, stakeholders and further involved laws. However, the delegation of these laws towards a local level varies between Germany, Belgium and Netherlands due to different political layers and their tasks.

Second, similarities were found in the national programs and policies of the included countries. Of course, this is mainly due to international agreements such as the European Environmental Impact Assessment. Furthermore, all the countries introduced a national prevention law that partly overlaps with environmental health issues and in general, makes an important contribution to healthy public spaces. The national programs are dealing with environmental health aspects that are similar in their implementation (-structure), but slightly have different focuses e.g., Germany vs. Netherlands.

Third, the included projects and tools have predominantly very similar target groups (local policymakers) with the exception of behavioural projects, which aim to influence decision-making of citizens directly. Of course, every tool and initiative has its positive impacts on environmental health, but also comes with disadvantages in the field of applicability in other countries or settings, usability and validity.

To summarize, the topic of environmental health is very complex and wide-ranging, connected with many different international and national political institutions, ministries, laws and layers.

¹¹ www.tegelsluit.nl

This means that not every aspect, project, law or ministries were considered in this report. For example, not including further behavioural projects and not defining every important actor related to environmental health. In a nutshell, this report is neither complete nor gives a representative picture about the overall situation but provides a basic understanding to certain environmental aspects and important policies.

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