



World Health
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Europe



UNITED NATIONS
ECONOMIC COMMISSION FOR EUROPE

EUROPEAN ENVIRONMENT
AND HEALTH PROCESS

Improving environment and health in Europe:

*how far have
we gotten?*



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Abstract

Pioneering the health-in-all-policies approach, the health ministries and environment ministries of WHO European Region Member States, together with many other European stakeholders, have gathered in five ministerial conferences, beginning in 1989, to identify priorities and develop appropriate policies for environment and health. At the latest such ministerial conference, held in Parma, Italy, in 2010, ministers and stakeholders committed themselves to pursuing a set of goals and targets on: air quality; water and sanitation; children's daily environments; chemical safety and asbestos-related disease; climate change; and more. In 2015, at the so-called Mid-Term Review, Member States met to assess progress in implementing the Parma Agenda and to discuss future directions, in view of the upcoming 6th Ministerial Conference on Environment and Health, scheduled for 2017. As described in this Report, substantial progress has been made in several, but not all, domains; policies at the national and international levels have greatly advanced and produced measurable gains, but some indicators remain at levels that are of concern. More efforts are needed to reduce the still high burden of disease due to environmental factors and its unequal distribution among European citizens.

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The loss of one out of four years of healthy life results from where and how people live and interact with their environment.

The environment has always been crucial to sustaining human health and well-being, through the multiple benefits provided by ecosystems, clean air and safe drinking-water. The environment is a source of both health and disease and is an essential resource for the survival and development of people and societies.

An abundance of natural resources has existed for a long time. Although often inequitably distributed, such resources have enabled economic growth, the spread of prosperity and human development. The past 60 years, known as the Great Acceleration, have seen urbanization, new technologies, economic activity, literacy and prosperity lift hundreds of millions of people out of poverty. In this context, the advancement of public health and medicine has extended the longevity, health and well-being of billions of people.

However, there has been a price to pay: social inequality; climate change; deforestation; a loss of biodiversity; the adverse effects on health of hazardous chemicals, soil, air and water pollution, and waste generation; as well as increased physical inactivity. From a planetary perspective, significant environmental processes and systems are today driven by human consumption and production rather than by the force of nature, thereby pushing the boundaries of ecosystems to their limits.

We produce, consume and live unsustainably, and the scientific evidence accumulated over recent decades clearly indicates that, unless the current trends change, governments and societies will face unprecedented levels of pollution and degradation. Therefore, we must set a different development pathway for the future.

Recognizing the mutual dependence of human health, well-being and environmental determinants, Member States in the WHO European Region and their partners gathered, in 1989, at the first of a series of European ministerial conferences on environment and health. The 1989 Frankfurt Conference was groundbreaking, pioneering the health-in-all-policies concept. This intersectoral partnership process is founded on an understanding of a clean and harmonious environment – in which physical, psychological, social and aesthetic factors are all taken into account and where the environment is regarded as a resource for improving health and increasing well-being.

The close linkages between the European environment and health process and the policy bodies of WHO and the United Nations Economic Commission for Europe (UNECE) provide a broad and inclusive platform for the participation of all those concerned, ensuring consistency and legitimacy of the process. Supported by rigorous evidence, this unique intersectoral partnership process also actively involves relevant intergovernmental and nongovernmental organizations with an understanding of people's right to participate in the governance of issues important to their lives.

The European environment and health process fosters a common concern for the future of health and the environment within a myriad of other global and regional developments and frameworks relevant to both sectors. The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the Transport, Health and Environment Pan-European Programme, both of which are rooted in the outcomes of the Third Ministerial Conference on Environment and Health, held in London in 1999, are just two examples of the innovative

solutions developed within the European environment and health process that address complex and urgent problems.

The Environmental Health Action Plan for Europe, adopted in 1994 in Helsinki, and the subsequent Children's Environment and Health Action Plan for Europe, adopted in Budapest in 2004, closely linked regional priorities, implementation strategies and actions at the national level to the benefit of Member States.

The Parma Conference in 2010 represented a significant step forward. It set time-bound targets, highlighted inequalities in environment and health, and focused attention on the need for greater political leadership and engagement at a time of economic and financial downturn across Europe. As background to assessing the implementation of the Parma commitments, this report demonstrates that significant, yet uneven, progress has been made.

Today, the post-2015 sustainable development agenda and Health 2020, the new European health policy framework, provide the platforms needed to promote an integrated response to the underlying social, economic and environmental determinants of health. Such an integrated response is a precondition for any further substantial and sustainable gains in health and well-being in Europe. The post-2015 sustainable development goals and related targets, which remain under negotiation, as presented in this Report,

provide a good point of departure for shaping the European environment and health process as an important component in the implementation mechanism for the post-2015 agenda. Multilateral environmental agreements and mechanisms provide a significant opportunity to implement sustainable development goals. Greater policy convergence between the Environment for Europe process and the European environment and health process would further capitalize on the synergies between the health and environment sectors. Such a convergence would ensure the integration of the social, economic and environmental dimensions for the further improvement of health and well-being, including the reduction of inequities and injustices and the provision of effective governance of and decision-making on common causes.

In addition to continuing the work towards meeting the Parma targets, the period until the next ministerial conference in 2017 should be one of further assessment of the environment and health challenges of the 21st century. The Great Acceleration, climate change and other unprecedented global and transboundary challenges can be effectively addressed only if we acknowledge that business as usual is not sufficient. The highly complex and systemic changes that we face can be effectively addressed only through a different approach, a shift in paradigm, rather than ineffectual incremental changes. We hope that this report will stimulate constructive reflection on the way forward.

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What factors can governments influence to protect and promote human health? This question is the starting point of modern public health. In the answer to this question, the central role of the environment has long been evident. In the 1980s, health and environment officials in the WHO European Region drew the necessary conclusions from the evidence available and initiated a joint effort to address the increasingly pressing challenges – the environment and health process that continues to this day.

The First Ministerial Conference on Environment and Health, in 1989, coincided with the beginning of a new historical era – the end of the Cold War. The drastic political change in countries in the eastern part of the Region opened up previously unthinkable opportunities for open exchange, cooperation, and true partnerships throughout the Region. Twenty-five years later, we can recognize important achievements. Many people in our Region live longer and better than ever before; and their environments are cleaner, healthier and more pleasant. Yet, more needs to be done.

With the Parma Declaration, the Fifth Ministerial Conference on Environment and Health, in 2010, acknowledged that earlier commitments had not been fully implemented – in particular, those set out to improve children's environment. The four regional priority goals in the Declaration are: healthy water and sanitation; clean

air; safe daily environments for children; and protection from hazardous chemical and physical agents. They are important prerequisites for health that are still not available to everybody in our Region. Environmental health challenges – old and new – require regulations and active policies for us to meet our time-bound Parma commitments by the end of 2015 and 2020.

In these times of economic austerity, investments in health and environmental protection are under particular scrutiny. It is our responsibility to demonstrate the crucial role of environment and health in a sustainable economy. Moreover, we need to be vigilant, to avoid having our societies drift apart. Growing inequalities can be recognized, not only between countries in our Region, but also within them, between urban and rural areas, and between the rich and poor. These developments are alarming.

As we move closer to the Sixth Ministerial Conference, we need to take stock and ask ourselves not only how far we have come in meeting specific targets, but also where we stand, in general, in the environment and health process. Moreover, we need to ask what we have learned, where we want to go and what we can expect to gain. Most importantly, we need to ask what we ourselves, our country or organization can contribute to the continuing progress towards making Europe an even better place to live – for all of us.

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7th EAP	European Union Environment Action Programme to 2020
ARIMMORA	Advanced Research on Interaction Mechanisms of electroMagnetic exposures with Organisms for Risk Assessment
CEA	French Alternative Energies and Atomic Energy Commission
CEHAPE	Children's Environment and Health Action Plan for Europe
CNR	National Research Council, Italy
CREAL	Centre for Research on Environmental Epidemiology
CSIC	National Research Council, Spain
DG	EC Directorate-General
DTU	Technical University of Denmark
EEA	European Environment Agency
EC	European Commission
EEHYC	European Environment and Health Youth Coalition
ENHIS	Environment and Health Information System
EU	European Union
EU-28	The Member States of the European Union as of 1 July 2013
Europe 2020	European Union ten-year growth and jobs strategy
FIOH	Finnish Institute of Occupational Health
FP	EU Framework Programmes for Research and Technological Development
GLAAS	UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water
HEAL	Health and Environment Alliance
Health 2020	WHO's new health policy framework for the European Region
HITEA	Health effects of indoor pollutants: integrating microbial, toxicological and epidemiological approaches
IARC	International Agency for Research on Cancer
INERIS	National Institute for Industrial Environment and Risks, France
INSERM	National Institute of Health and Medical Research, France
IOM	Institute of Occupational Medicine, United Kingdom
IPCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
ISS	National Institute of Health, Italy
NILU	Norwegian Institute for Air Research
NIPH	Norwegian Institute of Public Health

OECD	Organisation for Economic Co-operation and Development
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
PHE	Public Health England
REVIHAAP	Review of evidence on health aspects of air pollution project
RIVM	National Institute for Public Health and the Environment, Netherlands
Rio+20	UN Conference on Sustainable Development held in 2012 in Rio de Janeiro
SAICM	Strategic Approach to International Chemicals Management
SEARCH	School Environment and Respiratory Health of Children
SINPHONIE	Schools Indoor Pollution and Health Observatory Network in Europe
THE PEP	Transport, Health and Environment Pan-European Programme
THL	National Institute for Health and Welfare, Finland
TNO	Netherlands Organization for Applied Scientific Research
UN	United Nations
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WECF	Women in Europe for a Common Future

Technical terms

dBA	decibel, A-weighted
EDC	endocrine disrupting chemicals
IQ	intelligence quotient
µg	microgram
mSv	milli-Sievert, a unit of ionizing radiation
NGO	nongovernmental organization
PCBs	polychlorinated biphenyls
PM _{2.5}	particulate matter with an aerodynamic diameter smaller than 2.5 µm
PM ₁₀	particulate matter with an aerodynamic diameter smaller than 10 µm
POPs	persistent organic pollutants
PRTRs	pollutant release and transfer registers
RPGs	regional priority goals



The Fifth Ministerial Conference on Environment and Health, held in Parma, Italy, in 2010, brought together the health ministries and environment ministries of the 53 WHO European Region Member States. Together with other international organizations and stakeholders, they agreed on a common agenda for action on environment and health for Europe. The series of ministerial conferences, started in 1989, helped Member States realize that the health and environment sectors have a common concern for the environmental threats to human health in the Region and a shared commitment to identify, reduce and eliminate them.

Over time, the priorities for action of consecutive ministerial conferences changed and developed. Current priority themes include water and sanitation, indoor and outdoor air quality, children's daily environments (homes, schools, urban spaces), chemical and physical agents, climate change, and environmental health inequalities. The Parma Ministerial Declaration, the document that sets out the European agenda, includes five time-bound targets.

The Mid-term Review meeting of the European environment and health process in April 2015, a key milestone leading up to the Sixth Ministerial Conference on Environment and Health, evaluated the progress made in implementing the Parma agenda and its targets. The present report describes the key findings of this assessment.

Despite substantial progress in environment and health in the last few decades, approximately a quarter of Europe's burden of disease is attributable to exposure to environmental factors. Four out of five Europeans die from noncommunicable diseases. This is driven, among other things, by ageing populations and such determinants as poor diet, tobacco and alcohol consumption, and

sedentary lifestyle, which have long been identified as underlying causes. Strong evidence, however, now links such health outcomes as cardiovascular and respiratory diseases, type 2 diabetes and cancer to air pollution, climate change, and chemical and physical agents, thus suggesting a stronger relevance for several environmental factors than previously thought. Such evidence offers the potential to achieve significant health gains through reductions in harmful exposures and risk factors.

Nowadays, more than 90% of WHO European Region citizens have access to improved water and sanitation facilities. However, serious inequalities persist, notably for poor and rural populations and marginalized and vulnerable groups, with 67 million people lacking access to basic sanitation and 100 million lacking piped drinking-water on their premises. As a consequence, 10 deaths a day from diarrhoea are still attributable to unsafe water and poor sanitation and hygiene in the Region. The Parma Declaration set the goal of providing each child with safe water and sanitation by 2020 – in particular, in educational and day-care facilities. Progress has been slow. A key instrument for triggering action at the national level is the Protocol on Water and Health, a policy instrument that emerged from the Third Ministerial Conference on Environment and Health, held in London, in 1999, with the aim of protecting human health and well-being through better water management; it is jointly supported by the WHO Regional Office for Europe and the United Nations Economic Commission for Europe.

Air pollution is the largest single environmental health risk factor. About 600 000 premature deaths were caused by ambient (outdoor) and indoor air pollution in the WHO European Region in 2012. Europeans are exposed to harmful pollutants in the air, such as particulate matter, an important risk factor for major

noncommunicable diseases, including cardiovascular diseases, cancer and childhood asthma. In countries where data on air quality monitoring are available, more than 80% of the population is exposed to annual levels of particulate matter above WHO's air quality guidelines. All socioeconomic groups experience premature deaths and diseases due to ambient air pollution, but those from household air pollution are more than five times greater in low- and middle-income countries than in high-income countries. These data underscore the need to develop suitable policies that address improving air quality for the protection of public health. In this regard, the amendments of the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone and the Protocol on Heavy Metals to the Convention on Long-range Transboundary Air Pollution, both adopted in 2012, will contribute, among other things, to further decreasing the emissions of particulate matter, ozone precursors and heavy metals in the WHO European Region.

Globally, the WHO European Region has the highest attributable mortality to tobacco, and exposure to tobacco smoke negatively impacts health across the life-course. Following WHO indoor air quality guidelines and the WHO Framework Convention on Tobacco Control, Member States agreed in Parma to ensure that kindergartens, schools and public recreational settings are free of tobacco by 2015. Progress has been substantial (for example, 38 Member States have banned smoking in schools), but the goal has yet to be met.

Providing healthy and safe physical environments for children in their daily life is another time-bound goal, set for 2020. Significant progress has been made in safeguarding children below the age of 14 years against unintentional and road traffic injuries, though progress has been uneven across the Region – for example, a decrease in deaths of more than 60% in high-income countries between 2000 and 2011, compared with 34% in low- and medium-income countries. Further policy and infrastructure improvements

are still needed for active transport, such as cycling and walking to school, and for enabling physical activity in all settings of a child's life. This has a role in decreasing the prevalence of overweight and obese children, a major public health concern. The Paris Declaration, adopted by the Fourth High Level Meeting on Transport, Environment and Health in 2014, provides a clear policy framework to take action.

Various measures have been taken around the Region to prevent diseases arising from chemicals and to reduce exposure to harmful substances, carcinogens, mutagens and reproductive toxicants. A notable step forward was the adoption, in 2013, of the Minamata Convention on Mercury. It aims to protect health and the environment from highly toxic mercury, which remains a cause for concern. Each year, 1.8 million children, who are especially vulnerable to mercury-related neurological effects, are born in the EU with methylmercury levels above the adjusted safety limit of 0.58 µg/g (in hair).

The Parma Declaration also mandates that national programmes be developed, by 2015, to eliminate asbestos-related diseases. Asbestos is responsible for about 50% of all deaths from occupational cancer and is one of most widespread environmental health hazards in the Region. WHO and the International Labour Organization consider the most efficient way to eliminate asbestos-related diseases to be stopping the use of all forms of asbestos. However, as of 2014, about 300 million people in the WHO European Region are still living in countries that have not banned the use of all forms of asbestos. Even after banning its use, it still stays in the environment. Safe removal of asbestos and disposal of asbestos-containing waste are still challenges in countries that banned the use of all forms of asbestos. A limited number of countries (11 of 31 that responded to a WHO survey) are conducting periodic inventory reviews of materials still containing asbestos.

Climate change has serious health consequences. Climate warming is unequivocal, and action today strives to limit it as much as possible. Member

States have acted rapidly in response to such immediate health risks of climate change as heatwaves and outbreaks of infectious diseases. Because of short- and long-term health risks, further development is required through: including climate change, to a greater degree, in public health programmes and planning; ensuring better and more equitable access to services; improving the social and environmental determinants; strengthening primary health care; building climate-resilient infrastructures; building health care workforce capacity; and improving interagency coordination mechanisms. In both the environmental and the health sectors, opportunities exist to identify and implement policies, practices and technologies that reduce greenhouse gas emissions and help to adapt to climate change, which also yield significant local near-term health benefits. For example, both the greater use of renewable energy sources in generating electricity and more efficient combustion of fossil fuels can cut ambient air pollution. Putting such policies into practice can translate into significant health cost-savings, particularly through reductions in the burden of noncommunicable diseases.

Apart from these themes, other prominent issues in the Parma agenda require a continuous commitment from policy-makers and stakeholders, and the involvement of civil society and young people.

The context in which Member States operate is changing. Since the establishment of the Parma commitments in 2010, a persistent economic crisis and shrinking budgets have put environment

and health in jeopardy of being perceived as a luxury, secondary to other priorities. Also, awareness of a marked socioeconomic divide is increasing. This divide translates into environmental health inequalities. Building on lessons learnt from the Millennium Development Goals, harmonization with the post-2015 sustainable development agenda will also be essential. The process will thus need to: identify inclusive key environment and health policy areas; promote behavioural changes; help catalyse global solidarity for sustainable development; promote peaceful societies and strong institutions; contribute to formulating and measuring the conditions and outcomes of a green economy; and further strive towards equity.

To address current and future challenges, the need to develop and implement policies and responses through collaboration across sectors is strongly re-emphasized. The WHO Regional Office for Europe has already underscored the importance of all-of-government approaches to promote public health in its regional public health framework, Health 2020. To achieve further progress in the environment and health arena, it remains important to: establish links and strategic partnerships with different actors, stakeholders and processes; ensure effective engagement of the public and other stakeholders in decision-making related to environment and health; utilize fully the already established policy instruments and tools; raise public awareness and strengthen capacities and institutions to address environment and health challenges; and enhance the understanding and use of economic arguments to support action on environment and health issues.





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Introduction

The 53 Member States of the WHO European Region pursue a common agenda in environment and health. In 1989, their ministries of health and their ministries of environment joined forces and, through a pioneering intersectoral effort that predated what later became the health-in-all-policies approach, established a dialogue on environment and health. Since then, they have been jointly identifying priorities and tackling challenges in environment and health through periodic consultations and concerted policy actions. The process has been promoted and facilitated by WHO and the United Nations Economic Commission for Europe (UNECE), and has involved several partners, such as, other United Nations (UN) agencies and other international organizations, the European Commission (EC), nongovernmental organizations (NGOs), and many other stakeholders.

The First Ministerial Conference on Environment and Health was held in Frankfurt-am-Main, Germany, in 1989. Since then, another four such conferences have taken place, with the fifth and last in Parma, Italy, in 2010.

In Parma, as in previous conferences, Member States developed and adopted a ministerial declaration, a short document that outlines the priority items, the gaps and the most important actions to be undertaken. It aims to: address the contemporary challenges in environment and health in Europe; protect healthy environments; and promote human health and well-being. The Parma Declaration (included in this report as Annex 3) covers several areas of work and, for some of them, sets targets to be

achieved by all Member States, within a specified time frame.

The Sixth Ministerial Conference on Environment and Health will take place in 2017, so the present Mid-term Report is between two conferences. The present Report has been developed to help prepare for the so called Mid-term Review Meeting, where Member States gather to review the progress made towards achieving the Parma goals.

This Report, therefore, aims to provide information and data on the topics that are included in the Parma agenda, especially those for which time-bound targets and commitments were set. The Report does not intend to cover systematically all current topics in environment and health, nor does it aim to update priorities in the field. The Mid-term Review, however, is an important opportunity for taking stock of progress and reflecting on the way forward; the following chapters intend to provide a basis for such reflection and discussion.

The Report is organized as follows: Chapters 1–9 describe the evolving political context and the important policy and legislative reference frameworks; Chapters 10–17 cover the thematic areas where implementation of the Parma agenda is ongoing; finally, Chapter 18 discusses the findings.

It is hoped that the information contained in this Report will support Member States, and all those engaged in different capacities, in their efforts to improve the health and well-being of the citizens of Europe and beyond.





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A changing context for Europe's environment and health

Socioeconomic and demographic context for action

Although only four years have passed since the Fifth Ministerial Conference on Environment and Health, in Parma, Italy, several important socioeconomic and demographic developments have occurred in Europe around the time of the Mid-term Review. Understanding and considering them is important for the assessment of progress in implementing the Parma agenda. The following key underlying factors can: modulate and influence policy action, in addition to and beyond the existing political commitments; represent barriers or enabling factors for policy action; and ultimately contribute to updating or redefining environment and health priorities.

The persisting economic crisis

Several European economies have been severely affected by the global economic crisis and are still struggling to recover or even halt further decline amid significant financial reform. The crisis has resulted in an unwelcome decline in the standard of living of millions of people and in the welfare services offered to them.

The Economic Outlook of major economic trends, released by the Organisation for Economic Co-operation and Development (OECD) in May 2014, estimates that the global economy will strengthen over the coming two years, but urgent action is still required to further reduce unemployment and address other legacies of the crisis. The Outlook emphasizes that, with the world still facing persistently high unemployment, there is a need to enhance resilience, boost inclusiveness and strengthen job creation through policies

that spur growth; but, at the same time, there is also a need to create opportunities for all, thus ensuring that the benefits of economic activity are broadly shared. In particular, the Outlook mentions that, although unemployment has begun falling from the historic levels seen in the wake of the crisis, more than 44 million people are projected to still be out of work across the OECD area at end of 2015, 11.5 million more than before the crisis (OECD, 2014). In the 28 Member States of the European Union (EU-28),¹ it is also estimated that 5.5 million people below 25 years of age are unemployed, with youth unemployment more than twice the total unemployment rate – that is, 23.4% versus 10.8% in the EU-28 (Eurostat, 2014).

For environment and health, the economic crisis has exposed the difficulty of mediating between such societal values as the protection of health and the protection of employment opportunities. The crisis poses a major threat, as governments may be subjected to pressure to reduce the resources for environment and public health protection. The emphasis on fighting unemployment and supporting the recovery of the economy may result in: a short-sighted misperception of environment and health as luxurious commodities that can be dispensed with at times of crisis; a reluctance to engage in new legally binding commitments or to adopt environmental standards that ensure better protection of human health. The entirely voluntary nature of the environment and health process makes it particularly vulnerable to the economic crisis and reduced investments of Member States in processes that do not represent a legal obligation.

¹ Note. Romania and Bulgaria joined the European Union to form the EU-27 in 2007; on 1 July 2013, Croatia acceded to the European Union, bringing the total number of Member States to 28, thus creating the EU-28.

A growing socioeconomic divide

The combined effects of changes taking place in the labour market (linked to globalization and technological change), in social variables (such as household composition) and in the redistributive activity of welfare result in rising socioeconomic inequalities, which in most countries of the European Union (EU) are higher today than in 1980 (EC, 2010a). Socioeconomic conditions are major determinants of health and appear to be strongly related to the unequal distribution of population exposure to diseases resulting from environmental conditions. As discussed in Chapter 15, environment-related inequalities exist throughout the WHO European Region, with the magnitude of such inequalities varying between countries. Within countries, the poor can be exposed to environmental risks five times more often than their wealthier fellow nationals (WHO Regional Office for Europe, 2012).

The promise of the green economy

Responding to major political and social concerns about the challenging economic outlook, and propelled by the outcomes of the UN Conference on Sustainable Development held in Rio in 2012 (UN General Assembly, 2012), the concept of a green economy has rapidly gained global acceptance and use. As a result, viable pathways for fundamentally shifting economic development are now being proposed widely and pursued increasingly; these pathways include: reducing the carbon footprint; becoming climate resilient, resource efficient and socially inclusive; as well as valuing ecosystem services (UNEP, 2012). Although the development of the green economy is unquestionably welcome, systems must be developed to ensure its benefits to society (including the benefits to health) are not offset by unintended consequences that may damage health and well-being. For example, policies to increase the energy efficiency of residential buildings may result in increased risks of microbial contamination, for instance,

by *Legionella* in the case of reduced hot water temperature or by mold and mildew in the case of poor ventilation. Similarly, the promotion of diesel engines, because of their lower emissions of greenhouse gases compared to petrol, may result in increased emissions and exposure to particulate matter. It is equally necessary to ensure that the promotion of a green economy is not achieved at the expense of equity in the distribution of health and well-being.

Demographic trends

Due to decreasing crude fertility rates, relatively stable crude mortality rates and migration, the size of the European population is expected to remain stable until 2050 and then start to decline. The population of half the WHO European Member States will decline by 2050, and 13 Member States will experience more than a 10% decline (UNDESA, 2010). The overall net stagnation of the population in the WHO European Region will be maintained partially through net immigration from other parts of the world.

In many countries, structural changes in the population are dominated by rapid ageing, which has huge cultural, societal and economic implications. The demographic changes now being witnessed are unprecedented and invert the pattern of age distribution that has existed since time immemorial. For the environment and health discipline in its broad scientific and policy sense, the challenge is to protect a population rendered more vulnerable to environmental hazards by cognitive and physical impairment and to promote good physical environments that preserve and extend good physical and mental health into old age.

Urban development

About 50% of the population of the WHO European Region lived in urban settings in 1950, 70% in 2005 and up to 79% are expected to do so by



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2030 (UNDESA, 2011). Not only is urbanization a demographic change in the distribution of the population, but it is also a significant transformational change in how people live, produce, consume, behave and interact. While cities are the engines of economic prosperity and often the location of the greatest wealth in a country, they can also concentrate poverty and ill health. Urbanization provides employment, education, opportunities, social mobility, advancement of gender equity, services and goods faster and more efficiently; but it often also increases the cost of living and inequalities and concentrates poverty and ill health caused by obesity, air pollution and poor housing. It may also result in overexploitation or contamination of the underlying supportive environment (such as increased stress on water supplies, wastewater loads and waste flows) or in water and soil contamination due to poor policies for water, sanitation and waste management. Living and working in urban areas affect health and health prospects both positively and negatively through a complex array of exposures and mechanisms.

Noncommunicable diseases

When Europe began to industrialize, and prior to significant improvements in the

health infrastructure, life expectancy at birth for white males was about 39–40 years of age, representing an increase of only 50% when compared with equivalent males of the Mesolithic period (17 000–7 000 BCE). Since then, life expectancy at birth in European countries has approximately doubled to about 80 years of age (Barona, Bernabeu-Mestre & Pediguero-Gil, 2005; Robine et al., 2005) and mortality and morbidity patterns have changed substantially: nowadays, more than four out of five Europeans will die from chronic noncommunicable diseases. Environmental determinants, many of which can be modified, are directly linked to the onset of disease and the creation of health, as demonstrated by recent evidence on the burden of disease attributable to air pollution, which clearly identifies such pollution exposures as a major risk factor for cardiovascular and respiratory diseases and some forms of cancer (see Chapter 11).

The importance of tackling noncommunicable diseases was also emphasized in 2011 by the UN Political declaration of the High-level Meeting of the General Assembly on the prevention and control of noncommunicable diseases, which also acknowledges the Parma Declaration as one of the relevant regional initiatives (UN General Assembly, 2011).

The global and regional policy context for action

The European environment and health process needs to remain informed by (and open to) the articulated context of global, regional and national policies and developments, which provide the mandates and areas of action for the health and environment sectors. These policies also define the so-called space within which the environment and health process needs to develop and maintain its relevance and added value for its constituencies, supporting them in fulfilling their respective mandates in areas that represent common priorities. Since the Parma Conference, two major developments at the regional and global level have been the adoption of a new WHO European health policy framework (Health 2020) and the UN Conference on Sustainable Development (discussed in Chapters 2 and 3, respectively). In addition, at the subregional level, in 2010, the EU Member States adopted Europe 2020 as its 10-year growth and jobs strategy for: overcoming the economic crisis; addressing the shortcomings of the present growth model; and creating the conditions for smart, sustainable and inclusive growth.

The new European Health 2020 policy framework

Adopted by the WHO Regional Committee for Europe in 2012, the new health policy for Europe, Health 2020 (WHO Regional Office for Europe, 2013), described in Chapter 3, recognizes that the complex problems of chronic diseases and growing health inequalities cannot be effectively addressed unless the health sector can mobilize the whole government and society to engage in public health action. The goal of Health 2020 is to significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health, and ensure sustainable people-centred health systems that are

universal, equitable, sustainable and of high quality.

Health 2020 focuses on the growing understanding of the relationship between health and development. Health is an important investment and driver of development, as well as one of the most important results of development. Investment in health is critical to the successful development of modern societies and their political, social and economic progress.

The strong emphasis that Health 2020 places on equity is consistent with the Rio Political Declaration on Social Determinants of Health of the 2011 World Conference on Social Determinants of Health, which acknowledges that “Health in All Policies, together with intersectoral cooperation and action, is one promising approach to enhance accountability in other sectors for health, as well as the promotion of health equity and more inclusive and productive societies” (WHO, 2011)

Health 2020 also recognizes that the environmental determinants of health are of equal importance for creating, maintaining and restoring health and identifies the creation of resilient communities and supportive environments as one of the four priority areas for action in the WHO European Region.

UN Conference on Sustainable Development

The 2012 UN Conference on Sustainable Development (Rio+20), held in Rio de Janeiro, Brazil, was influenced by the notion of preventing human activities that could result in trespassing, by crossing the interlinked planetary boundaries that define a safe operating space for humanity (Rockstrohm et al., 2009).

In a statement of very direct relevance to the European environmental and health process, the heads of government noted, “We are convinced that action on the social and environmental determinants of health, both for the poor and vulnerable and for the entire population, is important to create inclusive, equitable, economically productive and healthy societies” (UN General Assembly, 2012). In light of these ambitious, partly overlapping agendas, more work is needed to identify the policies that simultaneously: benefit sustainability, health and health equity; avoid interventions and policies meant to improve one area (for example, the green economy) but have negative effects on others (for example, health or equity); and identify and contribute to the development of healthy sustainable development goals across the thematic areas of Rio+20.

Europe 2020

As noted earlier in this chapter, Europe 2020 is the EU’s 10-year growth and jobs strategy. It aims, by the end of 2020, to achieve five so-called quantitative headline targets that cover: employment, research and development, climate and/or energy, education, and social inclusion and poverty reduction. The objectives of the strategy are also supported by seven flagship initiatives that provide a framework within which the EU and national authorities mutually reinforce their efforts in areas that support the Europe 2020 priorities, such as innovation, the digital economy, employment, youth, industrial policy, poverty, and resource efficiency (EC, 2010b). Other EU levers – such as the European single market, the EU budget and the EU external agenda – also contribute to the achievement of the goals of the Europe 2020 strategy.

New evidence on the links between environment and health

Since 2010, important new evidence has emerged, particularly with respect to the links between air pollution, endocrine disruptors, mercury, and climate change and several health outcomes, notably major noncommunicable diseases – including cardiovascular and respiratory diseases and cancer. In total, this indicates the much stronger relevance of a number of environmental hazards to health – compared with what was previously thought and understood – as well as the potential to save considerable resources by reducing harmful exposures. This adds to the ongoing imperative of continuous perseverance in maintaining a high level of environmental services and infrastructures, such as safe-water and sanitation services, to prevent the burden of communicable diseases. The effect of extreme weather events in European countries in the last few years is a dramatic reminder of the need to protect and increase the resilience and efficiency of vital infrastructures

and services. Politically, this translates into heightened awareness and public concern, and heightened pressure on policy-makers to take effective action on matters that require strong international collaboration.

Air pollution and health

As discussed in Chapter 11, air pollution has recently emerged as the largest contributor to the burden of disease from the environment (with more than half a million premature deaths in 2012 in the WHO European Region). It is a more important risk factor for major noncommunicable diseases, such as ischaemic heart disease and stroke, than previously thought. The International Agency for Research on Cancer (IARC) classified diesel engine exhausts, outdoor air pollution and particulate matter as carcinogenic (Group 1) to humans (IARC, 2013; Loomis et al., 2013). While deaths



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from ambient air pollution occur in all European countries, regardless of their income level, those from household air pollution are over five times greater in low- and middle-income countries than in wealthier ones (WHO, 2014).

Endocrine disruptors

In 2013, WHO and the United Nations Environment Programme (UNEP) published a report, *State of the science of endocrine disrupting chemicals – 2012*, which updates the scientific knowledge, including main conclusions and key concerns, on endocrine disruptors (Bergman et al., 2013). The report highlights the view that many synthetic chemicals, untested for their disrupting effects on the hormone system, could have significant health implications. From a policy point of view, and notwithstanding the knowledge gaps that still exist, the report highlights the importance of managing and reducing exposure, noting that:

Government actions to reduce exposures, while limited, have proven to be effective in specific cases (e.g. bans and restrictions on lead, chlorpyrifos, tributyltin, PCBs [polychlorinated biphenyls] and some other POPs [persistent organic pollutants]). This has contributed to decreases in the frequency of disorders in humans and wildlife.

Mercury

The negative effects of mercury on health have been well established for several years (WHO, 2013). Notwithstanding the vast scientific literature available on the topic, attention to the importance of preventing prenatal exposure to methylmercury, also in economic terms, was recently heightened by a new study, which estimated the neurotoxic effects in terms of a reduction in intelligence quotient (IQ) following in utero exposure. The results suggest that, within the EU, more than 1.8 million children are born every year with methylmercury exposures above the adjusted safety limit of 0.58 µg/g and about 200 000 births exceed the higher limit proposed by WHO of 2.5 µg/g. The total annual benefits of preventing exposure to methylmercury within the EU were estimated to be more than 600 000 IQ points a year, corresponding to a total economic benefit of between €8 billion and €9 billion a year (Bellanger et al., 2013).

Given the many sources of mercury (such as mining, metallurgy, chlor-alkali plants, cement production and, critically, the use of coal in coal-fire plants), there is strong concern that human exposure could persist or increase if adequate control measures for its emissions are not in place. In 2013, the successful completion of negotiations for the Minamata Convention on Mercury (see Box 12 in Chapter 13) resulted in the

development of a new legally binding instrument that obliges parties to the Convention to take a range of actions, including addressing mercury emissions to air and phasing out mercury-added products (UNEP, 2013).

Climate change

In 2014, the Intergovernmental Panel on Climate Change (IPCC) released its fifth assessment report, *Climate change 2014: impacts, adaptation, and vulnerability* (IPCC, 2014), which marked a new milestone in the assessment of the scientific evidence (see Chapter 14). The report emphasizes that extreme weather events increase the risk of heat-related death and illness and also emphasizes the health consequences of lost work capacity and reduced labour productivity. Floods have increasingly affected most, if not all, European Member States. The devastating floods in Bosnia and Herzegovina, Croatia and Serbia, in May 2014, highlight once again the need for strengthening capacities and resources for adaptation, preparedness, and resilience, which lie at the centre of political attention and action for the environment and health process. Also,

local changes in temperature and rainfall have altered the distribution of some waterborne illnesses and the emergence of invasive vector species in Europe, such as the invasive mosquitoes that transmit the viruses causing dengue fever and chikungunya fever.

Delayed action on reducing greenhouse gas emissions will increase costs and impacts. For a rise in global mean average temperature of 2.5 °C, the estimated global aggregated economic losses could be between 0.2% and 2.0% of income. The EU estimated an annual welfare cost of €31 billion for heat-related effects by 2020. Crucially, many of the causes of climate change (such as fossil fuel combustion, poorly designed cities and overdependence on motorized transport) are also major drivers of the world's fastest-growing public health problems (such as cardiovascular diseases, obesity, diabetes and road deaths). By designing a smart climate mitigation policy, such as active transport and clean energy sources, among others, efforts to reduce carbon emissions offer important co-benefits for health, which in turn result in cost savings for health care systems and for governments, in general.

Conclusions

These developments have modified the landscape of environment and health in Europe, and beyond, through gradual or (in some cases) abrupt change. Specific thematic areas are further illustrated in the following chapters, which provide an analysis of the main scientific and policy developments since the Parma Conference and also provide useful indications of the successes achieved and challenges encountered along the road to implementing the Parma commitments.

While it is essential that the commitments

and goals of the Parma Declaration are pursued until its objectives are met in all Member States, it is also important that the evolving context for evaluating progress and identifying the way forward be taken into consideration. Striking the right balance between the different priorities that call for political attention will require continuing and stepping up the discussion among different stakeholders and continuing the concerted action that has characterized the first 25 years of the European environment and health process.

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2.

Health 2020

Introduction

Health 2020 is a European policy framework and strategy for public health in the 21st century. It was approved in 2012 by the 53 Member States of the WHO European Region. This value- and evidence-based framework focuses on: improving health for all and reducing health inequality with concrete targets; improving leadership and participatory governance for health; and tackling today's major health problems. Environment and health is one policy priority area of the general policy framework, which contributes to the overall European environment and health process on the policy level and serves as an integrative framework between sectors and stakeholders.

The vision for Health 2020 is for all people in the WHO European Region, to enable and support them to achieve their full health potential and well-being at both the individual and community level.

The links between better health, economy and environment are well established in the concept of sustainable development for sustainable societies. People who are healthy are better able to learn, earn, and contribute positively and innovatively to the societies in which they live. A healthy environment is a prerequisite for good health.

Policy priorities for health

Health 2020 is based on four interlinked priority areas for policy action, namely:

1. investing in health through a life-course approach and empowering people;
2. tackling the Region's noncommunicable and communicable disease health challenges;
3. strengthening people-centred health systems, public health capacity and emergency preparedness, and surveillance and response; and
4. creating resilient communities and a supportive environment.

The fourth area above requires the collaboration of the environment and health sectors and thus has strong links with the European environment and health process, with its almost 25 years

of unique history in the WHO European Region (WHO Regional Office for Europe, 2013a).

At the global level, in turn, this priority area and this process are closely linked to the Rio+20 process on sustainable development. The countries involved in sustainable development have begun to develop the policies that bring the co-benefit of health to people and the planet.

The Commitment to Act adopted by the Fifth Ministerial Conference on Environment and Health, in Parma, Italy, in 2010, is linked to health and sustainable development (WHO Regional Office for Europe, 2014).

The ongoing implementation of commitments with time-bound targets – to be achieved by 2020 – is a measure of progress in the European Region.

Renewing commitments to health and well-being

Health 2020 addresses the complexity of the determinants of health and health inequality. It recognizes that social, economic and environmental factors interact and influence the exposure of individuals and ultimately coincide to determine population health. Social inequalities add to the disease burden in the European Region, and inequalities related to environmental factors are one of the issues being addressed by the European environment and health process.

Building resilience is a key factor in the Health 2020 strategy and is highly relevant to protecting and promoting health and well-being at the individual and community levels. The rapidly changing environment related to technology, energy production and consumption, and

urbanization must be accompanied by actions to maximize its positive benefits to health and minimize its adverse effects. Given that about 69% of the people in the WHO European Region live in urban settings, the urban environment requires special attention and an integrated policy to mitigate health risks and vulnerability. Resilient communities have the potential to respond proactively to social, environmental and economic changes and to deal better with hardship. The European environment and health process, in point of fact, is concerned with the environmental health challenges of the changing environment and works on proactive actions to mitigate the health consequences in the areas of air and water quality, the use of chemicals, and climate change.

Cooperation with stakeholders

To implement the Parma Declaration agenda and achieve its ambitious goals, a well-functioning environment and health governance, based on a participatory approach, is required in the European Region. This need is reinforced by Health 2020, which strongly emphasizes the political, professional and civil society engagement needed to ensure improvements in health and reductions in health inequities, within a whole-of-society and whole-of-government approach. The European environment and health process may benefit from the involvement (perhaps on an ad hoc basis) of sectors of society outside of health and environment – for example, as has already happened with the transport sector.

In any case, in the current governance structure of the European environment and health process, stakeholders from different areas play an important role and contribute to coordinated actions. The role of civil-society groups is particularly important in strengthening the political concern for environment and health and in mobilizing joint efforts for effective action.

The implementation of the Health 2020 policy framework and strategy can happen only with the involvement of all relevant stakeholders, including civil society, the private sector and the various levels of government. The European environment and health process and its linkages contribute to the implementation of the Health 2020 strategy, along with the participation of the environment and health sectors and relevant stakeholders.

The dissemination of national cases and good practices at international events designed to share learning experiences can benefit the environment, health and other relevant sectors and can contribute to learning more about the areas of collaboration in the implementation of Health 2020 (WHO Regional Office for Europe, 2013b).

It would be useful to develop a concrete mechanism and measures that aid in solidifying the linkages and activities between the implementation of Health 2020 and the ongoing European environment and health process.

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3

Sustainable development and its goals

The journey towards sustainable development has not been straightforward and is far from being achieved fully. According to the UN (UN, 2013):

Because of its heterogeneity, the [European] region is a microcosm for the various challenges and opportunities facing the global community in building inclusive societies, ensuring environmental sustainability, achieving equitable growth and creating development partnerships and models of international cooperation.

During the last 42 years, a series of events has produced today's wide-ranging interpretation of sustainable development. At the UN Conference on the Human Environment, in Stockholm, in 1972, the international community met for the first time to consider global environment and development needs (UN, 1973). In the 1980s, the UN set up the World Commission on Environment and Development, which produced *Our common future*; it defined sustainable development as "development that meets the needs of present generations without compromising the ability of future generations to meet their own needs" (WCED, 1987).

In 1992, at Rio+20, 27 principles were adopted, together with a global programme, entitled Agenda 21 (a blueprint to rethink economic growth, advance social equity and ensure environmental protection), and two legally binding conventions: the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change (UNFCCC). The first principle of the Rio Declaration on Environment and Development recognized that "Human beings are at the centre of concerns for sustainable

development. They are entitled to a healthy and productive life in harmony with nature" (UN General Assembly, 1992). Agenda 21 identified primary health care, control of communicable diseases, protection of vulnerable groups, urban health and reducing health risks from environmental pollution and hazards as essential measures (UNDESA, 1992).

At the next milestone event, the 2002 World Summit on Sustainable Development, in Johannesburg, South Africa (UN, 2002), the focus was on poverty and inequalities, though it became apparent that the goals of sustainable development can only be achieved in the absence of a high prevalence of debilitating communicable and noncommunicable diseases.

In 2012, Rio+20 (UN, 2011) promised to strive (Open Working Group on Sustainable Development Goals, 2014):

for a world that is just, equitable and inclusive, and committed to work together to promote sustained and inclusive economic growth, social development and environmental protection and thereby to benefit all, in particular the children of the world, youth and future generations of the world.

The Conference resulted in a focused political outcome document entitled *The future we want* (UN General Assembly, 2012). It underscored "the need to further mainstream sustainable development at all levels, integrating economic, social and environmental aspects and recognizing their interlinkages, so as to achieve sustainable development in all its dimensions". It also called for the "full realization of the right to the enjoyment of the highest attainable standard of physical and mental health". In the sustainable

development debate, where human health had often been subsumed as an implicit beneficiary, such a statement is of great importance for environment and health. This position, moreover, was reinforced by the Rio Political Declaration on Social Determinants of Health (WHO, 2011) and by UN General Assembly resolution 67/81 on global health and foreign policy (UN General Assembly, 2013; WHO, 2014).

Since 2012, large consultative processes have occurred in the development of the post-2015 agenda. The recent synthesis report of the UN Secretary-General (UN, 2014) lays out the shared ambitions of the transformational and universal post-2015 agenda to:

- provide a people-centred and planet-sensitive agenda;
- fill key sustainable development gaps

left by the Millennium Development Goals;

- leave no one behind;
- provide an enabling environment to build inclusive and peaceful societies;
- address climate change and also preserve oceans and terrestrial ecosystems;
- provide a meaningful transformation of the economy;
- integrate economic, social and environment dimensions across the new agenda; and
- provide a rigorous and participatory review and monitoring framework and also a data revolution to make information more available.

Sustainable development goals

One of the main outcomes of Rio+20 was the agreement by UN Member States to launch a process to develop a set of sustainable development goals (UN General Assembly, 2012), which should build on the Millennium Development Goals and converge within the so-called post-2015 development agenda, thus contributing to the achievement of sustainable development and serving as a driver for implementing and mainstreaming sustainable development in the UN system as a whole. As part of the process, the UN General Assembly convened the Open Working Group to discuss and develop sustainable development goals and targets. This was accompanied by a multitude of global, regional and national dialogues and developments. The Open Working Group has met 13 times, with one thematic session on human health. By the time the General Assembly opened in September 2014, all the work since Rio+20 – including the development of a set of 17 sustainable development goals and 169 targets – formed the basis

for a report by the Secretary-General to the General Assembly; Box 1 lists the 17 goals proposed by the Open Working Group.

The UN Secretary-General launched the final intergovernmental process at the Sixty-ninth session of the UN General Assembly in September 2014 (UN General Assembly, 2014); this will be followed a year later, by the Heads of State and/or Government Summit. The UN post-2015 development agenda is expected to be a single framework – including a set of goals and measurable targets, and mechanisms for implementation, cooperation, technology development and financing.

As a follow-up on the global Millennium Development Goal debate, the need for addressing noncommunicable diseases was recognized for the health goal, as was that for ensuring universal health coverage and health system strengthening. In addition, there has been a strong drive to: consider health

Box 1. Open Working Group's proposal for sustainable development goals

The following are the Open Working Group's 17 sustainable development goals:

1. end poverty in all its forms everywhere;
2. end hunger, achieve food security and improved nutrition, and promote sustainable agriculture;
3. ensure healthy lives and promote well-being for all at all ages;
4. ensure inclusive and equitable quality education and promote life-long learning opportunities for all;
5. achieve gender equality and empower all women and girls;
6. ensure availability and sustainable management of water and sanitation for all;
7. ensure access to affordable, reliable, sustainable, and modern energy for all;
8. promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all;
9. build resilient infrastructures, promote inclusive and sustainable industrialization, and foster innovation;
10. reduce inequality within and among countries;
11. make cities and human settlements inclusive, safe, resilient and sustainable;
12. ensure sustainable consumption and production patterns;
13. take urgent action to combat climate change and its impacts;
14. conserve and sustainably use the oceans, seas and marine resources for sustainable development;
15. protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss;
16. promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels; and
17. strengthen the means of implementation and revitalize the global partnership for sustainable development.

Source: Adapted from UN General Assembly (2014:10).

equity systematically; give increased attention to sexual and reproductive health, especially for young people; and consider health as a fundamental right. Explicit reference to human health seems to be gaining more prominence (WHO, 2014). In the final Open Working Group document, health is included as Goal 3, with nine targets and two

additional targets (see Box 2). This is in line with the principle that sustainable development is only possible if people are healthy.

Additional work is required to place health as an outcome of all sustainable development goals through targets and indicators that show both changes in

Box 2. Goal 3: ensure healthy lives and promote well-being for all at all ages

“3.1 by 2030 reduce the global maternal mortality ratio to less than 70 per 100,000 live births

3.2 by 2030 end preventable deaths of newborns and under-five children

3.3 by 2030 end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases

3.4 by 2030 reduce by one-third pre-mature mortality from noncommunicable diseases (NCDs) through prevention and treatment, and promote mental health and well-being

3.5 strengthen prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

3.6 by 2020 halve global deaths and injuries from road traffic accidents

3.7 by 2030 ensure universal access to sexual and reproductive health care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

3.8 achieve universal health coverage (UHC), including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all

3.9 by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination

3.a strengthen implementation of the Framework Convention on Tobacco Control in all countries as appropriate

3.b support research and development of vaccines and medicines for the communicable and noncommunicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration which affirms the right of developing countries to use to the full the provisions in the TRIPS agreement regarding flexibilities to protect public health and, in particular, provide access to medicines for all

3.c substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States

3.d strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks”

Source: Open Working Group on Sustainable Development Goals (2014).

exposure to health-related risks and progress towards healthy sustainability (Dora et al., 2014). For example, reducing exposure to urban air pollution can reduce death and disease among urban

city dwellers and improving nutrition can contribute to reducing obesity and thus reduce noncommunicable diseases and health care costs.



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Progress in European Member States

The Member States of the European Region have made significant advances towards the Millennium Development Goals. Areas remain, however, in which action has stagnated and inequalities in progress persist across the Region, such as poverty, health, inequalities, and environment and health.

Health

Health has greatly improved across the Region, but not everywhere and not for everybody. For example, improvements in child and maternal health, HIV/AIDS and tuberculosis have stagnated in some parts of the Region. Also, the WHO European Region has the highest burden of disease of noncommunicable diseases. The impact of the major noncommunicable diseases (diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental disorders) account for an estimated 86% of the deaths and 77% of the disease burden in the Region. Mental disorders are the second largest contributor to the burden of disease and the most important cause of disability. Violence and injury add to the overall disease burden. These conditions threaten to overwhelm health systems in many countries in the Region.

Environment and health

Climate change, air quality, waste management and chemical pollution are all a part of challenges facing environment and health. In the area of climate change, the Region has the largest ecological footprint and is struggling to reduce greenhouse gas emissions. In 2012, 67% of global greenhouse gas emissions were subject to national legislation or strategies. The adverse effects of climate change on health are growing: Extreme weather events are increasing in frequency and intensity; the 2014 Balkans floods illustrated the human suffering and the consequences on a whole country's development.

In the area of air quality, almost 600 000 premature deaths from air pollution occurred in the European Region in 2012, 482 000 attributable to (outdoor) ambient air pollution and 117 200 to (indoor) household air pollution. The carcinogenicity of outdoor air pollution has also been determined and was published October 2013 (Loomis et al., 2013). Many cities do not reach the air quality guidelines values, which can have a significant cost impact on health care.

In the area of waste management, the data show that municipal solid waste generation has been about 520 kg per person per year

since 2000 (EEA, 2011). Development of proper regulations and their implementation is still required in many areas.

In the area of chemical pollution, millions of deaths and disability-adjusted life years are attributable to environmental exposure and management of selected chemicals. In particular, the problem of contaminated sites is a continuing problem in many European Member States.

Inequalities

The extent of inequalities in and between European countries is large. For example, there is a 16-year gap between the highest and the lowest life expectancy at birth, with marked gender differences. Also, in the area of environment and health, inequality persists in access to natural resources. For example, for water and sanitation, Millennium Development Goal 7, on ensuring environmental sustainability, has not been achieved in all European countries. Today, 67 million

people still lack access to basic sanitation, 100 million lack access to piped water on their premises, more than 6 million still rely on surface water as their primary source, and 10 deaths a day are attributable to water and sanitation, with significant inequalities in access.

Poverty

Extreme poverty has largely been eradicated. However, after 2008 (in particular), unemployment rates deteriorated in some countries, affecting young people especially.

Education

The quality of education has improved significantly, while significant inequalities persist within and between countries. Moreover, despite general high levels of education, participation of women in the labour market still remains a problem in some countries.

Conclusion

The post-2015 agenda will affect global development, economic, environment and social policies for many years to come. The following six elements (UN, 2014) are proposed to help frame the universal and integrative nature of the agenda, namely:

1. dignity: to end poverty and fight inequalities;
2. prosperity: to grow a strong and inclusive and transformative economy;
3. justice: to promote safe and peaceful societies and strong institutions;
4. partnership: to catalyse global solidarity for sustainable development;
5. planet: to protect our ecosystems for all societies and for all children; and
6. people: to ensure healthy lives,

knowledge and the inclusion of women and children.

The UN common vision (UN, 2013) suggests that the European environment and health process can play a critical role in shaping governance, policies, actions and partnerships in the European Region. The process can contribute to formulating a transformative agenda that: identifies inclusive key environment and health policy areas; works towards major behavioural changes; contributes to designing healthy, whole government strategies; contributes to formulating and measuring the conditions and outcomes of a green economy; as well as works towards equity. Integrating the benefits to health and well-being into decisions to improve sustainability can encourage change towards more sustainable patterns of resource use and consumption and can improve public health.

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4.

Multilateral environmental agreements and THE PEP

Multilateral environmental agreements

Multilateral environmental agreements provide a negotiated level playing field for addressing important environmental issues that have a marked effect on the entire population across geopolitical borders. They also foster international collaboration, accountability and oversight. As such, they are an extremely powerful policy tool to steer change and address inequalities in exposure to pollutants of concern. These agreements operate through legal instruments (conventions and other governance mechanisms) that enjoy strong political legitimacy and address specific issues – for example, toxic and dangerous chemicals, hazardous waste, air pollution, water quality and climate change. They can have an important impact on sectoral policies – most often the environment, transport and energy sectors, but equally agriculture, industry and other sectors.

Since the inception of the environment and health process, in 1989, a number of new legally binding multilateral environmental agreements of direct relevance to environment and health in the European Region have been negotiated and have come into force. Examples include: the 1991 Convention on Environmental Impact Assessment in a Transboundary Context (UNECE, 1991; known as the Espoo Convention) and its 2003 Protocol on Strategic Environmental Assessment (UNECE, 2003b); the 1992 Convention on the Transboundary Effects of Industrial Accidents (UNECE, 2008); the 1992

Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE, 1992), the 1992 UNFCCC (UNFCCC, 2014); the 1998 UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE, 1998; known as the Aarhus Convention); the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP, 2011a); the 2001 Stockholm Convention on Persistent Organic Pollutants (UNEP, 2011b); and the 2003 UNECE Protocol on Pollutant Release and Transfer Registers (UNECE, 2003a; known as the Protocol on PRTRs). The most recent agreement is the 2013 Minamata Convention on Mercury (UNEP, 2013).

The environment and health process directly contributed to some of these developments, notably through: the 1999 Protocol on Water and Health to the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE, 1999), which was adopted at the Third Ministerial Conference on Environment and Health; the contribution to the development of the 2003 Protocol on Strategic Environmental Assessment (known as the SEA Protocol) to the Convention on Environmental Impact Assessment in a Transboundary Context (UNECE, 2003b), which for the first time stipulated the need to involve competent health authorities in strategic environmental assessments.

The 2010 Parma Declaration on Environment and Health (WHO Regional Office for Europe, 2010) fully reflects the understanding by the WHO European Region Member States of the relevance of multilateral environmental agreements and other non-legally binding policy platforms for furthering the environment and health agenda in the Region and of the four regional priority goals and targets of the Parma Declaration. In particular, in a letter addressed (in July 2013) to all ministers of health and environment of the European Region, the European Environment and Health Ministerial Board called on all Member States of the WHO European Region to consider strengthening their participation in (and advancement of) implementing the following multilateral environmental agreements and policies:

- the 1979 Convention on Long-range Transboundary Air Pollution and its protocols (UNECE, 1979, 2014a);
- the 1999 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE, 1999);
- the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP, 2011a);
- the 2002 Transport, Health and Environment Pan-European Programme (THE PEP) (UNECE, 2014b); and
- the 2013 Minamata Convention on Mercury (UNEP, 2013).

In addition, the Report of the European Environment and Health Ministerial Board to the WHO Regional Committee for Europe and the UNECE Committee on Environmental Policy (EEHMB, 2013) highlighted the maximization of the opportunities provided by relevant ongoing processes. These include, in

particular, the implementation of Health 2020 (the European policy for health and well-being), multilateral environmental agreements, the Rio+20 follow-up in 2012 and other policy frameworks identified by the Parma Declaration.

Secretariat services to the multilateral environmental agreements most relevant to the environment and health process are provided primarily by UNECE and UNEP. However, the 1999 Protocol on Water and Health to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes is co-serviced by UNECE and the WHO Regional Office for Europe. The close partnership of these three UN agencies is of paramount importance to ensure that the health dimension of these instruments is highlighted.

Some other UNECE multilateral agreements – for example, in the area of transport – also cover the protection of environment and health, notably:

- the European Agreement concerning the International Carriage of Dangerous Goods by Road (UNECE, 2013a);
- the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (UNECE, 2013b); and
- the 1958 Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of These Prescriptions, and its annexed regulations (in particular those containing technical provisions for pollutant emission standards (Regulation Nos. 83 and 49) or technical provisions for the measurement of the fuel economy and carbon dioxide emissions of cars (Regulation No. 101)) (UNECE, 1958).



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Creating the link: UNECE multilateral environmental agreements as health promotion tools

Intersectoral cooperation is part of the core business of UNECE, which strives to build bridges across various sectors (such as environment, transport, energy, housing, forestry and trade) through a range of programmes and legal instruments. In line with the aim of intersectoral cooperation, the subprogramme on environment, which guides the work of the Environment Division at UNECE, has as its main objective: “To safeguard the environment and health, improve environmental management throughout the region and further promote integration of environmental policies into sectoral policies” (UN, 2009:307).

The five multilateral environmental agreements, the flagship products of UNECE’s Environment Division, address this vision and should be seen in the Region as underscoring the importance of health in all (UNECE) policies. These agreements go a long way towards promoting environmental health and contributing directly to Health 2020. They include:

1. the UNECE Convention on Long-range Transboundary Air Pollution (UNECE, 1979) and its protocols (UNECE, 2014a);
2. the UNECE Convention on Environmental Impact Assessment in a Transboundary Context (UNECE, 1991) and its SEA Protocol (UNECE, 2003b);
3. the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE, 1992) and its Protocol on Water and Health (UNECE, 1999);
4. the UNECE Convention on the Transboundary Effects of Industrial Accidents (UNECE, 2008); and
5. the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE, 1998) and the Protocol on PRTRs (UNECE, 2003a).

As both health and environment promotion tools, these five regional regimes form the basis for effective international cooperation, awareness raising and capacity building across the environment and health domains, each with their own additional value.

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes is supported jointly by UNECE and the WHO Regional Office for Europe. The main aim of the Protocol is to protect human health and well-being by better water management, including the protection of water ecosystems, and by preventing, controlling and reducing water-related diseases.

The SEA Protocol to the Espoo Convention aims to ensure, among other things, that environmental (including health) considerations are thoroughly taken into account in the development of plans and programmes in a wide range of sectors. The Protocol provides the only binding mechanism to date for the involvement of health authorities in development planning.

The Joint Task Force on the Health Aspects of Air Pollution, established in 1998 under the Convention on Long-range Transboundary Air Pollution, provides a joint forum for UNECE and WHO to work together to examine the effects of air pollution on human health.

Both the Aarhus Convention (UNECE, 1998) and the Protocol on PRTRs (UNECE, 2003a) address the Parma Declaration Commitment to Act, as they protect the rights of every citizen – including such vulnerable groups as children and women, rural communities and the poor – to a healthy environment. These instruments help governments to proactively disseminate relevant information, raise public awareness and effectively engage stakeholders and citizens in decision-making related to environment and health.

Finally, the Convention on the Transboundary Effects of Industrial Accidents addresses industrial accidents that may have adverse effects on human health.

THE PEP

The multilateral environmental agreements are not the only entry point of UNECE into the realm of European environment and health. THE PEP is another of UNECE's flagship programmes. It is a unique policy platform run jointly by UNECE (Environment Division and Transport Division) and the WHO Regional Office for Europe. Since 2002, THE PEP has encouraged Member States to pursue an integrated policy approach to sustainable and healthy transport and mobility.

THE PEP received renewed impetus and political support from ministries across three sectors at its Fourth High-Level Meeting on Transport, Health and Environment, in April 2014 in Paris, under the slogan "City in motion: people first!". The slogan underscores the importance of placing citizens at the centre of decisions on transport and mobility. The Fourth High-Level Meeting on Transport, Health and Environment adopted the Paris Declaration and its five priority goals. These include: reduction of air pollution and noise emissions from transport; investment and job creation in environment- and health-friendly transport; mobility management, promotion of safe and healthy walking and cycling; and the

integration of transport, health and environmental objectives into urban and spatial planning policies.

The four main issues addressed by THE PEP that are related to environment and health are:

1. the negative impacts on human health and ecosystems of transport-related air pollution, greenhouse gas emissions, road traffic injuries and noise – in particular, in urban areas;
2. the positive effects on health and the environment of sustainable mobility choices, such as public transport, mobility management and active transport that promotes physical activity, such as walking and cycling;
3. the importance of the tools and methods developed under THE PEP that link impact assessment and economic evaluation, to highlight the economic benefits of more sustainable transport, such as through the WHO-developed health economic assessment tools for walking and cycling and the step-by-step manual *Developing national action plans on transport, health and environment* (Schweizer, Racioppi & Nemer, 2014); and

4. a future vision for green and healthy transport and mobility that includes sustainable urban livelihoods for all.

THE PEP policy response to tomorrow's pressing urban problems will: increasingly reflect the need for urban centres to be car-free, with green spaces and protection of art and cultural history; promote active and human-powered mobility, such as walking and cycling; be accessible to all; and support healthy lifestyles, for both

physical and psychological well-being and an enhanced sense of community. As part of addressing these issues, THE PEP activities in the next five years will also focus on: strengthening capacities, through the newly established THE PEP Academy, among other things; and developing a European Cycling Master Plan, through an Austrian- and French-led partnership. The progress achieved will be reviewed in 2019 at the Fifth High-level Meeting on Transport, Environment and Health, hosted by Austria.

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5.

Health and climate change policies: the health dimension

Introduction

Warming of the climate system is unequivocal, and since the 1950s many of the observed changes are unprecedented over periods of decades to millennia. Throughout the 21st century and beyond, governmental and societal near-term and longer-term choices on how to best reduce greenhouse gas emissions (mitigation) and on how to manage the risk of climate change (adaptation) will affect population health.

In March 2010, at the Fifth Ministerial Conference on Environment and Health in Parma, Italy, all WHO European Region Member States and the EC declared themselves to be committed to protecting health and well-being, natural resources and ecosystems and to promoting health equity, health security and healthy environments in a changing climate (WHO Regional Office for Europe, 2010). This includes the promotion of healthy mitigation and adaptation measures.

Due to the global-commons character of anthropogenic climate change – that is, man-made change in resource domains or areas that lie outside of the political reach of any one nation state – international cooperation is necessary to significantly reduce greenhouse gas emissions. The UNFCCC (UN, 1992: articles 1 and 4) stresses the need to minimize adverse effects on health and welfare and to “employ appropriate methods... with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change”. Designed as an international legally binding instrument, the UNFCCC entered into force on 21 March 1994. Today, it has 195 signatory parties. All 53 Member States of the WHO European Region have ratified the Convention. Thirty-one of the European countries (and the European Economic Community) are Annex I countries, thus committing them to greenhouse gas emission reductions.

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Mitigation

The ultimate objective of the Convention is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UN, 1992: Article 2). At the 15th Conference of the Parties of the Climate Convention, it was recognized that the increase in global temperature should be below 2 °C, relative to pre-industrial levels, and “deep cuts in global emissions are required” (UNFCCC, 2010a:5). Scenarios show that, for the likelihood of limiting the increase in global mean temperature to 2 °C, a lowering of global greenhouse gas emissions by 40–70% by mid-century, compared with 2010, would be required (UNFCCC, 2010b; Edenhofer et al., 2014a). Significant international and national efforts are required to achieve this: globally, emissions grew 2.2% per year between 2000 and 2010, compared with 1.3% per year for the entire period 1970–2000 (UNFCCC, 2010b). Of this growth, 75% comes from the energy-supply and industrial sectors. For high-

income countries, transport emissions are a large contributor. European per person emissions are between 10–13 tonnes carbon dioxide equivalent per person per year – about seven times higher than median per person emissions in low-income countries (1.34 tonnes carbon dioxide equivalent per person per year) (UNFCCC, 2010b).

As part of their national legislation and obligations under the UNFCCC, almost all European countries have taken some level of action to reduce greenhouse gas emissions. In 2012, 67% of global greenhouse gas emissions were subject to national legislation or strategies, compared with 45% in 2007.

Countries and stakeholders are also engaged in a number of regional mitigation initiatives. As an example, Box 3 shows the EU 20/20/20 objectives. International cooperation is necessary to significantly mitigate the impact of climate change. How best to do this is still to be discovered and decided.

Box 3. The EU 20/20/20 triple objective

The 20/20/20 triple objective, endorsed by the European Council in 2007 and implemented through the EU’s 2009 climate and energy package and Directive 2012/27/EU on energy efficiency (EU, 2012), focuses on: a 20% reduction of the EU’s greenhouse gas emissions, compared with those of 1990; a 20% share of renewable energy in the EU’s gross final energy consumption; and a 20% increase in the EU’s energy-efficiency. With the current set of national domestic measures in place, EU emissions are expected to reach levels in 2020 that are 21% below 1990 levels – including emissions from international aviation. Renewable energy contributed 13% of gross final energy consumption in the 27 EU Member States² in 2011. The EU has therefore met its 10.8% indicative target for 2011–2012 and is currently on track, on average, towards its target of 20% of renewable energy consumption in 2020.

Only a few countries have evaluated the co-benefits of mitigation measures and technologies for human health. Examples include action in the energy, building, and transport sectors (see also

Chapter 14). Table 1 shows measures to reduce greenhouse gas emissions with health benefits and impacts, as identified in the recent IPCC report (Edenhofer et al., 2014b).

² Romania and Bulgaria joined the EU to form the EU-27 in 2007; on 1 July 2013, Croatia acceded to the EU, bringing the total number of Member States to 28, thus creating the EU-28.



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Table 1. Health and other benefits and/or impacts of several greenhouse gas emission reduction measures

Measures	Potential health co-benefit(s)	Potential adverse impact(s)
Energy supply		
Renewable energy (wind, solar, geothermal) replacing coal	From reduced air pollution (except bioenergy)	From occupational dust and toxic exposures associated with solar photovoltaic panel production
	From reduced coal mining accidents Potentially less lung cancer (indoor emissions from household combustion of coal are carcinogenic to humans – classified as Group I by IARC)	Occupational injuries Increased threat of displacement (for large hydroelectric installations) Ecosystem disruption
<u>Social benefits</u>		--
	Off-grid energy access at points of greatest need Substitutes for stand-alone diesel generators and kerosene lighting	
Nuclear replacing coal	From reduced air pollution and occupational hazards from coal mining From increased energy security (resulting from reduced fuel price volatility)	Public health risks from potential nuclear accidents Occupational health risks of ionizing radiation exposure Long-term public health and occupational health risks from nuclear waste storage and treatment Security risks associated with nuclear proliferation, nuclear sabotage and terrorism
Methane leakage prevention, capture and treatment	From reduced air pollution From occupational safety at coal mines	

Table 1 (continued)

Measures	Potential health co-benefit(s)	Potential adverse impact(s)
Transport		
Reduction of fuel carbon intensity	<p>From reduced urban air pollution – in particular, from use of electricity, hydrogen fuel, compressed natural gas and biofuels (unclear)</p> <p>For electrified vehicles, significantly less exposure to urban noise, potentially leading to less noise-related stress, mental illness and cardiovascular disease (among other things).</p>	<p>From increased urban air pollution from use of diesel fuel</p> <p>From reduced road safety (silent electric cars at low speed)</p> <p>No improvement in physical activity or risk of traffic injury</p> <p>No improvement in access for groups without cars</p>
Reduction of energy intensity	<p>From reduced urban air pollution</p> <p>From increased road safety</p>	--
Improved transport infrastructure and modal shift	<p><u>For non-motorized modes:</u></p> <p>Can reduce obesity and risk of diseases related to physical inactivity, including diabetes, cancer, and cardiovascular disease</p> <p><u>From reduced urban noise (modal shift and travel reduction):</u></p> <p>Reduced stress and sleep-related illness</p> <p>May improve mental health and well-being.</p> <p><u>Other co-benefits:</u></p> <p>Equitable access to services, jobs, education and leisure opportunities – particularly in developing countries</p> <p>Increased road safety (via modal shift and/or infrastructure for pedestrians and cyclists)</p> <p>Less risk of injury</p>	<p><u>Increased active transport:</u></p> <p>From potentially higher exposure to urban air pollution and traffic for pedestrians and cyclists – if not accompanied by lower levels of car use and investments in safe non-motorized networks</p> <p>--</p>
Journey reduction and avoidance	<p>From reduced levels of air pollution</p> <p>From increased physical activity: through non-motorized transport modes</p>	--
Buildings		
Fuel switching, renewable energy source incorporation, green roofs and other measures that reduce emission intensity	<p><u>Clean fuels:</u></p> <p>Lower emission of health-damaging carbon monoxide, PM pollution, including black carbon, resulting in fewer premature deaths</p>	<p>Potential explosions, fires and burns from ethanol and liquefied petroleum gas (appropriate equipment and containers needed to ensure safety)</p>

Table 1 (continued)

Measures	Potential health co-benefit(s)	Potential adverse impact(s)
Fuel switching, renewable energy source incorporation, green roofs and other measures that reduce emission intensity	From use of biogas, leading to improved sanitation waste management, due to anaerobic digestion of household and animal excrement From improved solid fuel stoves that meet WHO guidelines, emission rate standards and reduce air pollution	Potential explosions, fires and burns from ethanol and liquefied petroleum gas (appropriate equipment and containers needed to ensure safety)
Retrofits of existing buildings	From reduced air pollution Reduced heat stress and risk of heat-related stroke Fewer cold-related disease risks From less exposure to dampness	From insufficient ventilation (Better ventilation can reduce a range of toxic chemicals, as well as radon, in indoor air pollution and can reduce the risks of airborne disease transmission and asthma.)
Behavioural changes to reduce energy demand	From less outdoor air pollution From improved indoor environmental conditions	--
Industry		
Carbon dioxide and/or non-carbon dioxide emission intensity reduction	From reduced local air pollution and better work conditions	--
Energy-efficiency improvements from new processes and/or technologies	From reduced local pollution, improved water availability and quality From working conditions and job satisfaction <u>Other co-benefits:</u> New business opportunities	--
Material efficiency of goods and recycling	<u>Other co-benefits:</u> New business opportunities Potentially reduced local conflicts	Concerns for safety of new products or recycled products
Product demand reductions	<u>Other co-benefits:</u> Reduced inequity in consumption New diverse lifestyle concept	--
Agriculture, forestry and other land use		
Supply side: forestry, land-based agriculture, livestock, integrated systems and bioenergy	<u>Other co-benefits:</u> Increased food-crop production through integrated systems and intensified sustainable agriculture	Reduced food production (locally) due to large-scale monocultures of nonfood crops

Table 1 (concluded)

Measures	Potential health co-benefit(s)	Potential adverse impact(s)
Supply side: forestry, land-based agriculture, livestock, integrated systems and bioenergy	Incineration of such fuels as biogas produced through anaerobic digestion (for example, of animal or human waste) further reduces the impacts of pollution and greenhouse gases Increased dietary diversity	
Demand side: reduced losses in the food supply chain, changes in human diets and changes in demand for wood and forestry products	<u>Human health and animal welfare benefits:</u> From reduced use of pesticides and reduced burning practices <u>Shifting to diets richer in fresh, in-season vegetables, fruits and legumes:</u> Reduced risk of obesity, heart disease and cancer associated with reduced consumption of red meat and some processed foods	--

Source: Compiled and adapted from WHO (2015); Edenhofer et al. (2014b:72,77, 80, 86, 89); IARC & WHO (2006); Smith et al. (2014); reproduced by permission.

Adaptation

While adaptation has historically been lower on the agenda of international climate policy than mitigation, its inclusion is gaining importance with the need to reduce damage in the timeframe 2030–2040, for the near-term era of committed climate change.

Countries are at different stages of preparing, developing and implementing adaptation strategies (EC & EEA, 2014). Twenty-four Member States in the WHO European Region have developed national adaptation plans or strategies. This development depends on the magnitude and nature of the observed impacts, the assessment of current and future vulnerability, the capacity to adapt, and the willingness to act (see also Chapter 14).

Countries and stakeholders have also engaged in a number of regional adaptation initiatives. In one of them, the

EC adopted, in April 2013, an EU strategy on adaptation to climate change, which has been welcomed by the EU Member States. The strategy aims to make Europe more climate resilient. It focuses on promoting action by Member States, climate-proofing action, and better informed decision-making (EC, 2013).

International cooperation on climate change has diversified institutionally over the past decade – not only at the international level, but also at the national level. In addition to the UNFCCC, non-state actors, such as local governments and the private sector, are engaging in international cooperation on climate change. Incentives – such as monetary and technology transfers, market-based mechanisms, and trade-related measures – have enhanced participation in international cooperation on climate policy.

All WHO European Member States approved the Sixty-first World Health Assembly resolution WHA61.19 in 2008. Member States urged themselves to: develop health measures and integrate them into plans for adapting to climate change; strengthen the capacity of health systems; promote

effective engagement of the health sector and its collaboration with all related sectors; and provide clear directions for planning and investment (WHA, 2008). WHO and its partners are providing tools, methods and training on integrating health considerations into those of climate and its policies.

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6.

EU policy context for the European environment and health process

Major policy frameworks for the environment and health process

The Parma Declaration on Environment and Health (WHO Regional Office for Europe, 2010) was accompanied by an EC declaration that welcomed “the renewed commitment to strengthen the links between Environment and Health” and expressed support to “key environment and health challenges, such as the impact of climate change on health and the environment, socioeconomic and gender inequalities and the burden of noncommunicable diseases linked to environmental conditions and disasters” (EC, 2010a). To strengthen the synergies between WHO and EU processes, the EC declaration referred to the European Environment and Health Strategy (EC, 2003) and the associated Action Plan (EC, 2004). The aim of the

Strategy (also referred to as SCALE, which stands for science, children, awareness, legal instrument, evaluation) was to gain a better understanding of the complex interactions between the environment and health, in order to take action to reduce the impact of environmental factors on human health. The 2004–2010 Action Plan focused on health problems associated with environmental determinants, such as respiratory diseases, asthma and allergies, neurodevelopment disorders, cancer, and endocrine disrupter effects, particularly those affecting vulnerable population groups (EC, 2004).

Although, currently, there is no dedicated EU environment and health policy, human

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health and well-being are featured in the main policy frameworks, including the Europe 2020 strategy (EC, 2010b), the general EU Environment Action Programme to 2020 (also called 7th EAP) (EU, 2013), as well as in the thematic environmental legislation and the horizontal chemical legislation, making them directly relevant to the WHO European environment and health process.

Recognizing that “environmental problems and impacts continue to pose significant risks for human health and well-being, whereas measures to improve the state of the environment can be beneficial”, the 7th EAP sets a thematic priority objective, “to safeguard the Union’s citizens from environment-related pressures and risks to health and well-being”, alongside the protection of natural capital and a resource-efficient, low-carbon economy (EU, 2013).

The 7th EAP addresses such issues as air, water and noise and announces an EU strategy for a non-toxic environment, to be supported by a comprehensive knowledge base on chemical exposure and toxicity. It also considers risk management of emerging chemicals (such as endocrine disrupting substances) and new technological developments (such as nanomaterials). Going by the title “Living well, within the limits of our planet”, the 7th EAP not only guides the EU environmental policy until 2020, but also sets out the longer-term vision of a more sustainable future (Fig. 1). Recognizing the global dimension of many environmental challenges, the 7th EAP emphasizes the role of cooperating with partner countries, including neighbouring countries outside the EU, and the need to support the implementation of the commitments undertaken at Rio+20.

Fig. 1. Priorities of the 7th EAP



Legend:
green: thematic priority objectives;
black: enabling framework;
blue: challenges at different scales.

Source: EC (2014a).

The EU 10-year growth strategy, Europe 2020 (EC, 2010b), aims to create sustainable and inclusive growth and to promote a more resource efficient, greener and more competitive economy. Many of the objectives and targets set forth in the seven flagship initiatives

(Fig. 2) of the strategy are explicitly or implicitly relevant to human health and well-being.

Reduction of health inequalities, which is one of the prominent themes of the Parma Declaration, and promotion

of good health, as a condition for achieving the smart and inclusive growth objectives, are central themes in the EU's health policy (EU, 2014), which supports the Europe 2020 strategy (EC, 2010b). The third multi-annual programme of EU action in the field of health (2014–2020) focuses on promoting health and preventing diseases in the ageing society, to enable a longer, healthy and active life (EU, 2014). The programme aims to contribute to preventing all aspects of disease, “taking into account underlying factors of a social and environmental nature” (EU, 2014). In the context of protecting EU citizens from cross-border health threats, the programme refers to those “caused by biological and chemical incidents, environment and climate change”.

2013) points out the need to engage in disease prevention “sectors that have a major impact on health, such as education, housing, environment, employment”. It further points out that, recognizing health as a precondition for economic prosperity, the EU investments in health should focus on: health-promotion programmes; improved health coverage, as a way of reducing inequalities; and sustainable health systems. However, despite the benefits of disease prevention in terms of both health and economic, “most Member States do not use the opportunities for substantial gains in prevention and health promotion, particularly through the health-in-all-policies approach, which aims to influence the environmental, economic and social determinants of health” (EC, 2013).

The Social Investment Package (EC,

Fig. 2. Europe 2020: a strategy for smart, sustainable and inclusive growth



Source: EEA & JRC (2013:18), based on data from Rappolder (2012).



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Selection of the EU thematic legislation relevant to the environment and health process and the regional priority goals

Thematic environmental legislation continues to be of immediate relevance to the European environment and health process. The revision of different policies and new proposals aims to further contribute to improved protection of human health from environmental risk factors. The most relevant areas of policy include: air quality; chemicals; noise; and freshwater, the marine environment and soil.

Current EU air pollution policy is supported by the 2005 Thematic Strategy on Air Pollution (EC, 2005), which was designed to ensure progress towards attaining “levels of air quality that do not give rise to significant negative impacts on, and risks to human health and the environment”. An extensive review of the EU air pollution policy concluded in 2013 with a proposal for a new clean air policy package (EC, 2014b), which aims to further improve Europe’s air quality by 2030 and beyond – mainly through full compliance, by 2020, with present air quality policies and coherence with international commitments under the Convention on Long-Range Transboundary Air Pollution. The package also addresses air quality issues in cities

and contains a proposal for a directive to reduce pollution from medium-sized combustion plants. The inclusion of the short-lived climate forcing pollutants (a methane emissions ceiling and promotion of mitigation measures for black carbon) reflects attempts to connect the air pollution and climate change policy areas. If fully implemented, by 2030 the package could provide overall health benefits of €40–140 billion and be linked to avoiding 58 000 premature deaths (compared with the business-as-usual scenario) (EC, 2014b).

Policy frameworks for tackling indoor air quality are largely lacking, except for relevant issues addressed by specific pieces of legislation (EEA & JRC, 2013). A need to establish a horizontal framework that links health, safety, energy-efficiency and sustainability considerations has been postulated – for example, by EnVIE (de Oliveira Fernandes et al., 2009) and the Belgian Presidency of the Council of the European Union (2010). In the 7th EAP, indoor air pollution is to be addressed by implementing an updated EU air quality policy that takes into account “the differences between

the sources of indoor and outdoor air pollution”, in the context of the efforts to develop an EU strategy for a non-toxic environment (EU, 2013).

EU chemical legislation spans horizontal policy – which aims to ensure a high level of protection of human health and the environment. This legislation includes: the registration, evaluation, authorization and restriction of chemicals (REACH) (EU, 2006a); the regulation on classification, labelling and packaging of substances and mixtures (EC, 2008a); and legislation on specific groups of chemicals, such as biocides, pesticides, pharmaceuticals or cosmetics (see also EEA & JRC, 2013). Further work, however, is needed on such issues as simultaneous exposure to multiple chemicals (Kortenkamp, Backhaus & Faust, 2009; EC, 2012) and on approaches to chemical risk assessment or chemicals of emerging concern, such as endocrine disruptors – which can interfere with the hormone system, causing adverse effects on health.

The EU adopted a strategy to address mercury pollution, both in the EU and globally, through measures to reduce emissions, cut supply and demand, and protect against exposure, especially to methylmercury in fish (EU, 2005). In 2010, a revision of the mercury strategy was initiated (EC, 2010c). Recently, the EC began undertaking an assessment of changes to existing EU policy and legislation that may be necessary to achieve full compliance with the Minamata Convention on Mercury, adopted in 2013 (UNEP, 2013).

The main legislative instrument to control industrial emissions is Directive 2008/1/EC on integrated pollution prevention and control (EC, 2008b). It was revised and replaced by Directive 2010/75/EU on industrial emissions (EC, 2010d), which is a key instrument for reducing emissions of environmental pollutants.

EU legal efforts to prevent and limit undesirable substances from contaminating foodstuffs are of

relevance to Parma commitments. For example, the EU regulates the use of certain chemical substances, such as those used in farming or in certain production or food processing techniques (EC, 2006a). Also, to reduce the risks of contamination, genetically modified organisms and food packaging are monitored in the EU.

Directive 2002/49/EC on environmental noise (EU, 2002) is the main policy instrument for developing and monitoring actions in this area, both at the Member State and EU level. The EU Member States are obliged to implement noise action plans in cities and close to major transport sources and to implement indicators for noise mapping. A review of the implementation in 2014/2015 may lead to a proposal to review the Directive and strengthen its implementation.

The EU drinking-water policy has been in place for more than 30 years (EU, 1998). Its reporting obligations cover all drinking-water supplies serving more than 5000 people or supplying more than 1000 m³ a day. To address quality issues in small water supplies, the EC developed a guidance document that aims to protect drinking-water holistically, from the source to the tap of the consumer (Hulsmann & Smeets, 2011).

Directive 2000/60/EC establishes a framework for the management, protection and improvement of the quality of water resources (EC, 2000). Directive 2008/105/EC on environmental quality standards (EU, 2008) contains a list of priority or priority hazardous substances for which standards in surface waters are set. The EC reviewed the list and in 2012 put forward a proposal for a directive that amends these two older directives, with regard to priority substances.

Directive 2006/7/EC on bathing water quality (EU, 2006b) will be fully in force by end of 2014. In addition to its provisions on monitoring and surveillance methods to control the quality of inland and coastal bathing waters, the Directive provides for improved public information about

bathing water quality and requires the creation of bathing water profiles, which describe bathing waters and potential impacts and threats to their water quality.

The Marine Strategy Framework Directive (EC, 2008c) aims to protect the marine environment across Europe – including the good environmental status of marine waters – and the marine resource base. An understanding of the complex linkages between the seas and oceans and human health and well-being needs to be improved beyond the well-recognized health threats related to the

consumption of seafood contaminated with bioaccumulated mercury and some persistent pollutants (EMB, 2013).

Soil degradation in Europe is relevant to human health, natural ecosystems and climate change. A proposal for a soil framework directive (EC, 2006b), put forward with the objective to protect soils across the EU, is still in the process of a co-decision procedure. Currently, nine EU Member States have specific legislation on soil protection, especially on contamination.

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7.

The role of international agencies in the environment and health process

Since the 1980s, the European environment and health process has been, by design, an intersectoral and multi-stakeholder collaboration, aiming to identify environment and health priority challenges, clarifying objectives, setting commitments, and shaping policies and actions. This process involves national governments, intergovernmental organizations and NGOs that represent the scientific community, civil society, business, and the youth sector.

The 2010 Parma Declaration on Environment and Health highlights the involvement of various international agencies – together with other organizations (such as specialized UN agencies) and stakeholders (NGOs, business and the scientific community) – in implementing the action programme adopted. More specifically, the Parma Declaration encourages “all relevant international organizations to further develop common tools and guidelines to address the economic impacts of environmental risk factors to health” (WHO Regional Office for Europe, 2010). Besides the common tools and guidelines developed on the basis of the Parma Declaration, international organizations can also effectively participate in the implementation of certain measures by providing the necessary resources and sharing their experiences.

In essence, close cooperation with the relevant international agencies is considered vital to achieve the best possible results. The international agencies involved in the process include those organizations that promote cooperation among governments, NGOs, businesses and other environmental stakeholders.

They support the free exchange of information and public participation – for example, in environmental decision-making. An example of an organization involved in environmental decision-making is the Regional Environmental Center for Central and Eastern Europe (see Box 4).

Other international agencies – so far not directly involved in the environment and health process – are engaged in activities that are highly relevant, and closer collaboration with them and/or formal participation might be beneficial. These include, notably, financial agencies that participate in the evaluation of the economic aspects of environmental risks and in financing projects – for example, on industrially contaminated sites (Martuzzi, Pasetto & Martin-Olmedo, 2014), water and sanitation (UNECE & WHO Regional Office for Europe, 2012), air pollution, and climate change.

The World Bank and other international financial institutions support cooperation between governments, civil society and the private sector, to implement the Millennium Development Goals and the national and regional global priorities of the Rio+20 process – especially in relation to poverty reduction. Among other things, these international institutions contribute to the reduction of health inequalities and to the design and implementation of health institution reforms.

International financial institutions support the development of environmentally friendly health systems, to reduce environmental exposures and mitigate long-term effects, such as the health-related impact of climate change. Per se, a worthwhile objective is the establishment

Box 4. Regional Environmental Center for Central and Eastern Europe

The Regional Environmental Center for Central and Eastern Europe is an international organization. Its mission is to assist governments in addressing environmental issues, and it is an active contributor to major environmental processes and initiatives at the EU, European and global levels, such as sustainable development and climate change. The Center has been active in the European environment and health process from its inception and contributes to the implementation of the Parma Declaration and the Children's Environment and Health Action Plan for Europe. More specifically, the Center cooperates closely with environment, health, and education authorities and with schools to enable them – through analysis and guidelines – to improve the environmental conditions in the schools within and beyond the EU.

Center-coordinated projects include the Schools Indoor Pollution and Health Observatory Network in Europe (SINPHONIE) (REC, 2010), which has a special focus on schools and child-care settings and is aimed at capitalizing on existing knowledge and information and extending the range of information available. SINPHONIE covers old and new EU Member States and some accession countries, using standardized procedures to develop policies, guidelines and good practices, to ensure the best indoor environment for children in schools within the EU. The project involved complex research on health, environment, transport and climate change, with the aim of improving air quality in schools and kindergartens in the interests of children's health in 25 countries.

The School Environment and Respiratory Health of Children (SEARCH) initiative, another project, focuses on environment and health research and is implemented within the Children's Environment and Health Action Plan for Europe Priority Goal 3 on air quality (focused on indoor air quality) and children's health (REC, 2014). The project has two main components: (a) environmental monitoring, health assessment and energy consumption assessment; and (b) environment and health capacity building in schools.

of sustainable health systems with identified sustainable procurement. In general, this can be instrumental in building up the capacity of Member States to achieve better health and environmental performance.

An example of a possibly relevant international financial institution is the International Finance Corporation, part of the World Bank Group – the world's largest multilateral investor in health and education services to improve standards of quality and efficiency. In the field of public health and education systems, the International Finance Corporation works closely with the World Bank and low-income country governments to provide high-quality health care or educational services; its strategic priorities, however,

include social and environmental sustainability.

There are also recent examples of financial support within the framework of international development cooperation, through the International Development Association of the World Bank. It contributes support to projects in agribusiness, health and water management in such countries as Albania, Egypt, Kazakhstan and Viet Nam. Such collaboration benefits the donors and the health, environment and development of those receiving support. Another example of support from a financial institution is that of the Swedish International Development Fund. The International Development Association aids in regional and bilateral cooperation

in eastern Europe, in sustainable development, institutional reform and such emerging issues as the impacts related to climate change. Besides these examples of financial support, the

involvement of international NGOs (such as the Health and Environment Alliance) in the environment and health process strengthens the measurable results of progress in environment and health.

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The role and activities of NGOs

Introduction

Over the past 15 years, NGOs have shown their effectiveness in amplifying the health and environment message to the widest possible audience and in developing solutions to implement the Parma Declaration time-bound goals to reduce children's exposure to environmental contaminants.

Civil society has been an active contributor in the WHO environment and health process since its inception. Following the Third Ministerial Conference on Environment and Health, in London in 1999, NGOs from both the environment and health sectors were able to meaningfully participate as official members of the European Environment and Health Committee. They have brought diverse expertise, grassroots mobilization, and impetus for more protective environmental health policies.

To reflect the views and positions of the heterogeneous NGO community, a mechanism of representation has been used. Its representation is comprised of the Health and Environment Alliance (HEAL) for the health sector, which has represented almost 100 NGOs, and Eco Forum which, through Women in Europe for a Common Future (WECF), represents about 150 NGOs in the environmental sector.

Leading up to (and during) the ministerial conferences, NGO activities have been very important. These activities included: promoting ambitious goals and targets for the Parma Declaration; involving a broad range of stakeholders from all sectors; showcasing best practices and environmental health achievements Europe-wide; and providing material to inform policy-makers, media and the general public about why the environment is an asset to our health, and to that of our children. Moreover, NGOs have also been instrumental in scrutinizing and challenging governments on commitments they have made in the implementation phase.

The participation of these pan-European networks represent hundreds of diverse types of NGOs, ranging from women's and children's groups to health professionals (see for example Box 5), patient groups and consumer organizations in almost every country. Their participation is a key component in the vitality of the process, leveraging and multiplying the actors involved and ensuring that it has political relevance and societal meaning.

Besides their continuous participation in the political debate, the NGO advocacy role has been exercised through numerous initiatives at the national and international level, carried out in line with the Parma commitments. Some examples follow.

Raising public awareness, building capacity and advocating change

NGO activities in this area include the following.

- The WECF and HEAL policy report, *Non-communicable diseases and environmental determinants* (WECF,

HEAL & IPEN, 2013), responds to a key environment and health challenge identified at the Fifth Ministerial Conference on Environment and Health in Parma.

- A comprehensive review of public policy on children's environmental health in Europe (Jensen & Smith, 2014) features the WHO process and the Children's Environment and Health Action Plan for Europe (CEHAPE) call for action. It is contained in the first-ever publication for physicians and medical students, *Textbook of children's environmental health*.
- NGOs have helped extend public interest in and scientific recognition of early life exposures by establishing wide and receptive audiences, especially since the WHO Regional Office for Europe and the European Environment Agency (EEA) joint publication of *Children's health and environment: a review of evidence* (Tamburlini, von Ehrenstein & Bertollini, 2002).
- Significant gains have also been made in building new and strengthened partnerships for the implementation of Parma Declaration goals that involve non-profit-making health insurers, respiratory doctors, paediatricians, asthma patients, breast cancer groups and new European chapters of scientific societies.

Box 5. A national project: training in environmental health and medicine for Belgian health professionals

Belgian doctors, nurses, physiotherapists and other health professionals currently receive limited training in environmental health, and few health professionals were taught, through their education, about the adverse effect on health of the environment. But this is going to change in the future.

Training and certificate

All Belgian authorities are now working together to implement a certificate in environmental medicine for certified health professionals specializing in the field of environmental medicine. Also, basic training and continuing education in environmental health and medicine will be introduced in the education of future and active health professionals. Within five years, both the certificate and the trainings will be operational.

Belgian National Health and Environment Plan

Training health professionals in environmental medicine is an initiative from the Belgian National Cell Environment and Health. This National Cell is an environment and health partnership between the federal government, communities and regions. This partnership started 10 years ago with a legal agreement, when Belgian authorities developed the Belgian National Environment and Health Action Plan. Among its goals is making health professionals aware of the threat the environment can pose to human health.

Unique project

In 1996, WHO already stated that doctors should be able to evaluate, monitor and treat disorders linked to the environment. The project to train Belgian health professionals has a great societal relevance, for several reasons.

It meets a demand of patients, who learn more about the adverse effects on health of the environment through the media.

Health professionals will be able to perform their job more efficiently because of this project.

It will provide a set of relevant instruments for identifying environmental causes that affect health.

In the long run, it will contribute to improving public health in Belgium which, in turn, will have a positive effect on the country's economy.

- HEAL's communication activities for the European health and environment community include: a monthly bulletin of policy news from the EU, WHO, European and national institutions and civil society (7000 subscribers); a Health and Environment theme at an international environmental film festival; and a major social media programme, including a photo diary, Environmental Health Champion, that features WHO and other leading policy-makers and scientists for the past 10 years.
- HEAL's advocacy initiatives, developed with the help of evidence-based, health economics reports, have called for health-beneficial policy changes related to mercury, climate change and coal.

Chemicals

NGO activities in this area include the following.

- Environmental NGOs have raised awareness of the health impacts of asbestos via high-level policy meetings, training workshops, and informative material published in several languages (WECF, 2014a).
- The WECF network's Project Nesting provides a web platform (10 languages, thousands of visits per month) and training programmes, for parents and professionals working with children, on improving children's environmental health through safer consumer products (WECF, 2014b).
- HEAL and its members and partners have provided a Chemicals Health Monitor project (HEAL, 2014) to showcase how early life exposure contributes to an increase in chronic disease among children and adults. It also initiated EDC-Free Europe, made up of 50 campaign partners, for capacity-building and advocacy and information activities on endocrine disrupting chemicals. HEAL and WECF support civil society involved in the strategic approach to international chemicals management (SAICM) implementation.

Water

NGO activities in this area include the following.

- WECF's successful initiative on safe water and sanitation for children has contributed to the development of the 2014–2016 programme of work, adopted under the Protocol on Water and Health, which now features improving water, sanitation and hygiene in schools.
- WECF has developed a compendium for developing water and sanitation safety plans, involving schools in the pan-European region.

Climate change

NGO activities in this area include the following.

- Advocacy capacity to ensure the positive health impact and the health benefits of strong climate and energy policies has been strengthened by HEAL participation in the Working Group on Health in Climate Change and international climate negotiations and by publishing key advocacy reports and information materials.
- The first ever Climate and Health

Summit, in Durban, in 2011, resulted in: the creation of the Global Climate and Health Alliance (GCHA, 2013), the second Climate and Health Summit,

in Warsaw, Poland, in 2013; new advocacy materials; and a website – supported by WHO.

Child safety

NGO activities in this area include the following.

- Progress has been made in preventing injuries to children and in sharing good practice through the European Child Safety Alliance's project, Child Safety

Report Cards (European Child Safety Alliance, 2014). Thirty-one countries have scores on over 100 proven safety measures to reduce the number one cause of death and disability in every Member State – child injury.

Outcomes

The outcomes of NGO activities include the following.

- In 53 countries, 600 NGOs were informed about the environment and health process.
- In 25 countries, 200 NGOs were actively involved in activities related to the regional priority goals (RPGs).
- For the CEHAPE Award, 120 NGOs submitted applications, presenting

projects related to the RPGs. Five hundred NGOs disseminated the call for the Award.

- Hundreds of quality media articles were published, stimulated by NGO press materials that covered the science, policy and advocacy in the European Region.
- Hundreds of thousands of hits on NGO online sites were prompted by social media outreach.

Recommendations

The following recommendations are made to policy makers.

- They should use the latest science to drive precautionary policies in a more systematic way.
- They should use better calculations of the costs of inaction and the savings incurred for health care and public health to drive more protective environmental policies across the range of Parma commitments and environmental health challenges.

- National environment and health focal points should set up stakeholder consultations and ensure the participation of NGOs and youth.
- New topics should include the following areas: energy and health; local, sustainable and nutritious agricultural and food production; urban environments; mechanisms for responses to early warnings; pesticides; and prenatal and early exposure.

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The role of young people

Introduction

In 2013, about 165.8 million young people 10–24 years of age lived in the pan-European region – a significant part of the European population. These young people can play an important and positive active role in steering the development of future consumption patterns and technology, as well as providing societal support for healthy and sustainable patterns. They represent a major stakeholder in the European environment and health process.

Launched in Florence, Italy, in October 2012, the European Environment and

Health Youth Coalition (see logo in Fig. 3) is a new international NGO, a direct result of the commitments made by the Member States of the WHO European Region through the Parma Declaration to “ensure that youth participation is facilitated across all Member States at both national and international levels” (WHO Regional Office for Europe, 2010a). The Coalition aims to ensure that young people’s environment and health needs and priorities are recognized and represented at all levels – specifically, within the European environment and health process.

Fig. 3. Coalition logo



Through education, awareness raising, networking, communication and various peer-to-peer initiatives, the Coalition members act as change makers and catalysts, to ensure better environment and health standards in their communities.

The Coalition helps link different environment and/or health youth projects and activities to national and international strategies, which ensures that different stakeholders (youth groups, civil society, media, schools) work together towards common goals.

The build-up

The 2010 Ministerial Conference on Environment and Health (Parma Conference) featured the participation of over 70 young people from 35 countries. In the Youth Conference Declaration (WHO Regional Office for

Europe, 2010b), they undertook building a transparent and democratic youth network and working with local, regional and national governments and partners in implementing good policies.



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Building on the Parma Conference's commitment to support young people, the former Children's Environment and Health Action Plan for Europe Youth Network moved into another phase of development to strengthen the participation of youth. Since then, a series of youth meetings have taken place, gradually setting the stage for legally establishing a democratic, representative body of young people within the European environment and health process. The European Environment and Health Youth Coalition (EEHYC) has since become more formally involved in WHO programmes, including the Protocol on Water and Health and THE PEP. Also, the Coalition became a member of the European Environment and Health Task Force and obtained observer status for the European Environment and Health Ministerial Board.

The Parma Conference also introduced

a structured way for youth to participate in the environment and health process. In their Parma Youth Declaration, young people committed themselves to advancing meaningful youth participation and to strengthening cooperation with governments and other European environment and health process partners. Also, ministers committed themselves to providing young people with the necessary means to be actively engaged in environment and health policy-making and in implementing the Parma commitments.

Thus, the first objective was to *put a face on the youth*, so that Member States know who exactly they are talking to. With the support of Member States, WHO and other UN agencies, a series of meetings, discussions and events were organized between 2011 and 2014 to address a variety of issues on the Parma agenda.

Youth inputs to the European environment and health process

Developed to address the needs of both youth and European Region Member States, the mission of the EEHYC is (EEHYC, 2014):

to support, legitimize and give visibility to young people's participation in processes aimed at achieving a healthy and sustainable environment. The EEHYC will act to unite and focus youth-led activities

to implement, monitor and strengthen the Parma Declaration commitments on environment and health. Primarily, this will be achieved by helping young people to establish platforms and networks and supporting ministries in creating effective mechanisms for meaningful youth participation in the European environment and health process.

of the 53 European Region Member States are ongoing. National EEHYCs aim to empower, link and represent young people involved in environment- and/or health-related activities at all levels: youth organizations, students, informal groups, researchers, private and public sector employees, entrepreneurs, and professionals.

The Coalition is an international umbrella organization for national EEHYC groups. National youth coordinators have been selected to start the process of building these national coalitions. By the end of 2014, 17 current national youth coordinators are expected to complete the establishment of national coalitions in their countries, and efforts to build representative mechanisms in the rest

The objectives of the European Environment and Health Youth Coalition Action Plan 2014–2015 were adopted at the Coalition's first General Assembly and form the main tasks of the national youth coordinators (EEHYC, 2014).

To give visibility to young people participating in processes aimed at both promoting health and achieving

Box 6. Involvement of youth organizations in the environment and health process

Public recognition of youth as key actors in social development processes has been strengthened through the UN Convention on the Rights of the Child (UN General Assembly, 1989), the most widely ratified international agreement. It recognizes that participation is a right of all children and young people.

Lithuania, this past decade, saw the growing importance of young people participating in decision-making, as successful efforts by governments to engage the young led to better policy formulation, implementation and evaluation. The Ministry of Health of the Republic of Lithuania, the Lithuanian Health Promotion and Diseases Prevention Centre and the WHO Country Office for Lithuania are setting a good example by building partnerships with young people and giving them an opportunity to shape the policies and influence the outcomes of decision-making processes. This is essential to meaningful participation by young people. Towards the aim of increased participation, the three institutions mentioned invited the EEHYC to Lithuania and hosted their stay, with support from the WHO Regional Office for Europe.

The main purposes of the meeting and activities were: to discuss the involvement of young people in the decision-making processes; to encourage young people to become active participants in the environment and health sectors, thus raising social and political issues not just in their own countries, but also at the international level; and to consider the collaboration and partnership possibilities associated with the EEHYC's action plan.

The main practical outcome of the meeting was that representatives of the Lithuanian institutions gave their support and took responsibility for establishing the EEHYC as a new international NGO, to support the engagement of young people in national environment- and health-related processes that implement the commitments made by the Member States of the WHO European Region at the Fifth Ministerial Conference on Environment and Health, held in Parma, Italy, in 2010.

sustainable environments, the EEHYC published, in November 2013, the booklet *Promoting the participation of young people in the European environment and health process* (EEHYC, 2013). The booklet highlights examples of meaningful participation of youth – including examples of youth-led projects on environment, health and education in the pan-European region – and serves as inspiration to both other youth organizations and Member States.

Since 2010, the Coalition has made a significant contribution to implementing the Parma agenda in different domains, including at the national level (see Box 6 for an example from Lithuania). It contributed, for example, to implementing the 2011–2013 work programme of the Protocol on Water and Health (UNECE & WHO Regional Office for Europe, 2012) and is engaged in the current phase, 2014–2016 in particular, with activities related to water, sanitation and hygiene in schools.

In preparation for the Fourth High-

level Meeting on Transport, Health and Environment, the Coalition organized, in March–April 2014, the photo and video competition *City in motion: people first*, aimed at making young people sensitive to the problems related to transport. The competition featured 90 entries from 19 countries, reaching out to more than 5000 actively engaged people. During the Fourth High-level Meeting on Transport, Health and Environment, the Coalition also organized a pedometer event, in which meeting participants measured their mobility throughout the event, highlighting walking as a healthy, clean and sustainable means of transportation.

To support quality inputs from national youth coordinators and the EEHYC to the European environment and health process, a meeting was organized (in July 2014, in Bonn, Germany) to strengthen their capacity to develop national structures of the EEHYC and to work with national and local policy-makers and youth.

Implementing the Parma commitments to youth: a mixed picture

These developments are very encouraging – which is attributable directly to the outcomes of the Parma Conference – and quite unique, since they represent an important and innovative attempt to move beyond tokenism and patronizing approaches to the participation of youth. They also reflect: the commitments of several Member States to support the engagement of youth organizations in implementing their national environment and health agendas; and the enthusiasm of many youth organizations, which are mobilizing their members across Europe to bring about change, creativity and innovation in addressing environment and health challenges in Europe.

It appears, however, that Member States still need to make a greater and sustained effort and to demonstrate a stronger commitment to implementing

the Parma commitments to youth across the European Region. This assessment is based on the results of the policy survey WHO carried out in preparation for the Mid-term Review (WHO Regional Office for Europe, 2015).

Of the 28 European Region Member States that responded to the policy survey questions related to youth engagement in the European environment and health process, 60% reported involving youth organization in the process and 50% reported the existence of a policy to support the involvement of youth in the process. However, only three of the countries reporting (9.3% of the total) indicated they introduced new policies to support the Parma commitment to engaging youth since the Fifth Ministerial Conference on Environment and Health. These findings indicate that, since only

about a quarter of the European Region Member States have reported about youth engagement, strengthening youth involvement in the European environment and health process still needs significant improvement.

The establishment of the EEHYC as a legitimate youth NGO may play an important role in advocating greater engagement of youth at the national

level. It could help in filling gaps in the knowledge (and practice) of stakeholder engagement and in overcoming the challenges that presently exist to the participation of youth. At the same time, several Member States may need additional support to find ways to constructively engage youth organizations in the national environment and health agenda, to implement the political commitments made in Parma.

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10.

Safe water and sanitation

Introduction

Having easy access to adequate sanitation and sufficient amounts of safe water for drinking and hygiene is essential to human health and well-being and should be a prerequisite for a decent life in the 21st century. With good reason, in 2010, the UN General Assembly recognized access to safe and clean water and sanitation as a human right (UN General Assembly, 2010).

Diseases related to inadequate water, sanitation and hygiene still represent a significant health burden, primarily from diarrhoea, but also from other disease outcomes, such as legionellosis and soil-transmitted helminth infections. Priority chemicals in drinking-water that can cause non-infectious diseases include arsenic, fluoride, lead and nitrate.

Recent global estimates suggest that 58% of cases of diarrhoea can be attributed to unsafe water, inadequate sanitation and poor hygiene. In low- and middle-income countries of the WHO European Region, 10 diarrhoea deaths a day can be attributed to inadequate water, sanitation and hygiene (Prüss-Üstün et al., 2014). Children under five years of age are particularly vulnerable to diarrhoea as a leading cause of malnutrition and death (WHO & UNICEF, 2013).

Diarrhoea is preventable, and prevention is worth the investment. For the Caucasus and central Asia, for example, every dollar spent on improving sanitation brings an average economic return of US\$ 4.8, in the form of lower health costs, time savings and improved productivity (Hutton, 2012).

Water and sanitation: still a luxury for millions of Europeans

More than 90% of the population of the WHO European Region has access to so-called improved sources of drinking-water and sanitation facilities, as defined by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (WHO & UNICEF, 2014). Still, these overall figures mask great gaps and disparities that need to be addressed.

- Sixty-seven million people lack access to basic sanitation, in terms of functioning toilets and safe means to dispose of human faeces. Little progress has been made on sanitation coverage, and the WHO European Region is not on track to meet the Millennium Development Goal 7c target on sanitation (WHO & UNICEF, 2014).
- About 100 million people lack access to piped drinking-water on premises,

and more than 6 million still rely on surface water as their primary source, posing severe risks to health (WHO & UNICEF, 2014).

- Inequalities exist in access to drinking-water and sanitation services. Rural dwellers and the poor are the most disadvantaged. In the Caucasus and central Asia, for example, 71% of the rural population live in homes without access to piped water on premises, whereas only 14% of town and city residents are similarly disadvantaged (WHO & UNICEF, 2014).
- Most importantly, the Caucasus and central Asia is the only Millennium Development Goal region where we observe stalled progress and even setbacks in access to piped water on premises (WHO & UNICEF, 2014).

Looking beyond access

Figures on access tell only half the truth. To effectively prevent and control waterborne disease, intervention strategies need to look beyond securing access. Having a water tap or toilet in one's dwelling does not guarantee safe, sufficient and reliable water or environmentally sound disposal of human waste. Preliminary evidence suggests that transition from access to basic piped water on premises to systematically managed services can result in significant reductions in the risk of diarrhoeal disease (Prüss-Üstün et al., 2014).

The WHO recommended Water Safety Plan approach, a comprehensive risk assessment and risk management method, is the most effective means of consistently ensuring the safety of a drinking-water supply (WHO, 2011). Scaling up the adoption of water safety plans at policy and service provider levels is a Regional priority that shows

significant momentum. More than a third of all countries in the WHO European Region have either established enforceable regulations or scale-up strategies on Water Safety Plan-type approaches.³

The acceptance and uptake of systematic approaches to water and sanitation safety planning is vital to respond to the risks associated with such emerging dynamics as the occurrence of micropollutants in drinking-water (see Box 7) and the effects of climate change. Systematic assessments of the climate change resilience of utilities and integration of resilience into drinking-water and sanitation management is of major importance to control: the adverse effects of extreme events; variability and change patterns, such as heavy rainfall, flooding and drought; and the long-term consequences that affect the availability and quality of water resources (WHO, 2009).

Box 7. Micropollutants in drinking-water

The occurrence of pharmaceuticals and endocrine disrupting chemicals in the water cycle is of emerging concern in the WHO European Region. Currently available evidence suggests that adverse effects on the health of people are unlikely from exposure to trace concentrations typically found in drinking-water. Concerns about pharmaceuticals and endocrine disrupting chemicals should not divert the attention of water suppliers and regulators from waterborne pathogens and other chemical priorities (WHO, 2012). The Water Safety Plan approach supports on-site risk assessment and identification of preventive measures to address the main sources of risk and thus reduces people's exposure to pharmaceuticals and endocrine disrupting chemicals via drinking-water.

Maintaining safe services for small water supply and sanitation systems requires particular policy attention. Such systems provide the backbone of services in rural areas and small towns where 30% of the population in the WHO European

Region live. Challenges related to human resources, sustainable financing and institutional support frequently lead to poor water quality and thus to an increased risk to public health. An example of the consequences of such

³ This is based on a preliminary analysis of the 2013 WHO Global and Regional Survey on Water Safety Plans (publication forthcoming).

challenges is given in Box 8. For the period 2008–2010, EU Member States report that compliance for microbiological water quality parameters for small supplies is significantly lower than for large systems, and the need for targeted policy action towards improvement of small systems

has been recognized by the 7th EAP (EC, 2014). Such action is cost effective: for the WHO European Region, an investment of US\$ 1 is estimated to result in a mean return that ranges from US\$ 3 to US\$ 21, in terms of preventable disease (Hunter et al., 2009).

Box 8. Case study: small systems in Georgia

To inform the further development of national policies on improving small water supplies, a WHO-supported rapid assessment of drinking-water quality and prevailing sanitary risk factors was undertaken in two model districts in rural Georgia in 2011 (NCDC, 2013). The survey revealed significant microbiological contamination problems. Compliance with national standards for faecal indicator bacteria was less than 40%. In contrast, chemical contamination was found not to be of major concern. The results of the assessment identified possible interventions that would improve the situation, including infrastructural, source protection and capacity building measures.

Georgia's participation in the 2013/2014 cycle of the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) revealed, among other things, that the lack of wastewater treatment and skilled operators are key challenges in rural areas. To ensure sustainability in operation and basic maintenance of water supply and sanitation systems in Georgia, it is important that local governments are provided with the means to attract and retain qualified professionals.

The Government of Georgia has started to reform the water supply sector, to secure stable provision of drinking-water for the population. Recently, the National Food Agency of the Ministry of Agriculture developed annual plans of state programmes that monitor and control drinking-water quality.

The figures available on access do not tell the full story about water, sanitation and hygiene beyond households – namely, in schools, kindergartens and other child-care settings. Providing children with safe water, soap, and functional and clean toilets should be considered as a must in the 21st century. Still, there are considerable gaps between policy ambitions and the realities observed in schools. The 2014 WHO-led survey on environment and health policies confirmed that all 32 participating countries have policies and programmes that address children's access to safe sanitation and hygiene in schools and kindergartens (WHO Regional Office for Europe, 2015). In contrast, recent WHO

and UNICEF school surveys in six Balkan, Baltic and Caucasian countries hint at a range of shortcomings – in terms of number of available toilets and facilities for washing hands, privacy, cleanliness, and availability of soap and toilet paper, as well as low satisfaction of pupils with sanitation facilities (WHO Regional Office for Europe, 2015). These problems may result in children's increased exposure to health risks, but may also lead to missed learning opportunities for future generations. The findings call for more attention to enforcement of policies when it comes to concrete improvement actions in schools, and the broader involvement of stakeholders.



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Firm policy goals towards incremental improvement

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes is the first international instrument to link prevention and reduction of water-related disease and the sustainable use of water resources (UNECE & WHO Regional Office for Europe, 1999). It is the main policy mechanism for advancing implementation of the Parma Commitment to Act, specifically Regional Priority Goal 1 on ensuring public health by improving access to safe water and sanitation. Currently, the Protocol has 26 parties, representing about 60% of the population of the WHO European Region, with Bosnia and Herzegovina and Serbia acceding to the Protocol since 2010.

The Protocol requires parties to establish, publish and report on firm targets, including dates for their fulfilment. Targets must be tailor-made, reflecting the country's socioeconomic and environmental conditions, as well as its needs and priorities in the water, sanitation and health domain. To date, 10 parties and one other state have established such targets, and several countries have formulated draft targets that await formal adoption (UNECE, 2014).

The targets provide a clear policy framework for action that directs decision-making and resource allocation at different levels of government. Experience has shown that national targets trigger access to financing for implementing improvements. Donors and international financial institutions consider the Protocol targets as an entry point to align their technical support and investments with firm policy goals. For example, the European Bank for Reconstruction and Development explicitly aims to foster implementation of the Protocol through its Water Fund.

The third session of the Meeting of the Parties of the Protocol – November 2013, in Oslo – adopted a programme of work for 2014–2016. In agreement with the water, sanitation and hygiene post-2015 vision (UN-Water, 2014), promoting safe management and tackling the challenges related to water, sanitation and hygiene in schools, small systems and inequalities in access have been identified as priorities that unite all countries across the WHO European Region, irrespective of their socioeconomic status. In addressing these priorities, the Protocol plays a vital role as a Regional hub for mutual assistance and cooperation, capacity building, networking, and the exchange of best practices.

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Preventing disease through improved outdoor and indoor air quality

Background

Air quality is the largest contributor to the burden of disease caused by environmental factors. The already strong evidence on the adverse effects on health of ambient air pollutants, such as particulate matter and ozone, has evolved in the last three years. Also, the monitoring and modelling of exposure to air pollution is reviewed continually. In general, indicators of exposure to ambient air particulate matter (indicators PM_{10} and $PM_{2.5}$, indicative of particulate matter with an aerodynamic diameter smaller than $10\ \mu m$ and $2.5\ \mu m$, respectively) and ozone (indicator SOMO35, which stands for the sum of ozone means over 35 ppb) in the European Region have not

changed substantially over the last few years. In countries in the eastern part of the Region, monitoring is very limited. In most countries, regular monitoring of indoor air pollutant levels in indoor environments where children spend a significant part of their time, such as kindergartens and schools, is not conducted. The limited data available underscore the need to develop suitable policies to address indoor air quality in facilities for children. The overall compelling scientific evidence and significant burden of disease from air pollution provide convincing arguments for the need to take further action to reduce emissions and improve air quality, as set forth in the Parma Declaration.

Outdoor air quality

Air quality is a key determinant of environmental health. In the WHO European Region in 2012, exposure to air pollution accounted for almost 600 000 premature deaths (WHO, 2014a). These deaths were due to ischaemic heart disease, chronic obstructive pulmonary disease, lung cancer, and acute lower respiratory infections. Specifically, 482 000 deaths were attributable to ambient air pollution and 117 200 deaths to household air pollution in the WHO European Region. While deaths from ambient air pollution occur in all European countries, regardless of their income level, those from household air pollution are more than five times greater in low- and middle-income countries

than in wealthier ones. For major noncommunicable diseases (such as cardiovascular diseases), exposure to air pollution is a more important risk factor than was previously thought.

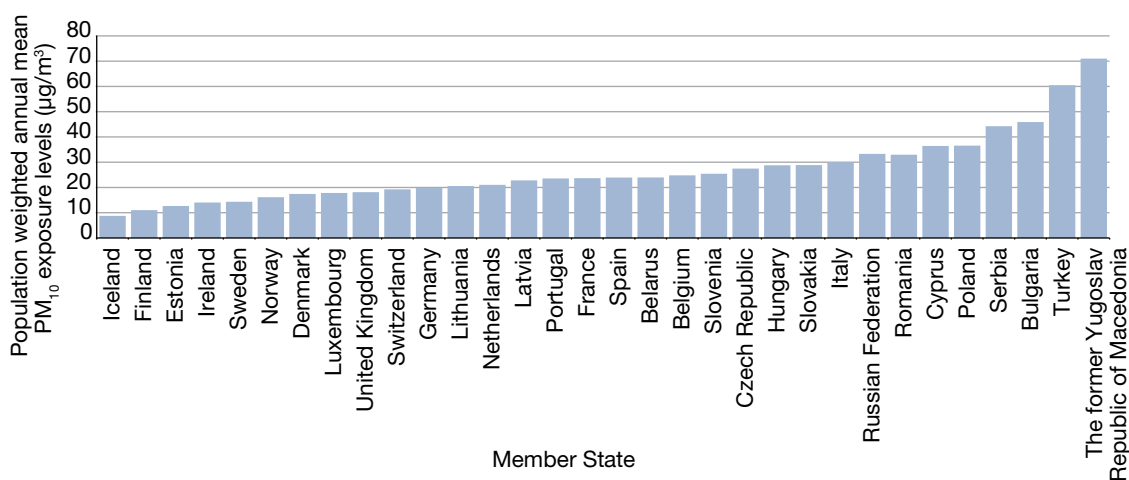
WHO has been reviewing the state of the science on the health aspects of air pollution under the Review of Evidence on Health Aspects of Air Pollution (REVIHAAP) Project (WHO Regional Office for Europe, 2013) and collecting data on exposure to particulate matter and ozone in outdoor air as part of the Environment and Health Information System (ENHIS) database of the WHO European Region (WHO Regional Office for Europe, 2015).

Particulate matter

Particulate matter is a mixture with physical and chemical properties that vary by location. Biological components, such as allergens and microbes, are also found in particulate matter. The health effects of particulate matter are well documented. They are due to both short-term (hours, days) and long-term (months, years) exposure and include: respiratory and cardiovascular morbidity, such as aggravation of asthma, respiratory symptoms and an increase in hospital admissions; and mortality from cardiovascular and respiratory diseases and lung cancer (WHO Regional Office for Europe, 2013; Loomis et al., 2013).

For particulate matter in ambient air, population exposure is reflected in the indicator reported by combining data on PM_{10} or $PM_{2.5}$ concentrations with the size of population exposed. Fig. 4 shows the average levels of exposure to PM_{10} for 2012 (or the most recent year of data available) for 32 Member States of the WHO European Region. The population-weighted country-level average background PM_{10} exposure in urban or suburban areas varied from $8.7 \mu\text{g}/\text{m}^3$ to $71.0 \mu\text{g}/\text{m}^3$. A variation in exposure levels of twofold to threefold was observed between cities in some countries. For $PM_{2.5}$, also in 2012 (or the most recent year available), the levels varied from $4.6 \mu\text{g}/\text{m}^3$ to $50.4 \mu\text{g}/\text{m}^3$.

Fig. 4. Population-weighted annual mean PM_{10} exposure levels (in $\mu\text{g}/\text{m}^3$) in European Region Member States, 2012 (or latest year available)



Source: data extracted from ENHIS database (WHO Regional Office for Europe, 2015).

In general, population-weighted average exposure to PM_{10} and $PM_{2.5}$ in all cities of the Region for which data are available has not changed substantially over the last few years. The number of monitoring stations, however, has increased over the years, especially for $PM_{2.5}$. In 2012, the PM_{10} and $PM_{2.5}$ data from regular population-relevant monitoring were available, respectively, for 479 cities in 30 countries and 300 cities in

26 countries. In European cities where particulate matter is monitored, 75.4% and 94.0% of people experience annual levels exceeding the WHO air quality guideline for PM_{10} ($20 \mu\text{g}/\text{m}^3$) and $PM_{2.5}$ ($10 \mu\text{g}/\text{m}^3$), respectively (yearly average values, WHO Regional Office for Europe, 2006). This gives rise to a substantial risk to health. For 28.6% of urban residents, the EU limit value for PM_{10} ($40 \mu\text{g}/\text{m}^3$) was exceeded in 2012.

Ozone

There is evidence that short-term exposure to ozone is associated with morbidity (adverse effects on pulmonary function and lung permeability, lung inflammation, respiratory symptoms, and increased use of medication) and mortality. These effects appear to be independent of the effects of other air pollutants, such as particulate matter. Evidence on the effects of long-term exposure to ozone is accumulating; several cohort analyses have been published on long-term exposure and mortality (WHO Regional Office for Europe, 2013).

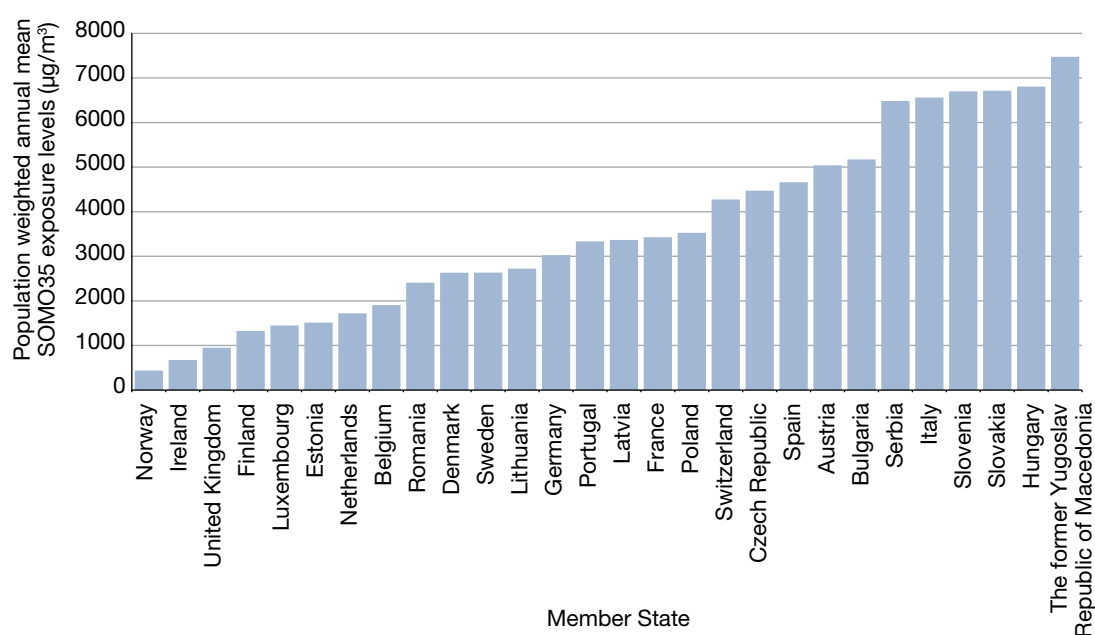
The indicator SOMO35, expressed as $\mu\text{g}/\text{m}^3$ (or ppb) \times days, can be used to quantify the cumulative yearly health impacts of ozone. At this time, there is no convincing evidence of a threshold for an effect on mortality at the population level from exposure to ozone; there is, however, substantial uncertainty about the magnitude of health effects from exposure to ozone at low concentrations (WHO Regional Office for Europe, 2013). Therefore, the quantification of possible effects of daily exposure to ozone on

mortality is feasible only when ozone concentrations are sufficiently high and estimates are reliable – that is, above $70 \mu\text{g}/\text{m}^3$ (35 ppb). For this reason, the indicator SOMO35 is used here.

The indicator reported for ozone reflects the cumulative annual exposure to ozone measured in urban background locations. Fig. 5 shows the average levels for SOMO35 (in $\mu\text{g}/\text{m}^3 \times$ days) for the most recent year of data available (2012) for 28 Member States of the WHO European Region. Mean SOMO35 values varied by country from 438 $\mu\text{g}/\text{m}^3 \times$ days to 7474 $\mu\text{g}/\text{m}^3 \times$ days. In general, the indicator values increased slightly during the period 2000–2012 in the WHO European Region Member States for which data were available. In most countries, there was a significant increase in the indicator values for the year 2003, most likely due to the unusually hot summer.

Ozone data, as part of regular monitoring, were available for 426 cities in 28 countries in 2012. The coverage of urban populations varied from 14.6% to 59%.

Fig. 5. Population-weighted annual mean SOMO35 (in $\mu\text{g}/\text{m}^3 \times$ days) in European Region Member States, 2012



Source: data extracted from ENHIS database (WHO Regional Office for Europe, 2015)

Outlook

For both particulate matter and ozone, ground-level monitoring is very limited in countries in eastern Europe, the Caucasus and central Asia, due to the small number of monitoring stations. Monitoring needs to be improved in many countries to assess population exposure and assist local authorities in establishing plans for improving air quality.

The majority of Member States of the WHO European Region are parties to the UNECE Convention on Long-range Transboundary Air Pollution (UNECE, 1979). Under the Convention, the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone was amended in 2012 and now includes, for the first time, commitments to reduce emissions of $PM_{2.5}$ (UNECE, 2013). Furthermore, black carbon is now explicitly mentioned in the revision as an important component of $PM_{2.5}$. The revised Protocol also introduced flexible arrangements to facilitate accession of new parties – mainly countries in southern and eastern

Europe, the Caucasus and central Asia (UNECE, 2014). The amended Protocol has already been ratified by several Member States.

For EU countries, the EC released a new air policy package in December 2013. It provides new measures to reduce air pollution, updates existing legislation, and aims to further reduce emissions from industry, traffic, power plants and agriculture. This policy package is now being considered by the other EU institutions, with a view to negotiate and agree on the different elements in the package.

The overall compelling scientific evidence on (and significant burden of disease from) air pollution provides convincing arguments for the need to take further action to reduce emissions and improve air quality (for example through transport policies, which will have further co-benefits, as described in Box 9 with an example from Slovenia), as set forth in the Parma Declaration.

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Indoor air quality

Evidence on the adverse effects on health of exposure to indoor air has accumulated and been summarized in recent WHO indoor air quality guidelines for dampness and mould, selected chemical pollutants, and household fuel combustion (WHO Regional Office for Europe, 2009, 2010; WHO, 2014b). Very few data are available on exposure to indoor air pollutants in facilities for children, such as schools and kindergartens – especially in the eastern part of the Region. Recently, international projects have applied harmonized approaches to monitor exposure to indoor air pollutants in schools in many countries – for example, the recently completed SINPHONIE, SEARCH and HITEA projects and ongoing WHO surveys in schools.⁴ Also, national and subnational monitoring programmes have been conducted – for example, a national survey of schools in France (Michelot et al., 2013; REC, 2014; EC, 2014).

Preliminary findings from these projects demonstrate that poor ventilation and exposure to mould and dampness remain widespread problems and that further efforts to identify and eliminate sources of contamination are warranted to prevent the accumulation of indoor air pollutants, such as formaldehyde and benzene, in some classrooms.

Although important data gaps exist, the limited amount of data available show the need for introducing and enforcing suitable policies – such as the use of low-emission materials, good ventilation practices, proper maintenance, and heating and energy efficiency – to prevent water leaks and the accumulation of moisture, control indoor combustion sources, address these environmental risks, and reduce exposure in indoor environments where children spend a significant part of their time.

Box 9. A national example: air quality and noise in Slovenia

In Slovenia, the main source of air pollution and environmental (ambient) noise is road transport. Poor air quality and noise levels that exceed the prescribed limits seriously affect people's health. In Ljubljana, the capital city, about 75% of its people live within 100 metres of busy roads. It is estimated that about 40% of Slovenian children are exposed to PM₁₀ concentrations that exceed WHO guidelines values; 15% of these are hospitalized due to respiratory diseases.

Urban areas also have high levels of noise. Noise maps show that more than 136 000 people in Slovenia are exposed to road traffic noise above 55 dBA. More than 20% of these people live close to roads and are exposed to levels above 65 dBA. Most worryingly, noise levels are high at night too.

Noise affects children in particular, with adverse effects that are difficult to assess, but very important nonetheless. Noise maps show that in some schools in Ljubljana pupils are exposed to noise levels above 55 dBA. Road traffic noise, especially from short acoustic signals above 70 dBA (typical of road traffic), disturbs children between 7 and 11 years of age at school, interfering with reading and learning.

As urban air pollutants and noise often share the same source, their effects may cluster spatially, exacerbating health inequalities within cities. For this reason, it is more than necessary to adopt measures for improving air quality and reducing noise pollution, especially in cities. This is undoubtedly a good step towards ensuring good health for children, and adults as well.

4 The acronym HITEA stands for “health effects of indoor pollutants: integrating microbial, toxicological and epidemiological approaches”.

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12.

Children's environment

The Parma commitments aim to address obesity and injuries in children through safe environments, physical activity and a healthy diet, with a target (WHO Regional Office for Europe, 2010:35):

... to provide each child by 2020 with access to healthy and safe environments and settings of daily life in which they can walk and cycle to kindergartens and schools, and to green spaces in which to play and undertake physical activity. In so doing, we intend to prevent injuries by implementing effective measures and promoting product safety.

Uneven progress has been observed in the WHO European Region with respect to changes in key indicators and policy action. The prevalence of overweight in children and adolescents remains a major concern, accompanied by a disappointingly low prevalence of physical activity, which even decreases as children progress to adolescence. On a much more positive note, significant progress has been made across the entire Region in reducing unintentional and road traffic injuries in

children (0–14 years of age). Unfortunately, less progress has been recorded by the low- and middle-income countries of the Region, and the difference in mortality rates between low- and middle income countries and high-income countries over the past decade has increased.

These inequalities between countries are mirrored by inequalities within countries, where children and adolescents from socially disadvantaged groups are more exposed to the risk of injuries and have fewer opportunities to be physically active, compared with those from higher socioeconomic backgrounds. The remarkable success on the injury-reduction front has been driven by strong policy actions – in particular, the commitment taken by Member States under the UN Decade of Action for Road Safety 2011–2020 (UN General Assembly, 2010) and the EU strategic targets for road safety, which aim to halve road deaths between 2010 and 2020 (EC, 2010).

In general, Member States report the highest degree of policy development on

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aspects regulated by laws and policies, such as the minimum number of physical education hours in schools. They also report the lowest degree of policy development on policies that would make the built environment more conducive to integrating physical activity into daily life, such as measures to provide infrastructures for cycling to school, for facilitating walking to school and for reducing speed limits or implementing traffic calming measures in the proximity of schools. Progress in preventing tobacco consumption, also important for children's environments, is described in Box 10.

Greater progress will be needed in the years to come to attain this Parma target – particularly with respect to the development and implementation of policies that result in safer and more supportive environments in which children can be more physically active.

The active participation of Member States in THE PEP could provide support for these efforts and synergy with the efforts to counteract obesity, through relevant policies on nutrition and physical activity developed by WHO and the EC.

Overweight

The most recent publication of the Health Behaviour in School-aged Children survey (Currie et al., 2012) indicates that, among 11-year-olds (both genders) in participating countries, the highest prevalence of overweight was found in Greece (33%), Portugal (32%), Ireland

(30%) and Spain (30%), and the lowest in the Netherlands (13%) and Switzerland (11%). Among 15-year-olds, the prevalence of overweight ranged from 10% (Armenia, Lithuania and the Russian Federation) to 23% (Greece) (Currie et al., 2012).

Physical activity

A disappointingly low number of children were reported to be physically active, with girls consistently reporting lower levels of physical activity, compared with boys across all countries that participated in the Health Behaviour in School-aged Children survey. According to the latest publication of the survey, at the age of 11 years the highest prevalence of physical activity was

reported by Ireland (42% boys and 31% girls) and the lowest by Italy (10% boys and 7% girls). As children progress into adolescence, however, these levels decrease sharply: at the age of 15 the highest prevalence of physical activity was reported by Armenian boys (29%) and Greenlander girls (20%), while the lowest was reported by Italian boys and girls (12% and 5%, respectively).

Unintentional Injuries

During the period 2000–2011, good progress in reducing deaths related to unintentional injuries in children below the age of 14 years was achieved across the entire Region, with an overall reduction of more than 40% for both unintentional injuries and road traffic injuries. Progress, however, has been uneven in low- and middle-income countries, compared with high-income

countries; and the difference in mortality rates has increased even more over the last decade, with rates six times higher for unintentional injuries and four times higher for road traffic injuries in low- and middle-income countries, compared with high-income countries.

Of interest is the success in injury reduction achieved for road traffic injuries



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in high-income countries: more than 60%, compared with 2000, as shown in Table 2 (WHO, 2014). Largely, this may be attributed to the strong efforts made by countries under the UN Decade of Action for Road

Safety 2011–2020 (UN General Assembly, 2010), and the EU strategic target to halve road deaths between 2010 and 2020, taking forward the previous objective of halving deaths between 2001 and 2010 (EC, 2010).

Table 2. Causes of death for unintentional and road traffic injuries, 2000 and 2011

Cause of death (0–14-year-olds)	2000		2011		Difference between 2000 and 2011 (%)
	Number of deaths	Mortality rate ^a	Number of deaths	Mortality rate ^a	
All countries					
Unintentional injuries	28 646	16.5	16381	10.4	-42.8
Road traffic injuries	7 192	4.2	4082	2.6	-43.2
Low- and middle-income countries					
Unintentional injuries	23 704	25.7	14087	10.4	-40.6
Road traffic injuries	4 971	5.4	3267	2.6	-34.3
High-income countries					
Unintentional Injuries	4 764	6.1	2293	2.9	-51.9
Road traffic injuries	2 221	2.9	845	1.1	-62.0
Rate ratio of low- and middle-income countries to high-income countries					
Unintentional injuries	--	4.2	--	6.1	--
Road traffic injuries	--	1.9	--	3.8	--

^a Per 100 000 population.

Source: Adapted from WHO Regional Office for Europe (2014:10); elaborated from WHO (2014).

Box 10. Tobacco and health in Europe

Tobacco kills about 1.6 million people each year in the WHO European Region, and the use of tobacco products has a dramatic impact on mortality. Of all deaths in the Region, 16% are attributable to tobacco. Globally, the European Region has the highest mortality attributed to tobacco.

Tobacco use or exposure to tobacco smoke negatively impacts health across the life-course. During fetal development, tobacco can increase rates of stillbirth and selected congenital malformations. In infancy, it can cause sudden infant death syndrome. In childhood and adolescence, tobacco can cause disability from respiratory diseases. In relatively young middle-aged adults, it can cause increased rates of cardiovascular disease and, later in life, higher rates of cancer (especially lung cancer), as well as deaths associated with diseases of the respiratory system.

To protect people against the devastating effect of tobacco smoke on health, the WHO Framework Convention on Tobacco Control requires each signatory Party to adopt and implement measures that provide protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, where appropriate, other public places.

The number of European countries banning smoking in all public places has increased from four in 2007 to nine in 2012, although compliance varies. Improvements were particularly significant for schools and universities. In 2012, 32 European countries banned smoking in universities and 38 banned smoking in schools.

Despite progress, the Region still provides less protection from exposure to smoke than most WHO regions, and further progress is crucial for the health outcomes of Europeans.

The WHO Framework Convention on Tobacco Control is a powerful tool – and it works – but it needs to be used to its full potential. Ten years after it was adopted, in 2003, the number of people protected by tobacco control measures is growing increasingly. However, to achieve the Parma Declaration goal (to “provide each child with a healthy indoor environment in child-care facilities, kindergartens, schools and public recreational settings”) and the global voluntary noncommunicable target of a 30% relative reduction in tobacco use by 2025, the question is: do we need to accelerate our pace?

Policy response

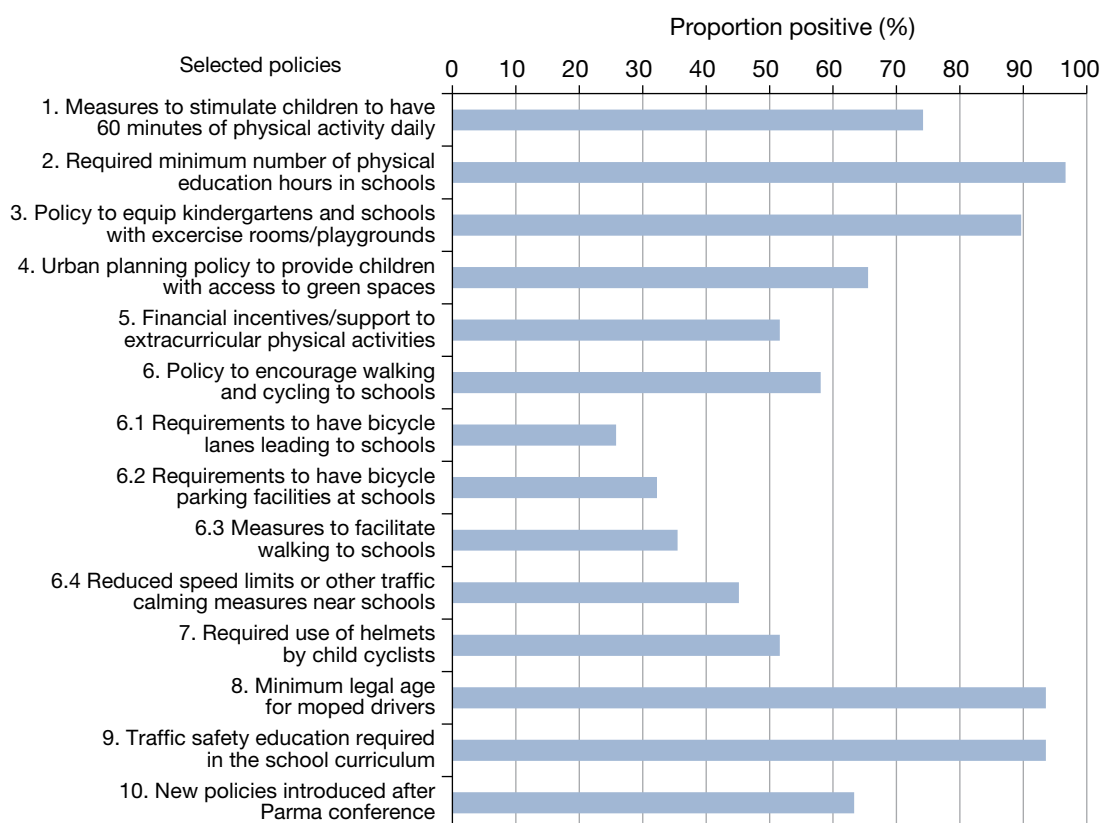
With the exception of the prevention of road injuries, particularly in the high-income countries of the Region, the policy response to address the Parma Commitment to Act on the health risks to children posed by their environment has been rather weak, relying mostly on policies under the leadership of the education or the road safety sectors. In point of fact, more than 90% of the countries that responded to the survey, developed by WHO to support the Mid-

term Review (WHO Regional Office for Europe, 2015), reported on the existence of policies requiring: a minimum level of physical education hours in schools and the equipment needed for kindergartens and schools with exercise facilities; traffic safety education to be included in the school curriculum; or a minimum legal age for moped riders. Only 20% of countries responding, however, reported the existence of policies requiring bicycle lanes leading to schools. Moreover, just

35% reported the existence of measures to facilitate walking to schools, and 45% reported the existence of measures to reduce speed limits or measures to otherwise calm traffic in the proximity of schools. Encouragingly, more than 60% of the countries reported the introduction of new policies after the 2010 Parma ministerial conference (see Fig. 6).

Taking everything into consideration, the results of this policy survey underscore the difficulty of developing intersectoral policies, which require (and reflect) the integration of education with urban planning and transport policies, to create more supportive and safer environments for children to be more active physically in all settings of daily life.

Fig. 6. Proportion of countries that responded positively about the existence of selected policies



Note. Items 6.1 through 6.4 refer to sub-questions to Item 6.

Source: WHO Regional Office for Europe (2015).

A positive contribution to developing more integrated policies for transport and urban development is being provided by THE PEP, notably through the exchange of experiences provided by a series of workshops that have taken place in the Czech Republic, Georgia, Kazakhstan, Lithuania, the Russian Federation, the former Yugoslav Republic of Macedonia and Ukraine and by the development of such tools as a

manual for developing national transport, health and environment action plans (Schweizer, Racioppi & Nemer, 2014) and health economic assessment tools for cycling and walking (WHO Regional Office for Europe, 2011). The Fourth High-level Meeting on Transport, Health and Environment, held in Paris in 2014, marked an important milestone in the process, renewing the commitment to action (see Box 11).

Box 11. Paris Declaration on green and healthy mobility and transport

A significant political millstone for regional priority goals 2 and 3 of the Parma Declaration was achieved, on 15 April 2014 in Paris, when European ministers attending the Fourth High-level Meeting on Transport, Health and Environment adopted the Paris Declaration: City in Motion – People First! More than 20 ministers, deputy ministers and state secretaries of health, environment and transport, as well as ambassadors took part in the discussions, and participants representing Member States and civil society and international organizations welcomed the Declaration.

The Declaration sets priorities and calls for action to ensure green and healthy mobility and transport, to secure sustainable livelihoods for all. It aims to reduce air pollution and noise emissions from transport and encourages people to become more physically active by replacing the use of cars with walking and cycling, where possible. The Declaration is linked to the commitments made at the Fifth Ministerial Conference on Environment and Health, in Parma in 2010, and to the post-2015 development agenda, and it focuses on sustainable development and socioeconomic justice.

Through the Declaration, European countries created a new vision of green and healthy mobility and transport and linked the promotion of health and sustainability to socioeconomic justice. This is supported by new goals and tools, including:

- a new priority to integrate transport, health and environmental objectives into urban and spatial planning policies;
- THE PEP Academy, which will strengthen knowledge and skill development for integrated transport, health, environment and spatial planning (UNECE, 2014);
- the launch of a new partnership, which aims to develop a pan-European master plan to promote cycling;
- stronger partnerships with city networks, civil-society organizations and the research community; and
 - the mobilization of young people and their organizations.

Additional positive contributions will come from closer collaboration and synergy with key policies and plans to counteract obesity and promote healthy nutrition and physical activity, such as: the European Charter on Counteracting Obesity (WHO Regional Office for Europe, 2006); the Vienna Declaration on Nutrition and Noncommunicable Diseases in the Context of Health 2020

(WHO Regional Office for Europe, 2013); the forthcoming European Strategy on Physical Activity, which is expected to be adopted by the WHO Regional Committee in 2015; the Council Recommendation on promoting Health Enhancing Physical Activity across sectors (Council of the EU, 2013); and the EU Action Plan on Childhood Obesity 2014–2020 (EU, 2014).

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Hazardous chemicals, endocrine disrupting chemicals and asbestos

Introduction

The production of chemicals has doubled during the last decade and is expected to continue growing at a higher rate worldwide in low-income countries and countries with economies in transition. The sale of chemicals will also grow by about 3% annually until 2050 (OECD, 2012). About 140 000 chemicals are in use today, and complex supply chains and the continuous introduction of new chemical compounds make enforcement of safety standards increasingly challenging. All in all, increasing exposure and possible adverse effects on health may be expected if regulatory mechanisms are

lacking and if capacity and resources are inadequate to address the risks presented by chemicals (UNEP, 2013).

The Parma Declaration and its Commitment to Act encourage Member States to implement relevant international agreements and to work towards reducing and eliminating the risks of the most hazardous chemicals – such as persistent organic pollutants; carcinogens, mutagens and reproductive toxicants; and endocrine disrupting chemicals – with specific attention to vulnerable population groups.

Assessing the situation

A WHO questionnaire survey in 2012, where 33 of 53 Member States participated, indicated that various measures have been taken around the Region to mitigate hazardous chemicals risks. This assessment (WHO Regional Office for Europe, 2013) found the following.

- More than 80% of the responding WHO European Member States have officially committed to international agreements on chemical safety, with the highest proportion committing to the Stockholm Convention on Persistent Organic Pollutants (UNEP, 2011); currently, 26 Member States and the EC signed the Minamata Convention on Mercury (see Box 12).
- Practically all countries follow the International Health Regulations and the Strategic Approach to International Chemicals Management.
- The majority of Member States have legal requirements to collect and provide information on chemicals, registration and the control of hazardous chemicals in place (as dictated: by the Regulation on Registration, Evaluation, Authorisation and Restrictions of Chemicals in the EU and harmonized with EU legislation in associated partners; and by the requirements of the Customs Union of Belarus, Kazakhstan and the Russian Federation in the area of public health).
- Chemical risk reduction policies are being developed in more than 87% of the WHO European Member States, based on a multi-stakeholder approach.
- Pre-marketing registration of carcinogens, mutagens and reproductive toxicants and of bioaccumulating substances is required in two thirds of countries participating in the survey.

- Basic capacities for monitoring the existence and quantity of selected hazardous substances in water, air and food have been created in the majority of countries.
- At least one official source of information on chemicals is in place in all Member States;
- Ninety per cent of the countries reported having developed a plan for emergency preparedness and response and indicated that the health sector was involved in its development and implementation.
- About two thirds of the Member States participating in the survey reported using risk assessment as an essential instrument in the decision-making process.

Box 12. Minamata Convention on Mercury

The Minamata Convention on Mercury is a global legally-binding treaty. Its main objective is to protect the health of human beings and the environment from anthropogenic emissions and releases of mercury and mercury compounds. It was adopted in October 2013 and will enter into force after the fiftieth ratification. To date, 26 WHO European Member States and the EC signed the Convention.

Mercury is highly toxic, especially to children. According to recent studies of selected populations that rely on subsistence fishing, between 1.5 and 17 children per 1000 children showed cognitive impairment that resulted from the consumption of fish containing methylmercury. Exposure to mercury can be high in locations where risks of higher contamination of the environment and food sources might occur, in addition to exposure to mercury in consumer products.

Voluntary activities globally and domestically in a number of countries – such as banning mercury exports in the EU in 2011, continuing the reduction of mercury use in chlor-alkali plants and restricting the mercury content in electric and electronic equipment in European countries – have led to a decrease in the use of mercury.

To meet its objective, a wide range of measures is included in the Convention: phasing out primary mercury mining and certain products with mercury added; reducing the use of mercury in production and its release into the environment; requiring control of the export of mercury and products with mercury added; providing safe storage; implementing sound management of waste containing mercury; assessing the effect of mercury on human health, particularly that of vulnerable populations; and conducting scientific research, information exchange, education and training.

Implementing the Convention will require multisectoral action – including the health sector. Its implementation will benefit health through a decrease in developmental and other neurological disorders in children (UNEP, 2014).

These efforts have led to a decrease in population exposure to chemicals recognized by WHO as chemicals of major public health concern. Notable progress has been achieved in reducing risk and strengthening regulation of persistent organic pollutants included in

the Stockholm Convention. According to a WHO–UNEP survey of breast-milk contamination with persistent organic pollutants for the period 1998–2012, exposure to dioxins and furans decreased by up to 30–50% in Luxembourg, Norway, Slovakia and Sweden and more than

twofold in Belgium (UNEP & WHO, 2013). Levels of breast-milk contamination with dioxins and furans were also found to be low in the Republic of Moldova, Romania, the Russian Federation and Tajikistan (UNEP & WHO, 2013). Levels of dioxin-like and non-dioxin-like polychlorinated biphenyls, and organochlorine pesticides have also fallen steadily over time. The level of contamination of breast milk with organochlorine pesticides, however, is still of concern in some countries in central Asia and eastern Europe (UNEP & WHO, 2013).

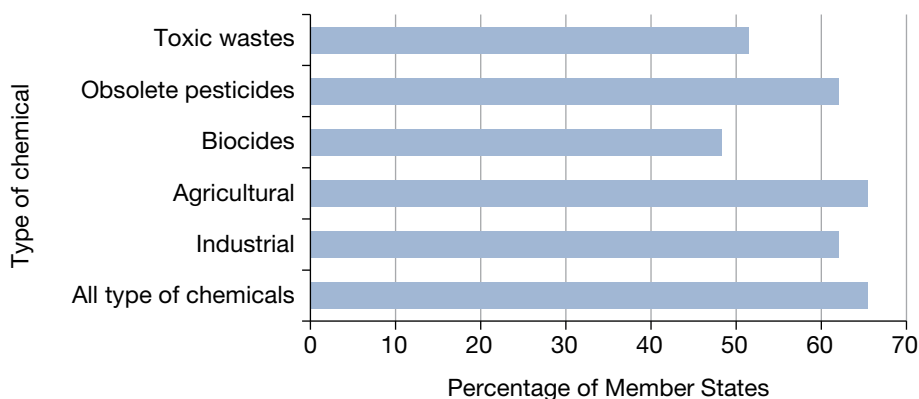
Exposure to hazardous chemicals remains an issue of concern in all Member States, though priorities differ significantly from country to country. For example, within the EU, more than 1.8 million children are born every year with exposure to methylmercury above the adjusted safety limit of 0.58 µg/g (hair), and the total benefits of exposure prevention were estimated to be a gain of about 600 000 IQ points per year (Bellanger et al., 2013). Thus, exposure to endocrine disrupting chemicals seems to be an issue of priority within the Region, even though in some countries the risk of these chemicals is not properly evaluated yet (WHO, 2012). Also, obsolete pesticide stockpiles remain a significant source of risk to human health and the environment in some south-eastern European

countries and the newly independent states (IHPA, 2013).

Meeting the Parma Declaration goals in the area of chemical safety requires further action by Member States, especially action aimed at protecting vulnerable population groups (WHO Regional Office for Europe, 2013). The WHO survey identified the following important gaps.

- Only half of Member States reported setting up programmes to reduce and/or eliminate chemical risks to children and to manage the risks associated with industrial, agricultural and household chemicals (see Fig. 7).
- Even fewer countries specifically address exposures and risks from priority carcinogens, mutagens and reproductive toxicants and from endocrine disrupting chemicals.
- Less than half of the Member States have a legal basis for prohibiting the use of dangerous chemicals in products destined for children and for protecting places where children learn and play.
- In two thirds of the Member States, dedicated research programmes are either not funded or only partly funded.

Fig. 7. Types of chemicals addressed by policies and plans



Source: WHO Regional Office for Europe (2013:9).

The WHO survey also found: occurrences of lack of information on such hazardous substances as endocrine disrupting chemicals; insufficient human, laboratory, methodological and financial capacities for the environmental and biological monitoring of carcinogens, mutagens and

reproductive toxicants and of endocrine disrupting chemicals; and the need to prioritize the chemicals to be addressed and to assess risks and long-term health effects, as well as the need to assess the cost-effectiveness of risk reduction measures.

The way forward

Developing and implementing programmes to address gaps in the management of chemicals (with specific attention to vulnerable group needs and priority hazardous chemicals) and strengthening human resources to implement sound management of chemicals can be considered at the national level, to ensure reaching regional priority goals for chemical safety. Also, more research would be instrumental in filling substantial knowledge gaps.

Complexity and considerable scientific uncertainty – for example, from the multiplicity of agents and effects,

exposure to a cocktail of chemicals in everyday life, the complexity of identifying certain substances, and the effects of transgeneration and early-life exposure – impair evidence-based decision-making. Thus, application of the precautionary principle, based on expert assessments and on open and transparent consultations between all stakeholders, is crucial to supporting decision-making and policy development. This requires building appropriate consultation mechanisms between scientists, health and environment professionals, and policy-makers, as well as the general public and industry.

Asbestos

One of the commitments made by the Member States of the WHO European Region in the Parma Declaration was to develop, by 2015, national programmes for the elimination of asbestos-related diseases in collaboration with WHO and the International Labour Organization.

Asbestos is responsible for about 50% of all deaths from occupational cancer and is one of most widespread environmental health hazards in the Region. Exposure to asbestos leads not only to asbestosis, but also to cancer – in particular, mesothelioma and lung cancer. In 2012, the International Agency for Research on Cancer confirmed the previous classification of all forms of asbestos, including chrysotile (white asbestos), as carcinogenic to people (Group 1) and added two more cancer locations related to asbestos exposure: the larynx and ovaries (IARC, 2012).

Exposure to white asbestos poses

increased risks of asbestosis, lung cancer and mesothelioma. No threshold has been identified for carcinogenic risks. WHO recommends that the most efficient way to eliminate asbestos-related diseases is to stop the use of all forms of asbestos.

As of 2014, about 300 million people in the WHO European Region are still living in countries that have not banned the use of all forms of asbestos. Even after banning its use, however, asbestos still persists in the environment. Safe removal of asbestos and disposal of waste containing it are still challenges in countries that banned the use of all forms of asbestos. A limited number of countries (11 of 31 that responded to the WHO survey) are conducting periodic inventory reviews of existing asbestos-containing materials.

A wide spectrum of practices exists in the Region, from banning the use of all



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forms of asbestos more than 20 years ago to still using or even producing it. Many countries have successfully implemented internationally guided policies, WHO recommendation or transposed the EU directives on prevention of asbestos hazards and have taken action to eliminate asbestos-related diseases. In many countries in the central and eastern parts of the Region, however, the implementation of asbestos policies is still being developed. With regard to exposure to health risks, the lack of strong legal frameworks that regulate the production and use of asbestos intensifies existing inequalities in the Region. Countries without adequate policies to address asbestos-related diseases need self-driven efforts and the collaboration of relevant sectors – as well as reinforced strategic guidance and practical support from WHO – to develop and implement national asbestos programmes by 2015, as mandated by the Parma Declaration.

National asbestos profiles have been recognized as key tools for integrating the development and management of asbestos policies and programmes.

These profiles support the identification of national priorities and the monitoring of national achievements. Reliable information on the use and distribution of asbestos, asbestos-waste management, and asbestos-related morbidity and mortality is critical to the design of national asbestos profiles and programmes.

Well-established national cancer registers and national registers of occupational diseases are key resources for quantifying asbestos-related morbidity. However, not all countries, even if they have cancer registers, included mesothelioma as a separate disease in the registers.

Awareness, diagnostic procedures and criteria, and notification and registration of asbestos-related diseases vary between countries and are in need of strengthening and harmonization. Also, awareness of and training for asbestos-related diseases are still lacking in almost all countries in the central and eastern part of the Region. Training and education should be increased for health and occupational health professionals, employers, workers, policy-makers, and the general public.

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Climate change and health

In March 2010 – at the Fifth Ministerial Conference on Environment and Health, held in Parma, Italy – all WHO European Member States and the EC declared their commitment to: protecting health and well-being, natural resources, and ecosystems; and promoting health equity, health security and healthy environments in a changing climate. Implementing the Regional Committee resolution (WHO Regional Committee for Europe, 2010b) and the Parma Commitment to Act (WHO Regional Office for Europe, 2010a) will contribute both to mitigating and adapting to climate change.

This summary covers the level of implementation of the climate change and health aspects of the Commitment to Act. Information was collected through:

- regular exchanges and facts and views provided by members of the Working Group on Health in Climate Change (EHTF, 2012, 2013);⁵
- a country questionnaire for members of the Working Group on Health in Climate Change (Wolf et al., 2014);
- country data available at the UNFCCC (UNFCCC, 2014a) and EEA–EU Climate Adaptation Platform CLIMATE-ADAPT (CLIMATE-ADAPT, 2014);
- a review of the literature; and
- pilot projects (WHO Regional Office for Europe, 2013).

Health issues in climate actions at all levels and in all sectors

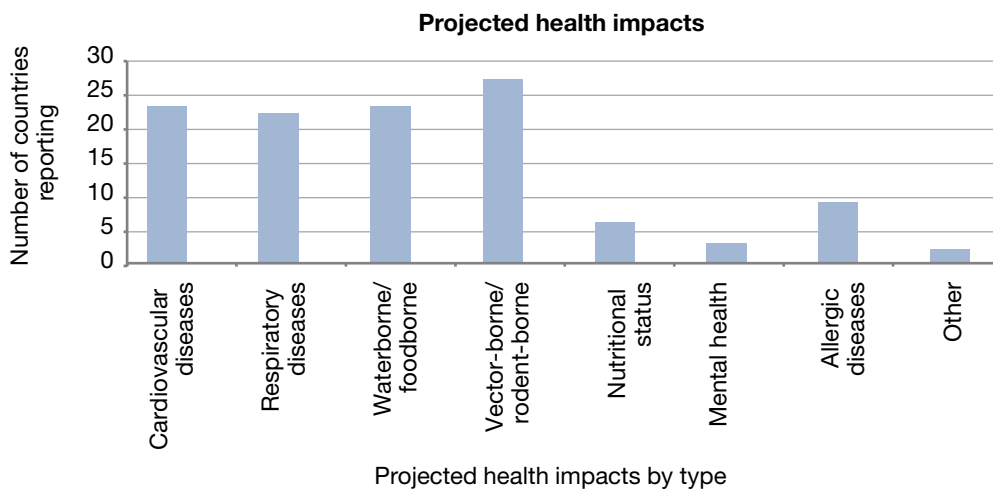
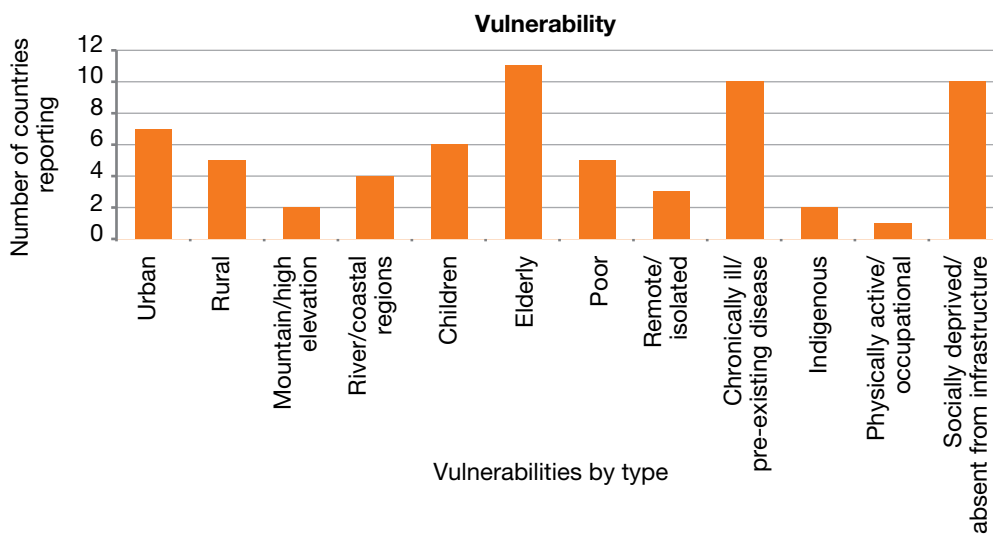
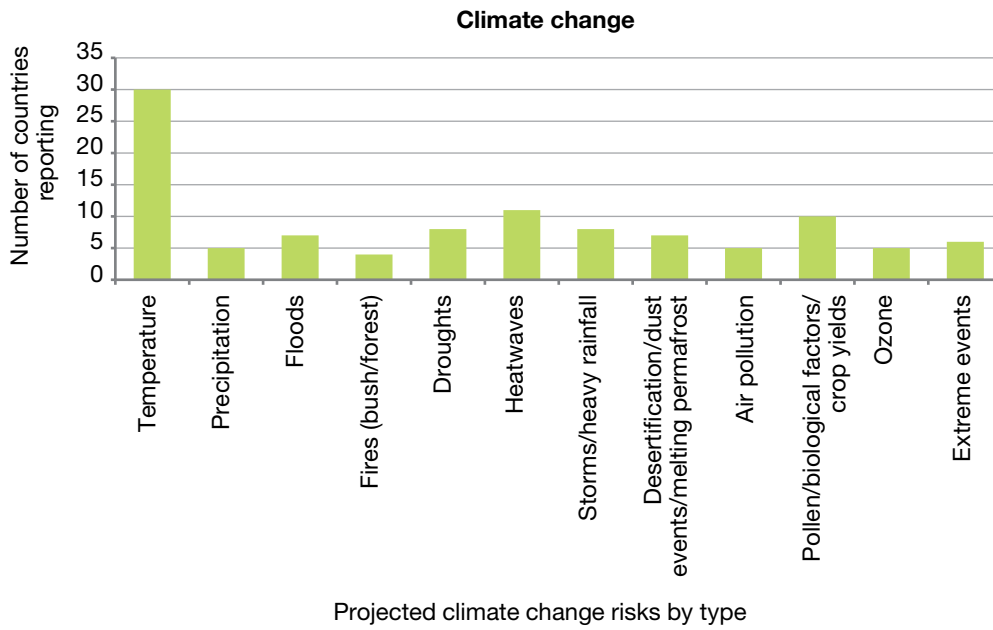
As part of implementing the UNFCCC, governance mechanisms for climate change policy are mainly the responsibility of the ministries of the environment or the ministries of energy and climate change. In two thirds of the WHO European Region Member States, the health adaptation dimension of climate change is dealt with by the health ministries, either independently or in conjunction with other ministries. Financial and human resources for climate change and health activities are normally scarce (if any) or are embedded in ongoing activities.

Of the 53 Member States of the WHO European Region, 32 have developed national health vulnerability, impact and adaptation assessments of climate change projections. Fig. 8 shows the projected climate change risks, vulnerabilities

identified and projected health impacts, by the number of countries that reported (see also the references in Annex 2). These assessments have various uses: (a) they frame the development of national adaptation strategies; (b) become part of national communications to the UNFCCC and/or; (c) serve to address the prevention of specific risks, such as heatwaves or emerging infectious diseases. Most assessments were done between 2008 and 2013, the earliest being in 2000. Pilot initiatives served to stimulate them in those countries where no prior action or policies were available, such as the seven country initiative in central Asia and southern Europe (WHO Regional Office for Europe, 2013). The estimation of the health and economic consequences of inaction in climate policy are still rare.

⁵ The Working Group on Health in Climate Change of the European Environment and Health Task Force facilitates dialogue and communication, among Member States of the WHO European Region and other stakeholders, on matters related to climate change and health. It will support and facilitate, in particular, the implementation of the relevant commitments in the Parma Declaration and in the European Regional Framework for Action to protect health from the adverse effects of climate change.

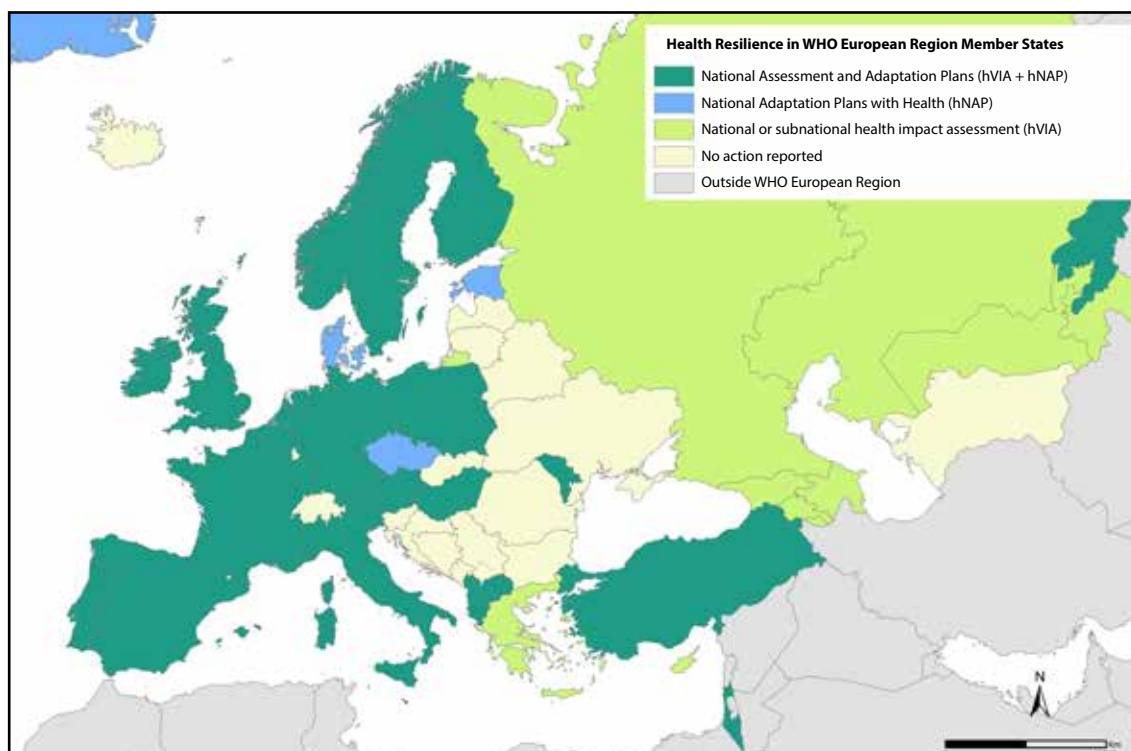
Fig. 8. Projected climate change risks, vulnerabilities identified and projected health impacts



Of the 53 Member States of the WHO European Region, 24 have published a national adaptation strategy or action plan. Also, 22 include action on health. In addition, eight Member States of the Region developed health-specific national or subnational adaptation plans (see Fig. 9 and also Annex 1). The inclusion of health-specific actions in the adaptation

plans is important, to attract international financing and to identify areas of priority action in governmental allocation of funds. Significant further support is needed to strengthen health in national adaptation plan development. Also needed are the promotion of government approval for, and the evaluation of the effectiveness of, those action plans.

Fig. 9. Health in national adaptation plans



Data source and map production: Tanja Wolf, Climate change, green health services and sustainable development (CGS) © WHO Regional Office for Europe 2015. All rights reserved.

The goals of climate policy intersect other societal goals, creating the possibility of co-benefits, including health gains through averted mortality and illness (see Chapter 5). Most Member States of the

WHO European Region have developed some level of action on sustainable transport modes and energy-efficient housing (UNFCCC, 2014b).

Health system resilience

The IPCC concluded that “Rising temperatures have increased the risk of heat-related death and illness [likely]. ... Local changes in temperature and rainfall have altered distribution of some water-borne illnesses and disease

vectors, and reduced food production for some vulnerable populations [medium confidence]” (Smith et al., 2014). Furthermore, it anticipated that (Hijoka et al., 2014):

Until mid-century climate change will act mainly by exacerbating health problems that already exist ... New conditions may emerge under climate change..., and existing diseases (e.g. food-borne infections) may extend their range into areas that are presently unaffected ... and lost work capacity and reduced labour productivity in vulnerable populations can be observed.

The real challenge of dealing effectively with climate change is recognizing the value of wise and timely decisions in a setting where complete knowledge is impossible (IPCC, 2014). Most of the WHO European Region Member States have already strengthened their health systems through a range of specific measures, either as a response to observed problems or as part of public health planning processes. They have (Wolf et al., 2014):

- strengthened infectious disease surveillance;
- strengthened environmental health services, such as water, sanitation and vaccination;
- strengthened health security and implementation of the International Health Regulations;

- strengthened early-warning and disaster responses;
- brought climate change into the mainstream of public health policy;
- strengthened primary health-care service;
- ensured that planning for climate change was included in public health policy;
- developed integrated climate, environment and health surveillance; and
- built a climate-resilient infrastructure.

These Member States, however, identified several areas that require further development: inclusion of climate change in public health programmes and planning; strengthening primary health care and building a climate-resilient infrastructure; and building up health-care workforce capacity and developing mechanisms for intersectoral–interagency coordination. Also, planning for more frequent or intense extreme weather events and for climate-sensitive infectious disease outbreaks and synergistic and compounding exposures is necessary.

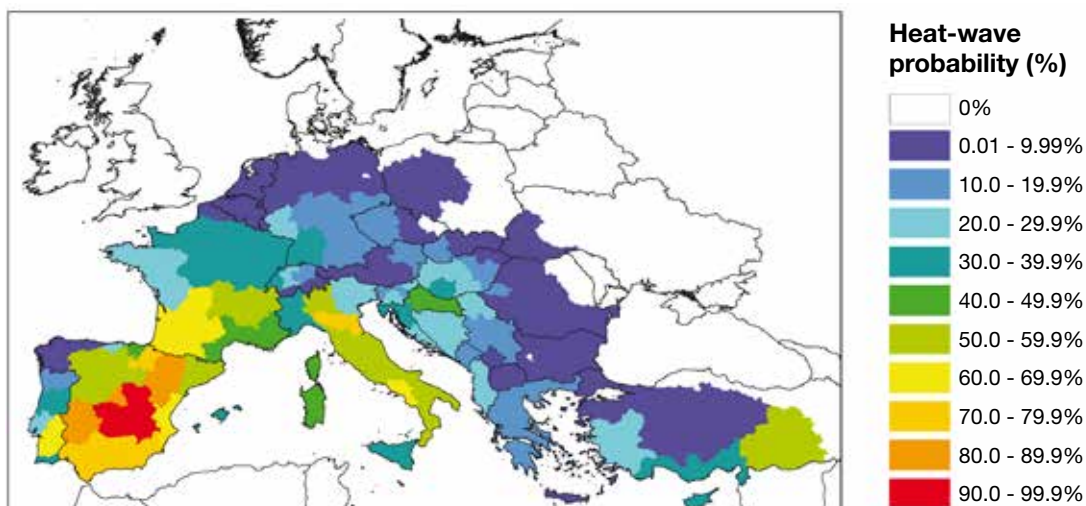
Early-warning and preparedness systems

Different types of weather early-warning systems are in place throughout the WHO European Region, addressing heatwaves, flooding, cold waves, fires and droughts. Most of them are provided by meteorological services (for example, heatwave probability forecasting; see Fig. 10). Collaboration between health and climate services is critical to implement all of these actions. For example, following the devastating 2003 heatwave, 18 countries across Europe established heat–health action plans. The essential components of

such action plans are the identification of weather situations that adversely affect human health (see Fig. 11), the monitoring of meteorological forecasts, mechanisms to disseminate warnings, and public health activities to reduce or prevent heat-related illness and death.

Hence, early-warning systems are more effective if there is a health-specific response plan in place or if there is an identifiable decision-making process into which early warnings are integrated.

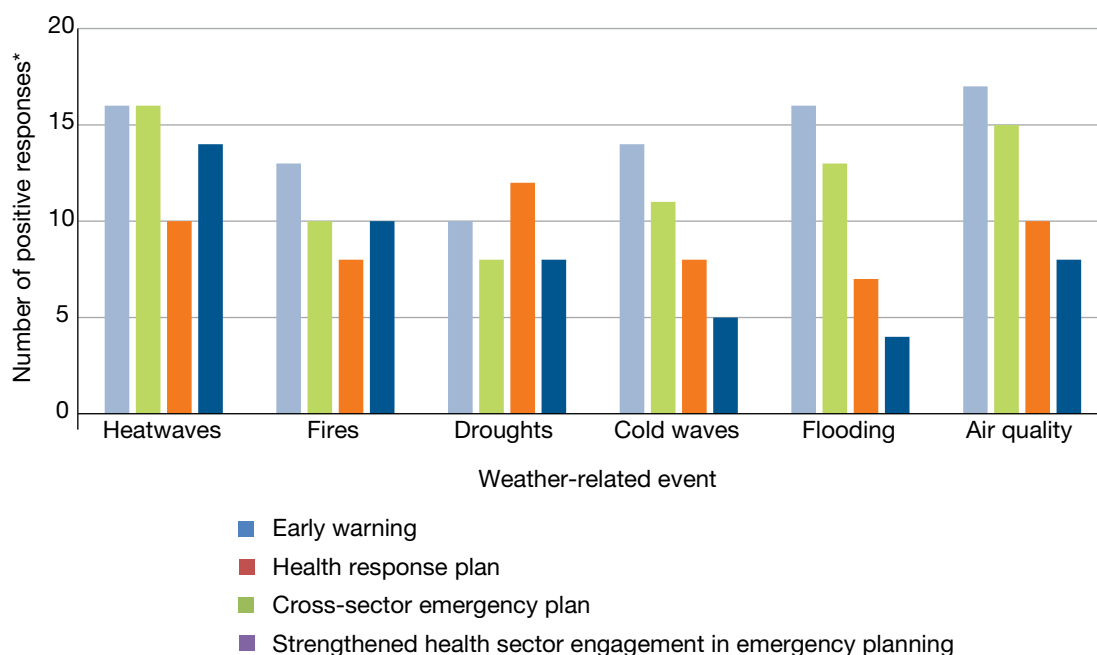
Fig. 10. Heatwave probability forecasting in European Member States



Note. "Forecast heatwave probability automatically generated by the German Meteorological Weather Service (Deutscher Wetterdienst) for subregions of Europe, for the week beginning 18th August 2012. <http://www.euroheat-project.org/dwd/index.php>. Data source: Deutscher Wetterdienst. © EuroGeographics for the administrative boundaries. Map production: WHO-WMO. Copyright: WHO-WMO."

Source: WHO & WMO (2012:42-3).

Fig. 11. Activities to protect health from extreme weather in a number of Member States



*Number of positive responses by countries participating to a questionnaire in 2012, which was distributed to 31 Member States that had nominated a representative to the Working Group on Climate Change and its Impacts on Health (HIC).

Source: WHO Regional Office for Europe (2015).

New vector-borne diseases are emerging in the WHO European Region, and diseases considered to have been eliminated are returning. Late in 2013,

European countries endorsed a new seven-year framework for the European Region to improve the surveillance and control of invasive mosquitoes and the prevention and control of re-emerging diseases (van den Berg, Velayudhan & Ejov, 2013). An example of climate-

sensitive disease surveillance is the geospatial representation of places where invasive vector species have been detected. Monitoring the presence of vectors (like ticks and mosquitoes) provide an idea about where outbreaks could occur.

Awareness programmes on climate change and health

In most countries, authorities and the public perceive climate change as important in political developments, but fewer countries reported a high relevance of health in political processes related to climate change. A content analysis of the regular national communications of Regional Member States to the UNFCCC revealed that, as of April 2014, only one country in the Region had not mentioned health in

its national communication (UNFCCC, 2014c,d).⁶ Most communication activities on climate change and health are based on events and focus on extreme weather events. Key means to strengthen this area would be the development of communication plans on climate change and health and also the capacity building and development of the workforce on climate change and its health-related aspects.

Health sector's contribution to reducing greenhouse gas emissions and strengthening its leadership

The health sector is a large economic player in the WHO European Region; health expenditures represent, on average, 10% of the national gross domestic product in EU Member States and a growing share in other countries of the Region (OECD, 2012; WHO, 2014). The estimated carbon footprint for Europe's health-care sector is similar to that of the emissions of international aviation and maritime transport activities of the EU Member States (LCB-HEALTHCARE, 2011). With some 15 000 hospitals, about 250 million tonnes of carbon dioxide a year are released (Holland, 2012), representing close to 4.2% of total

European greenhouse gas emissions. Examples of activities that reduce greenhouse gas emissions include: energy and carbon management in hospitals; low carbon procurement; low carbon travel and transport for hospital staff and patients; waste management; water-saving measures; energy-efficiency measures indoors; and renewable energy application. In addition, full health system involvement in planning should be part of these activities (see Fig. 12) Within EU and UN agencies (Box 13), the low carbon use agenda in health care and particularly procurement is gaining visibility (LCB-HEALTHCARE, 2011).

⁶ Parties to the Convention must submit national reports on the implementation of the Convention to the Conference of the Parties. National communications usually contain information on national circumstances, greenhouse gas reduction measures, a vulnerability assessment, financial resources and the transfer of technology, and education, training and public awareness. The required contents of national communications and the timetable for their submission are different for Annex I and non-Annex I Parties. This is in accordance with the principle of "common but differentiated responsibilities" enshrined in the Convention.

Fig. 12. An example of the vision of environmental resilient health systems



Source: SDU (2014:6).

Box 13. The UN Informal Interagency Task Team for Sustainable Procurement in the Health Sector

Noting the relevance of procurements in the health sector – both in relation to the greenhouse gas footprint and the ecotoxicological impact, considering the whole life-cycle approach – the United Nations Development Programme (UNDP) and five other UN agencies (WHO, UNEP, the United Nations Population Fund, the United Nations Office for Project Services, and the Office of the United Nations High Commissioner for Refugees) have established a UN Informal Interagency Task Team for Sustainable Procurement in the Health Sector at the UN global procurement hub in Copenhagen. Managing an annual procurement of health products and services of over US\$ 3 billion, the Task Team is working on:

- establishing standards and guidelines for green procurement in the health sector;
- engaging health financing institutions and purchasers in the health sector for green procurement;
- engaging manufacturers and suppliers, to optimize the reduction of the environmental impact of health products; and
- introducing environmental criteria for procurement in the health sector.

Through this UN engagement, innovations made and lessons learnt in the WHO European Region are already catalysing similar initiatives in other regions.

Research on and development in climate change and health

With regard to climate and health research for the European Economic Area, the EU CLIMATE-ADAPT portal lists 384 research projects on climate change, of which 51 have a health component. In the WHO European Region, Member States outside

of the European Economic Area have an increasing interest in climate change research. Often, research is needed to develop national assessments, but is poorly funded.

The way forward

Throughout the WHO European Region, Member State governments are aware of and working towards the implementation of the climate change commitments within the environment and health process. Governance mechanisms are progressively being established, and robust progress is being made in certain areas, including vulnerability and impact assessments, the strengthening of health systems, and awareness raising. However, much remains to be done in several areas.

Specifically, the development of government-approved national plans and strategies with sound health components could boost the effectiveness of health adaptation activities in the Region. Whether part of or independent of these

plans, research and evidence need to be at the core of any health-related adaptation or mitigation activity. Also, there is room for expanding the use of early warning systems for context-specific climatic risks. Moreover, the explicit consideration of climate change in strengthening medium- and long-term health systems can help reduce manageable climate risks; building health workforce capacity is a key component of this risk management. Last, it is important not to underestimate the exemplary power of the health sector in leading the way towards sustainability. Improving the sector's environmental performance can help release resources to strengthen its core mandate of health maintenance and promotion.

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Environmental health inequalities

Environmental health inequalities refer to disparities in the exposure and vulnerability of population subgroups to environmental risks, with potential effects on health and health equity. Evidence shows that environmental health inequalities are strongly expressed in the WHO European Region and that they persist even when population-wide exposure to environmental risks is reduced.

For the WHO European Region, environmental health inequalities have gained increasing attention as a challenge and represent a serious concern for the general public and policy-makers alike. Following the commitment of WHO European Member States to “address socioeconomic and gender inequalities in environmental exposure” and to “act on environmental health risks faced by vulnerable groups” (Parma Declaration (WHO Regional Office for Europe, 2010)), 20 Member States were actively involved in preparing the first assessment report on environmental health inequalities in the European Region (WHO Regional Office for Europe, 2012). Environmental health inequalities were found for exposure to noise, injuries, passive smoke, access to drinking-water and sanitation, and various housing-related risks. Disadvantaged population groups are reported to have exposure levels up to five times higher than those for groups not disadvantaged.

A review of evidence shows that, in recent years, the social divide in environmental risk exposure has not yet been successfully tackled and further action is necessary.

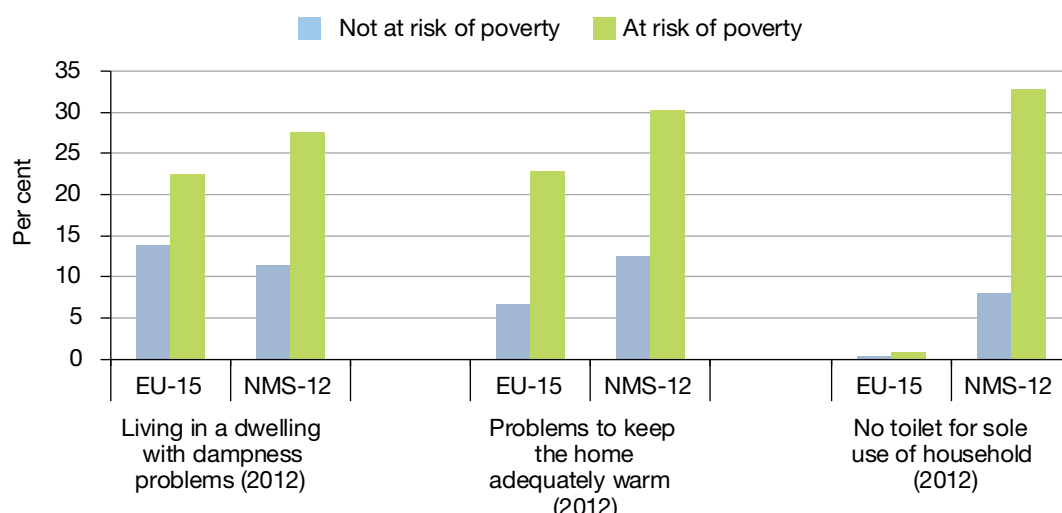
- Systematic monitoring of environmental inequalities takes place in a few countries only. Data on the sociodemographic distribution of environmental risk are still lacking for the eastern part of the WHO European Region; and evidence
- The strongest environmental inequalities are found persistently in population groups affected by multiple social deprivations – for example, when socioeconomic, demographic and ethnic disadvantages are combined.

is scarce, especially for such key parameters of environmental justice as air pollution and chemical exposure.

- Poverty, low income and socioeconomic status remain the most important single determinant of environmental inequality (Fig. 13). Most environmental inequalities, however, can be traced to residential location and quality, which affects urban pollution and safety, as well as living conditions.
- Environmental exposure inequalities continue to exist in all Member States where data are available. For example, when compared with affluent households, low-income households may still experience double or even triple exposure to damp homes and indoor cold in some countries; and less wealthy households have significantly lower access to adequate water supply and sanitation. Also, noise and air pollution problems remain more frequently reported by low-income groups and in deprived areas.
- Recent research indicates that environmental inequalities can be very diverse and, thus, difficult to address. For example, urban noise and air pollution exposure strongly varies by neighbourhood, and in some cities higher exposure is actually found for higher-income groups. Similarly, some chemicals (such as lead and cadmium) show higher concentrations in individuals in lower-income groups, while others (such as polychlorinated biphenyls) are more prevalent in individuals in higher-income groups.

- A new equity issue has evolved from the increase in the cost of energy, leading to increased energy vulnerability levels that do not only affect low-income households. This problem is increasing in many countries and has direct impacts on fuel choices, pollution levels and injury risks.

Fig. 13. Poverty risk and environmental inequalities



Environmental inequality example

Abbreviations: EU-15: 15 EU Member States before enlargement on 1 May 2004; NMS-12: 12 new EU Member States that joined the EU before 31 December 2012 (thus, not including Croatia).

Source: EU-SILC (2014).

Environmental factors can be linked to many different health outcomes, but the proportion of health inequalities caused by differences in environmental exposure and vulnerability is still unclear. The emphasis on environmental equity, however, was also mirrored in the WHO European health divide report (WHO Regional Office for Europe, 2014), which recommended the prioritization of environmental policies that improve health and also benefit excluded and vulnerable population groups. The Health 2020 policy for the WHO European Region also indicated a continued prioritization of health-for-all principles (WHO Regional Office for Europe, 2013).

During recent years, many Member States have prepared national reports and campaigns on the social determinants of health, often highlighting environmental equity as one of the major avenues to health equity. Various governments and international agencies have also installed environmental research and monitoring

systems that partially cover the equity perspective (see an example from Malta in Box 14). Examples of action include: the Joint Monitoring Programme reporting on wealth as a determinant of access to water and sanitation (WHO & UNICEF, 2014); and the Ministry for Health of Malta (Vincenti & Braubach, 2013) publishing the first national environmental health inequalities assessment report.

Environmental inequality needs to be addressed through multisectoral action, and adequate interventions often require support from various ministries. With better knowledge of the most relevant environmental health inequalities, more targeted and effective policy responses and interventions for reducing environmental inequality will become possible. Also, better information may facilitate governmental collaboration, by clarifying the contributions required from various sectors.

The evidence currently available on the

potential equity effects of environmental policies and interventions is rather incomplete and needs to be reviewed systematically. Various examples, however, have shown that policies designed for improving environment and health, in general, may still fail to lessen inequalities. Thus, the development of reliable tools to evaluate the health equity effects of environmental interventions is likely to become a priority in the coming years. In

this context, it will be important for Member States to ensure and document that:

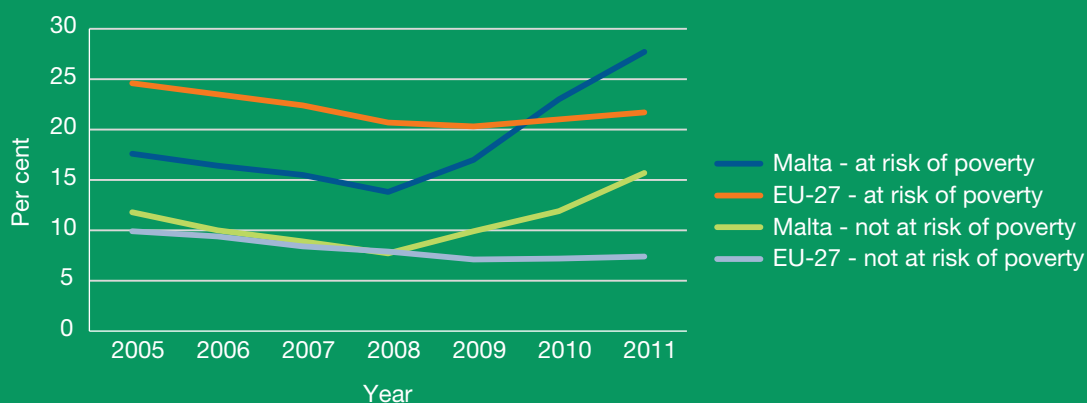
- environmental interventions and policies do not further aggravate existing inequalities; and
- interventions that focus on equity are established and effectively reach the target groups intended.

Box 14. Income or environmental conditions? A Maltese case study

Contributing first insights about the health disparities associated with environmental inequality, the national Report on health inequalities in Malta suggests that both the socioeconomic situation and environmental exposures have an independent effect on the health status of the population, with vulnerable subgroups under combined social and environmental pressures being most affected.

The steep increase in the percentage of the Maltese population reporting the inability to keep their home warm coincided with a drastic rise in fuel prices from 2008 onwards, due to the removal of subsidies (Fig. A). Electricity and heating fuel prices had also increased significantly from 2007 to 2010 and 2009–2012, respectively. The price increases, although affecting the whole population, may have a greater impact on the poor.

Fig A. Percentage of population unable to keep their home adequately warm, by income, 2005–2011



Notes. EU-27 values for 2005 and 2006 are Eurostat estimates (Romania and Bulgaria joined the EU to form the EU-27 on 1 January 2007; on 1 July 2013 Croatia acceded to the EU, bringing the total number of Member States to 28, thus creating the EU-28)

Source: Data from EU-SILC (2013). Reproduced from Vincenti & Braubach (2013:13).

For most of the stressors considered, environmental exposure is associated with a proportional increase in low self-reported health status. For some exposures – such as lack of access to green and recreational areas – there is no clear association or gradient with health outcomes (Fig. B).

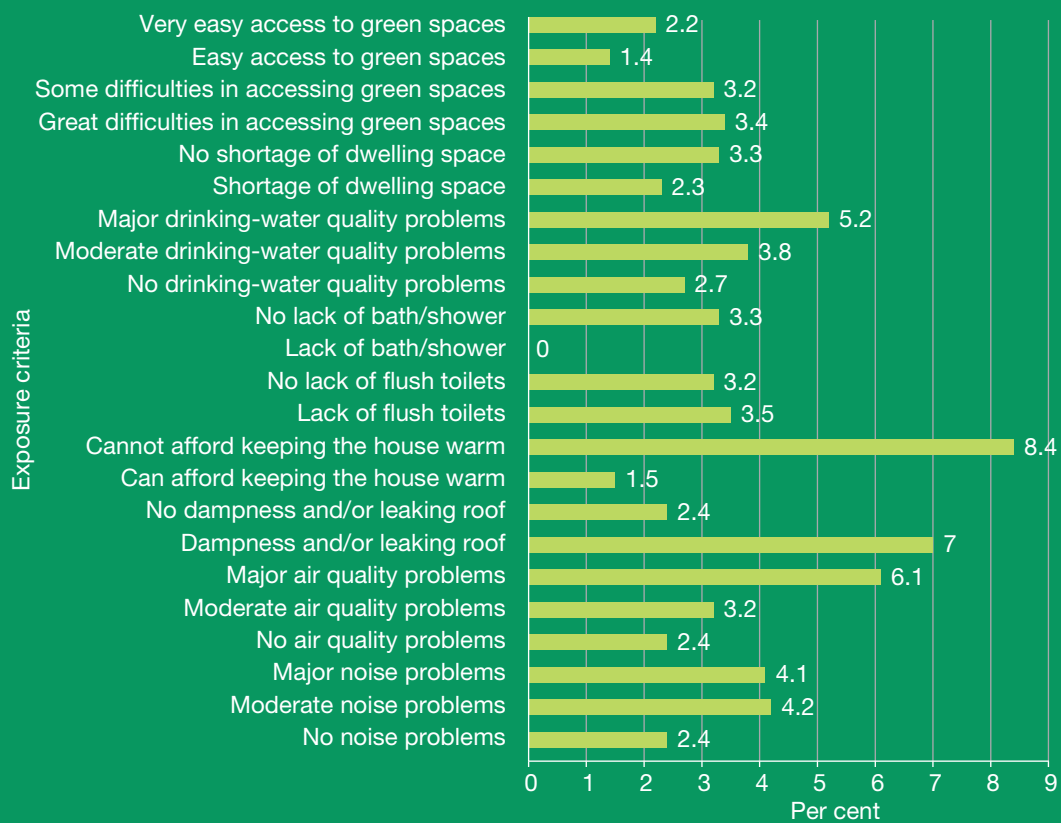
When keeping the home warm is not a problem, self-reported health is similar in the two population subgroups with different financial means. Once heating expenses become difficult to afford, however, its effects on self-reported health are evidently much more severe within the poorer subgroup.



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Box 14 (concluded)

Fig. B. Percentage of Maltese population reporting bad or very bad health by environmental exposure in 2011/2012



Source: Data from EQLS (2012). Reproduced from Vincenti & Braubach (2013:35).

Although the associations shown in Fig. B cannot prove a causal relationship and the extent of the reliability and validity of perception of the environmental problems as an estimate of harmful exposure are debatable, the results suggest that people in vulnerable health conditions tend to be much more frequently exposed to environmental risks than their healthier counterparts.

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16.

Environmental health and economics

Background

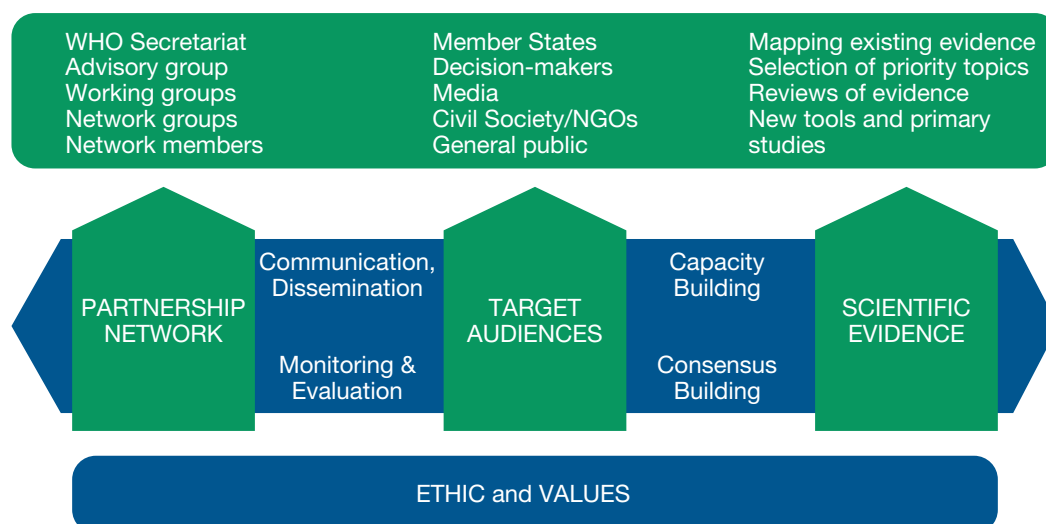
Due to globalization and the financial and economic crises, the economic and global public health landscape of most of the world has been transformed significantly. Austerity measures taken during and after the financial crises show the clear interdependence between the economic and health sectors, even if the financial restrictions are not targeted at the health sector as such. As these changes occur, it is becoming increasingly important for the public health sector to have the ability to analyse policy choices and specific interventions in economic terms. In addition to considering improvements to public health, as such, easy access to sound health and economic evidence allows policy-makers to include cost-benefit arguments in their decision-making process. Only if both sides, costs and benefits, are included in these considerations will policies be effective in reaching efficient results that benefit the whole of society.

In full recognition of recent transformations, the Fifth Ministerial Conference on Environment and Health in Parma (2010)

discussed the need to consider the economic dimensions of environment and health policies. The Parma Declaration on Environment and Health (WHO Regional Office for Europe, 2010) called for the development of common tools and guidelines for ascertaining the economic impacts of environmental risk factors on health. In 2012, this was strengthened when Rio+20 further developed the concept of a “green economy” in the context of sustainable development and eradicating poverty. The WHO Regional Office for Europe and its 53 Member States mirrored the importance of the economic dimension and its relationship with the health sector in their policy umbrella Health 2020 (WHO Regional Office for Europe, 2013a).

In response to these declarations, the WHO Regional Office for Europe developed a strategic framework for environmental health and economics (see Fig. 14) and established the Environmental Health Economics Network (EHEN).

Fig. 14. Elements of the EHEN strategic framework



Source: WHO Regional Office for Europe (2013b).

The goals of EHEN are to develop and sustain cross-sectoral collaboration, respond to the needs of target audiences,

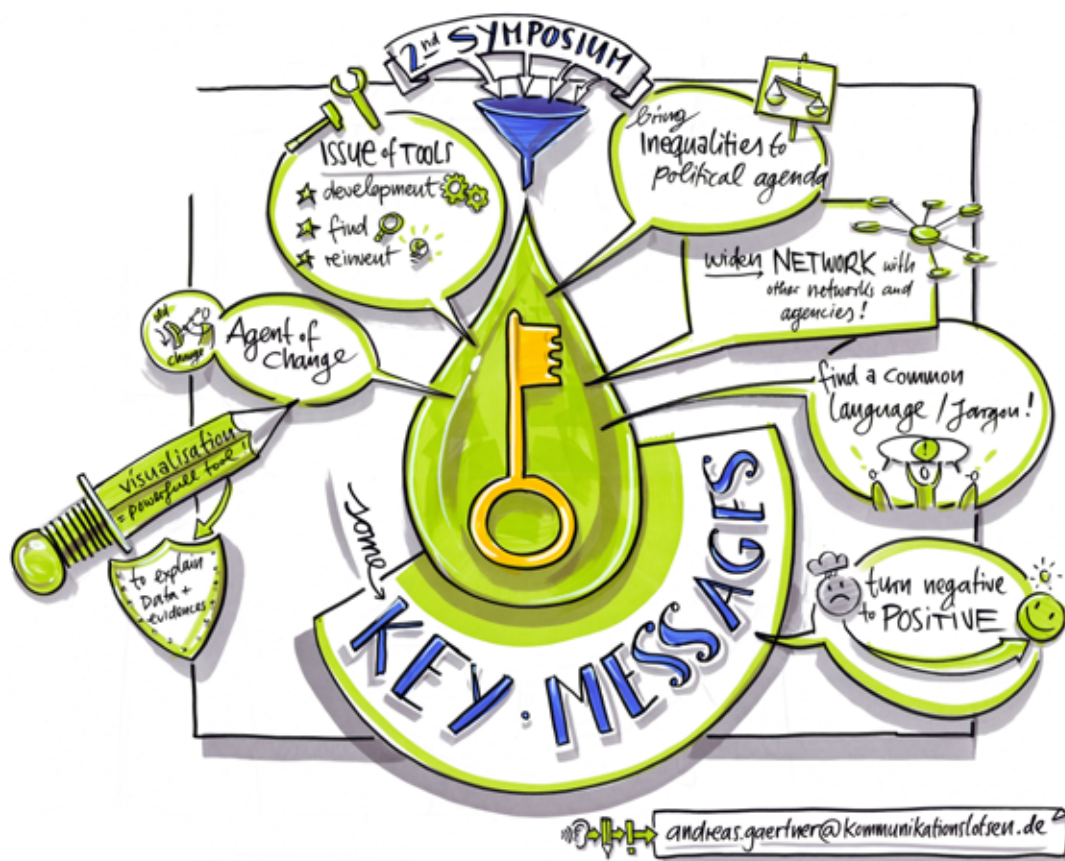
and compile and develop scientific evidence.

Economic evidence

EHEN has prompted discussion among experts about several important topics, ranging from current systematic review (Bielefeld University, 2014) to risk communication (WHO Regional Office for Europe, 2013c) to health inequality (WHO

Regional Office for Europe, 2012) and deprivation indices (see Fig. 15). Research findings on these topics show the importance of well-balanced approaches to policy-making.

Fig. 15. Best use of economics in environmental health – key messages from EHEN



Source: Drawing by Andreas Gaertner, the Kommunikationslotsen Agency. WHO Regional Office for Europe (2013).

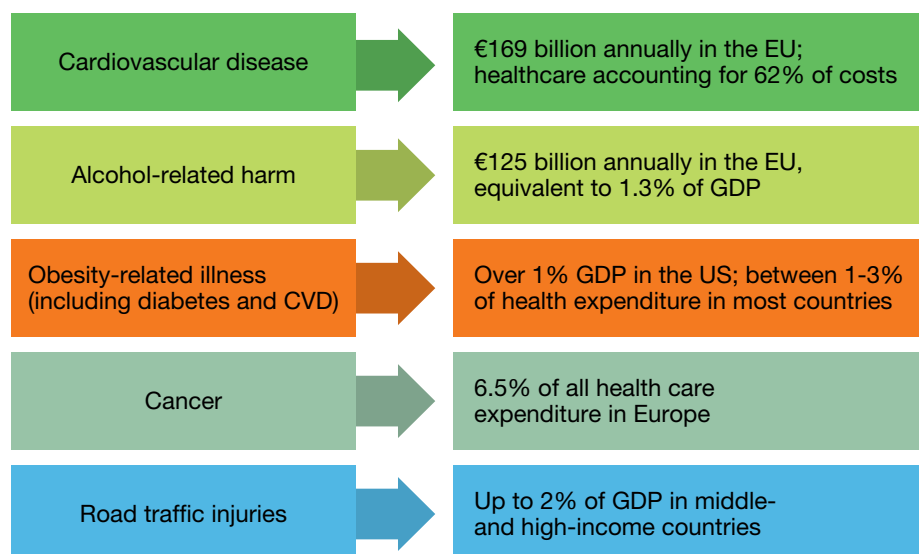
Some examples of health economics research findings are shown in Fig. 16, which is based on the work of the WHO Regional Director for Europe, Zsuzsanna Jakab and compiled from a group of international studies carried out in recent years. The figure shows the relationship between health outcomes listed on the left and their cost on the right.

Another example of health economics research findings resulted from an analysis of the effects of austerity measures in Thessaloniki, Greece, on exposure to particulate matter and the disproportionate vulnerability that resulted from these measures. As part of an austerity package, Greece increased taxes for light heating oil. Citizens without the financial means to cope

with the increased cost turned to biomass as an alternative fuel source, which resulted in increased exposure to PM_{2.5} (Table 3).

This is associated with greater risk of adverse health outcomes, such as cardiac and respiratory morbidity and mortality.

Fig. 16. The economic case for health promotion and disease prevention



CVD; cardiovascular disease; GDP: gross domestic product.

Source: adapted from Jakab (2014).

Table 3. Temporal comparison of energy use for heating in Thessaloniki, Greece

Year	Heating oil (%)	Natural gas (%)	Electricity (%)	Biomass burning (%)	PM _{2.5} (µg/l)
2011	44.0	40.0	10.4	5.6	43.5
2012	20.0	40.0	19.4	20.7	62.5

Source: Sarigiannis, Karakitsios & Kermenidou (in press).

In light of the complex, multifactorial analysis required in such a situation, WHO is taking part in ongoing model development that takes into account environmental factors and also in projects that evaluate future impacts based on various potential policies. One of the key outcomes of this development was that investing in climate change mitigation resulted in significant co-benefits for health outcomes – for example reduction of noise and air pollution. This proved that these investments would also have high economic rates of return. For example, about €1.5 million (from total costs of €33 million per year caused by the adverse

effects on health of exposure to PM_{2.5}) in the urban area of Kuopio, Finland, could be saved yearly as a result of health benefits achieved from decreased PM_{2.5} levels (Asikainen et al., 2014).

Such analyses are vital to the evaluation of economic policies and their effects on environmental exposure. Conversely, economic evaluations of environmental policy can enhance understanding of the importance of preventative measures in ensuring health and economic development through evaluation of long-term costs.

In general, economic evidence can provide

strong arguments for governmental decision-making for possible and efficient policy interventions, such as: regulations, subsidies; laws; and investments in public health, environment and other sectors. One prominent example of this is the EC Clean Air Policy Package, which was adopted in December 2013. It was supported by evidence from cost-benefit analyses performed before and after adoption, demonstrating that the benefits of the proposed Policy Package would exceed costs by at least a factor of 12 (Holland, 2014).

The results of investments in primary prevention and environmental protection are often perceived as costly exercises. However, policies set forth with the best of intentions can have unexpected consequences. In addition, there is often proof that prevention, early investments (for example, in mitigating climate change) and policy interventions can yield a high rate of return, directly and indirectly. This occurs not only by increasing health and well-being, but also by contributing to economic resilience. Consequently, economic growth can be promoted in a way that is both green and sustainable.

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Trends and current state of EU-funded research on environment and health⁷

Summary

The EU has a significant funding programme for environment and health research. The projects funded by its Framework Programmes for Research and Technological Development, also

called Framework Programmes, have contributed to building a knowledge base, which is needed to make informed policy decisions in Europe and beyond.

EU research programmes on environment and health: beginnings

Since their launch in 1984, the Framework Programmes have played a leading role in multidisciplinary research and cooperative activities in Europe and beyond. The Fifth Framework Programme (FP5), from 1998 to 2002, was the first EU research framework programme in which a dedicated environment and health research activity (called key action) emerged. With a budget of €160 million for the four years, this key action initiated more than 90 transnational research projects, for which the results are available (EC, 2007).

In the past 10 years, one of the main drivers of environment and health research was the European Environment and Health Strategy (EC, 2003) and the associated Action Plan (EC, 2004), adopted in 2004, the first phase of which ended in 2010. The Action Plan served as inspiration and support for research in the Sixth Framework Programme (FP6), from 2002 to 2006. More than 60 projects were funded during the four years of FP6, with annual EU contributions of about €50 million. All FP6 projects have ended, and results have been compiled into a compendium (EC, 2012).

Seventh Framework Programme: sustained support for environment and health research

A total of 147 of environment and health projects were funded by the Seventh Framework Programme (FP7), from 2007 to 2013, with the EU contributing

about €550 million (€79 million a year). Most projects are still ongoing, and an overview of the projects funded is available (EC, 2014a).

⁷ Legal notice: Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information. The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

The majority of environment and health research projects were funded by the FP7 Cooperation Programme. The notable exception is the Euratom Programme, which funded 14 projects on the adverse effects on health of ionizing radiation. Since environment and health research has a wide scope and is multidisciplinary, funding has been provided under several FP7 themes. With regard to the number of projects, the environment (including climate change) theme has funded the largest number

of projects (38% of the total; 36% of the total EC contribution). However, three other themes – (a) nanosciences, nanotechnologies, materials and new production technologies; (b) health; and (c) food, agriculture and fisheries and biotechnology – have also funded a significant number of projects, related mostly to the environmental and health risks of nanoparticles and nanomaterials, alternative toxicology testing for chemicals, and food contaminants, respectively.

Worldwide participation

The outreach of EU-funded environment and health programmes is extensive. A total of 68 countries worldwide have participated in FP7, including 1190 unique institutions (participants) and 2120 project participations in the 147 projects funded (with some participants participating many times in different projects). The EU Research Framework Programmes are open to participants from outside the EU; and, in many cases, the topics addressed in the projects have encouraged this participation.

As shown in Table 4, all 28 EU Member States are represented in FP7-funded projects. Of the 10 central and eastern European Member States (EU-10), the ones showing the strongest participation are the Czech Republic, Poland, Romania and Slovenia. An additional 12 countries from the WHO European Region have taken part, the most frequent three being Norway, Switzerland and Turkey. Thus, 41 of the 53 countries in the WHO European Region have been active in FP7 projects (data not shown).

Table 4. Countries and international organizations participating in FP7-funded environment and health-related projects

Participants	Number	Number of unique beneficiaries	Number of participations in projects
EU Member States	28	928	1778
Countries from the WHO European Region outside the EU^a	12	109	205
Other countries from outside the EU^b	28	113	137
Total	68	1150	2120
International Organizations:			
EU Joint Research Centre	1	1	36
UN agencies	6	6	15
Other international organizations	33	33	40
Total	40	40	91

^a Albania, Georgia, Iceland, Israel, Montenegro, Norway, the Russian Federation, Serbia, Switzerland, the former Yugoslav Republic of Macedonia, Turkey, Ukraine.

^b Argentina, Australia, Bangladesh, Brazil, Canada, China, Egypt, Ghana, India, Iran (Islamic Republic of), Japan, Kenya, Republic of Korea, Malawi, Mauritius, Mexico, Mozambique, New Zealand, Pakistan, Rwanda, Senegal, Singapore, South Africa, Sri Lanka, Uganda, the United States of America, Viet Nam.

Source: EC Research and Innovation Directorate-General (2014); reproduced by permission.

The largest participation from outside Europe has come from the United States (24 participants in 35 projects), followed by China (12 participants in 16 projects) and Canada (11 participants in 12 projects).

Finally, the FP7 project participant profile is characterized by significant involvement of various international organizations, such as professional scientific, industry, patient and NGOs (33 entities).

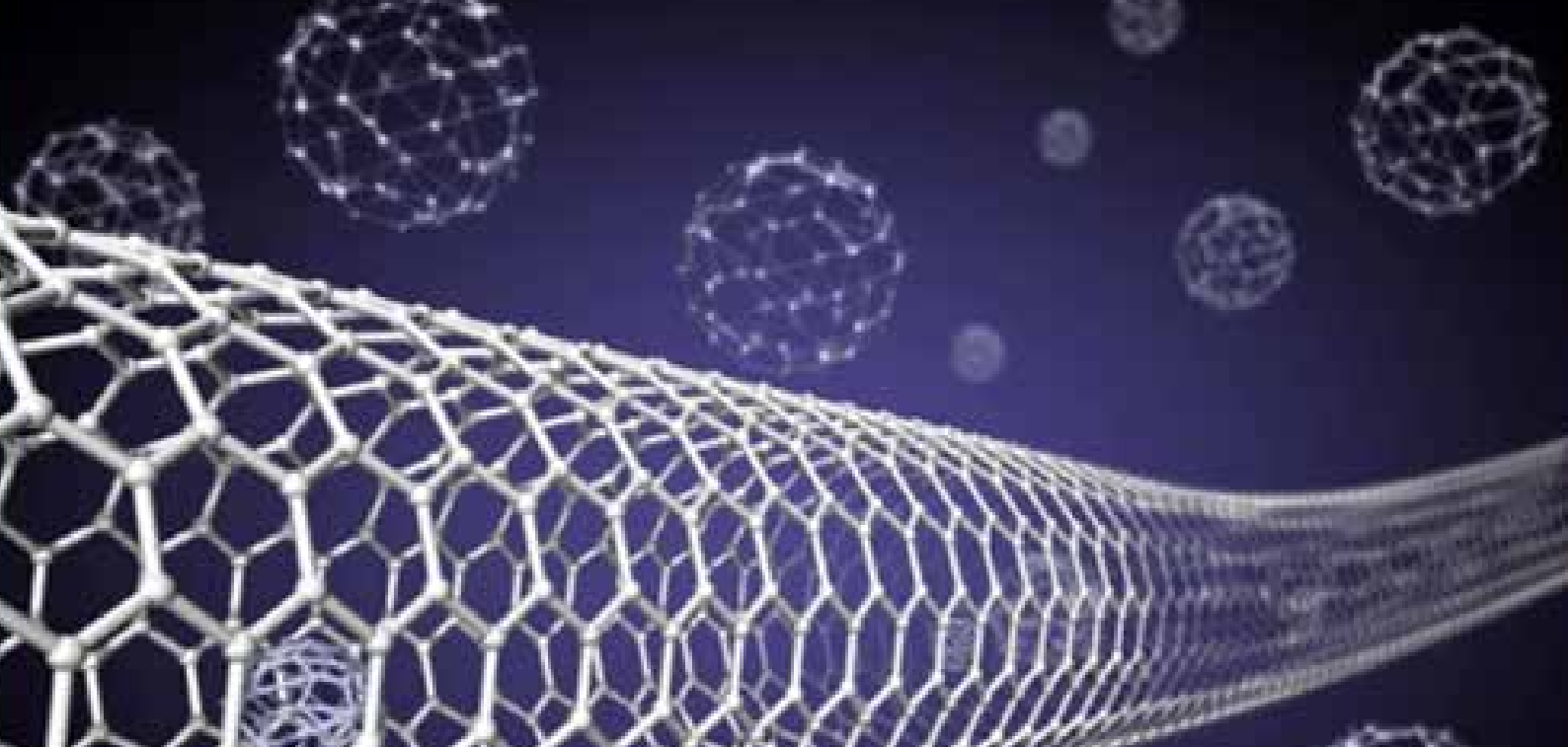
Table 5 gives an overview of the most

active institutions participating in FP7 research projects related to environment and health. The types of institutions that have taken part reflect the cross-cutting nature of environment and health. Some countries, especially Germany, Spain and the United Kingdom, have strong participation from small- and medium-sized companies. The most active participation from the EU-10 institutions comes from the Nofer Institute of Occupational Medicine (Poland), the Slovak Medical University and the Jožef Stefan Institute (Slovenia).

Table 5. The most active institutions participating in FP7 projects

No. of project participations	Participating institution
36	Joint Research Centre (JRC), Ispra, Italy
23	National Institute for Public Health and the Environment (RIVM), Bilthoven, Netherlands
22	Karolinska Institute, Solna/Huddinge, Sweden
20	Helmholtz Research Centre for Environmental Health, Munich, Germany
19	Institute of Occupational Medicine (IOM), Edinburgh, United Kingdom; Utrecht University, Utrecht, Netherlands
18	Imperial College of Science, Technology and Medicine, London, United Kingdom
15	Centre for Research on Environmental Epidemiology (CREAL), Barcelona, Spain; Fraunhofer Institute, various locations, Germany; Norwegian Institute of Public Health (NIPH), Oslo, Norway; National Research Council (CSIC), various locations, Spain
14	Netherlands Organization for Applied Scientific Research (TNO), various locations, Netherlands; National Institute of Health (ISS), Rome, Italy
13	French Alternative Energies and Atomic Energy Commission (CEA), various locations, France; Ludwig-Maximilians University, Munich, Germany; Technical University of Denmark (DTU), Kongens Lyngby, Denmark
12	Public Health England (PHE), various locations [previously Health Protection Agency], United Kingdom
11	National Institute for Industrial Environment and Risks (INERIS), Verneuil-en-Halatte, France; National Institute for Health and Welfare (THL), Helsinki/Kuopio, Finland; National Institute of Health and Medical Research (INSERM), various locations, France; National Research Council (CNR), various locations, Italy; Norwegian Institute for Air Research (NILU), Kjeller, Norway
10	Finnish Institute of Occupational Health (FIOH), Helsinki, Finland; University College Dublin, Dublin, Ireland

Source: EC Research and Innovation Directorate-General (2014); reproduced by permission.



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Multitude of issues covered

Environmental factors (stressors) addressed

If the classification of a project funded in FP7 is based on the environmental stressor studied in the project (Fig. 17), it can be seen that the largest number of projects funded in FP7 deal with issues related to environmental chemicals (such as: exposure to chemicals, including via consumption of food; detection and alternative testing methods; life-cycle assessment; and adverse effects on health), followed by nanoparticles and/or nanomaterials, and air quality.

Compared with FP6, the main new trend in FP7 is the funding dedicated to issues related to environmental and health risks of nanoparticles and nanomaterials (EC, 2010) and of global change. The FP7 projects often focused on the risks related to the emergence of such infectious diseases as vector-borne diseases due to changing climatic factors – for example, the Healthy Futures project (EC, 2014b). The above are examples of

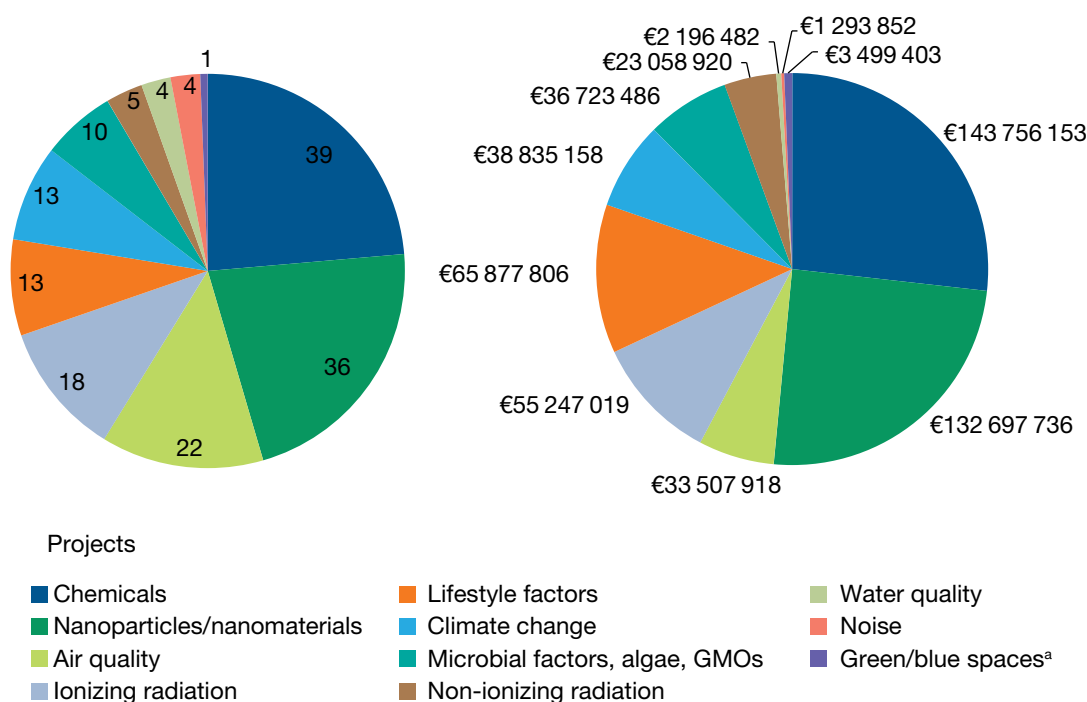
scientific areas in which many emerging and unresolved issues remain and in which research is continually needed to support evolving policies. In addition, greater emphasis has been placed on projects that examine the role of lifestyle factors in health and disease.

Unlike in FP6, exposure to air pollution and subsequent health risks has also received increased attention and research funding in FP7 – for example, the HITEA Project (EC, 2011:123–125) – while few FP7 projects deal with water quality issues. The Euratom programme continues to fund a significant number of projects related to ionizing radiation – for example, population studies following the Chernobyl nuclear accident, such as EpiRadBio (EC, 2014b).⁸ The number of projects funded on risks related to ionizing radiation is three times higher than that dedicated to potential health risks related to exposure to non-ionizing radiation (electromagnetic fields) – for example, the MOBI-KIDS project (EC, 2011:201–203).⁹

⁸ EpiRadBio is a population study that combines epidemiology and radiobiology to assess cancer risks in the breast, lung, thyroid and digestive tract after exposures to ionizing radiation with cumulative equivalent doses on the order of 100 mSv or below.

⁹ The MOBI-KIDS project is an international multicentre case-control study of risk factors for brain cancer in young people. Experts from 16 European and non-European countries are involved in the study.

Fig. 17. Number of projects funded, and EU contribution by environmental factor (including lifestyle factors) addressed



GMOs: genetically modified organisms.

^a Green spaces: for example, parks; blue spaces: for example, lakes, seas.

Source: EC Research and Innovation Directorate-General (2014); reproduced by permission.

Compared with FP5, an issue that has received relatively little funding in FP7 is exposure to environmental noise and the potential health risks related to it, although the situation shows a slight improvement when compared with FP6.

Health effects and end-points addressed

If the classification of FP7-funded environment and health projects is based on the health end-points and diseases investigated in the projects (Table 6), the largest number of projects focused on genotoxic or mutagenic effects – for example, the ARIMMORA project (EC, 2014b)¹⁰. This is followed by an almost

equal number of projects that focused on: ecotoxicological end-points, such as the SOLUTIONS project (EC, 2014b); atopic and respiratory diseases, such as the ATOPICA project (EC, 2014b); neurodevelopmental effects, such as the DENAMIC project (EC, 2014b);¹¹ and cardiovascular end-points, such as the CARDIORISK project (EC, 2011:175–177). These projects investigate diseases where environment – especially chemical contaminants and air pollution – is thought to play a role. Obesity and diabetes are new end-points that have been addressed in a more comprehensive manner – for example, the EpiMigrant project (EC, 2014b).¹²

An important feature of the environment

10 The acronym ARIMMORA stands for “Advanced Research on Interaction Mechanisms of electroMagnetic exposures with Organisms for Risk Assessment”.

11 The acronym DENAMIC stands for “Developmental Neurotoxicity Assessment of Mixtures in Children”.

12 The EpiMigrant Project is concerned with the identification of epigenetic markers that underly the increased risk of type 2 diabetes in the South Asian population.

13 The acronym ESCAPE stands for “European Study of Cohorts for Air Pollution Effects”.

and health area since FP6 has been continuous support for projects that examine several end-points concurrently. For example, the ESCAPE Project (EC, 2011:119–121) focused on the adverse

effects on health of air pollution and examined the risks of exposure to it in relation to cancer, cardiovascular diseases, respiratory diseases and reproductive health.¹³

Table 6. Health end-points studied and diseases investigated in FP7 projects

Health end-points	Number of projects
Genotoxicity, cancer	26
Ecotoxicological effects	16
Atopic diseases, immune effects	13
Neurodevelopmental effects, effects on the brain, neuro(cyto)toxicity, mental health and disorders	13
Cardiovascular effects	12
Respiratory health, lung function, inflammation	12
Reproductive health	7
Obesity	7
Infectious diseases	5
Diabetes	4
Overall mortality	4

Source: EC Research and Innovation Directorate-General (2014); reproduced by permission.

Coordinating research

In addition to performing research activities per se, a significant number of FP7 coordination actions reviewed the state of the science related to various issues and promoted coordination and networking of activities. The coordination actions do not allow research activities to be funded; instead, they aim to support coordination and harmonization of research-relevant actions.

Noteworthy FP7-funded coordination actions include the following.

- ERA-ENVHEALTH (EC, 2011:381–383). This coordination action brought together the national programme managers of research on environment and health, to establish long-term collaboration between the various

organizations, and analysed the environment and health landscape in Europe.

- COPHES (EC, 2014b).¹⁴ This coordination action – which brought together 35 institutions in 27 European countries, along with its *sister project* DEMOCOPHES (which was funded by the Life+ programme and which tested a common approach to human biomonitoring surveys developed by COPHES) – created harmonized protocols and guidelines for carrying out human biomonitoring in Europe and conducted a pilot survey. Differences of exposure were noted in various European countries – for example, exposure to methylmercury.

14 The acronym COPHES stands for “Consortium to Perform Human Biomonitoring on a European Scale”.

- ENNAH (EC, 2011:211–213).¹⁵ By reviewing the current state of scientific knowledge about the adverse effects on health of exposure to noise, this coordination action contributed actively to updating EU environmental noise directives.
- ENRIECO (EC, 2011:305–307). This coordination action analysed the data, methods and tools of European birth cohort studies (36 birth cohorts, 350 000 mother–child pairs), to identify links between exposure to environmental factors and health. CHICOS (EC, 2011:297–299) identified more than 70 birth cohorts, encompassing more than 500 000 children. The majority of cohorts were located in northern and/or western Europe, though all regions of Europe have birth cohorts suitable for research.
- HEROIC (EC, 2014b). This ongoing action coordinates a network of experts and stakeholders, to establish stronger interfaces between human and environmental risk assessment.
- NanoImpactNet (EC, 2011:253–255). This 24-member multidisciplinary European scientific and regulation-support network focused on the health and environmental impact of nanomaterials.

New aspects of FP7 projects

Previously less investigated aspects of FP7 projects include, among other things:

- the strong emergence of projects that develop personalized exposure assessment approaches and technologies;
- the increased development of biomarkers of exposure and early adverse effects on health based on *omics*, which poses some challenges to risk assessment, due to difficulties in interpreting the large amount of data created;
- studies that explore the adverse effects on health of early exposures, such as those in utero, and the risks of developing diseases later in life – the so-called concept of developmental origins of health and disease;
- conducting the first ever EU-wide feasibility study of population exposure to a limited number of chemicals (human biomonitoring) in the DEMOCOPHES project, based on harmonized protocols and work carried out by the COPHES coordination action;
- a large number of projects funded to explore the potential environmental and health risks of nanoparticles and nanomaterials; and
- the launch of the pilot EU Exposome Initiative (EC, 2014a).

Supporting policies

Environment and health research funded by the EU Framework Programmes has fed, and has the potential to feed, into a large number of policy actions and initiatives, either directly or indirectly. Relevant prominent policy initiatives include the European Environment and

Health Strategy and the associated Action Plan, the European strategy for nanotechnology and the Nanotechnology Action Plan, and various sectoral policies – for example, on chemicals and air pollution.

¹⁵ The acronym ENNAH stands for “European Network on Noise and Health”.

The EC Directorate-General (DG) for Research and Innovation has been part of the WHO environment and health process for the past 10 years, and the EC is a member of the European Environment and Health Task Force. In the past, DG Research and Innovation and WHO have interacted many times to ensure that relevant policy-makers are aware of significant scientific results being generated in EU-funded research projects, so they can make informed

decisions. The 2008 International Public Health Symposium on Environment and Health Research – entitled Science for policy, policy for science: bridging the gap – was a major event; it was co-organized by WHO. Also, WHO has been a partner in several research projects and coordination actions funded by the EU; and, in the effort to set priorities for research, DG Research and Innovation has profited from many WHO activities and studies.

Looking towards the future

In preparing for Horizon 2020, the new EU Framework Programme for Research and Innovation 2014–2020 (EC, 2014c), the EC recognized that research issues need to be addressed in a more cross-cutting and integrated way, integrating more innovative approaches into conventional research. This challenge-driven approach resulted in the launch of the pilot EU Exposome Initiative in 2012 in the area of environment and health (EC, 2014a). The exposome can be defined as the measure of all the exposures of an individual in a lifetime and how those exposures relate to health.

The Exposome Initiative includes three projects:

1. **Exposomics:** enhanced exposure assessment and omic profiling for high priority environmental exposures in Europe;
2. **HELIX:** the human early-life exposome – novel tools for integrating early-life environmental exposures and child health across Europe; and
3. **HEALS:** health and environment-wide associations based on large population surveys.

Under Horizon 2020, environment and

health-related research activities are contained in several so-called societal challenges, the main one being Health, Demographic Change and Well-being. In the first call for proposals under this societal challenge, the EC provides funding opportunities for research in a number of areas. For example, these areas cover: understanding health, ageing and disease: determinants, risk factors and pathways; health promotion and disease prevention: improved intersectoral cooperation for environment and health-based interventions; and new approaches to improve predictive human safety testing (EC, 2014d).

Besides the need for scientific support for evolving EU policies in such areas as chemicals, air pollution and noise, the recently adopted Seventh EU Environmental Action Programme – with the international challenge of living well, within the limits of our planet – will be one of the main policy drivers for environment and health research in Europe in the years to come. One of its main objectives is “to safeguard the Union’s citizens from environment-related pressures and risks to health and wellbeing” (EC, 2014e). In addition, the recently adopted Life+ programme will provide support for environment and health-related actions in EU countries.

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Environment and health in Europe: taking stock of progress

The preceding chapters summarize the situation and progress made since 2010 – the year of the last Ministerial Conference on Environment and Health – in the areas and goals set forth by the Parma Declaration. For these areas and goals, the present report outlines the current state of evidence, exposures and health impacts. Particular attention is paid: to the thematic areas of the Parma Declaration with its time-bound targets (with specified completion dates) on water and sanitation, air quality, the settings of the daily life of children, chemicals, and asbestos; to climate change; and to health inequalities. The evolving political, institutional, governance and knowledge-based frameworks – arguably shaping environment and health as profoundly as material determinants – are also described. Moreover, dedicated chapters present the action and strategies of such influential actors as relevant UN agencies, the EU, civil society (as represented by NGOs), and the voice of young people (conveyed by the Youth Coalition).

To draw useful conclusions, some important questions need to be addressed. For example, if there is an overall picture to which all these elements contribute, what is it? Also, what general indications can be drawn from the findings that can inform a discussion of the way forward, including the upcoming 6th Ministerial Conference on Environment and Health, scheduled for 2017?

The Member States of the European Region have been very active since the Parma Conference. Besides taking concrete action to address and ameliorate the adverse effects of environmental health determinants, many have also

provided substantial information for assessing progress, identifying gaps, and responding to challenges. The WHO Regional Office for Europe routinely gathers environmental indicators from established data flows – for example, on air quality, water quality and sanitation. In addition, it has collected, through several surveys carried out over the last few years, a wealth of data on policy development, implementation of programmes and, where feasible, direct measurements of the quality of the environment – for example, in schools in six Member States.

On the basis of the data on the actual state of the environment and the progress made in relevant policy areas, a rather uneven picture emerges, perhaps unsurprisingly, showing both promising and unpromising aspects. With regard to established, well known risk factors, there seems to be limited progress in the intensity of their occurrence, despite consistent policy efforts, often underpinned by legally binding commitments, such as those made by parties to relevant conventions and protocols and by EU Member States subject to EU directives. For example, though relatively low for Member States in the western part of the Region, concentrations of noxious ambient air pollutants (PM_{2.5} and ozone, typically in urban settings) seem to be stationary during the last few years, at levels that still entail substantial health impacts. Data are scarce for Member States in the eastern part of the Region, but the information available suggests a prevalence of unacceptably high concentrations of air pollutants, far above WHO guideline values and, a fortiori, EU standards.



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Similarly, access to safe drinking-water and sanitation remains a troubling problem, especially in rural areas; in particular, progress in the Caucasus and central Asia, for example, is stalled or even negative. Also, the prevalence of physical activity is disappointing, with children overweight and obesity possibly increasing throughout the region – trends that may in part reflect environments that are not conducive to walking and cycling, for example.

In contrast to the limited progress described above, sustained international and national efforts have resulted in significant progress in unintentional and road traffic injuries, halving them in a decade, until 2011; nonetheless, a gradient through income levels, both between and within countries, was observed. For exposure to hazardous chemicals – which are notoriously difficult to measure – mixed signals were reported for the period 1998–2012. Decreasing levels of dioxins and furans in breast milk were observed in several EU and non-EU countries. On the other hand, 1.8 million children yearly are born in the EU with levels of methylmercury

that affect their cerebral development and cognitive performance in later years. In addition, significant efforts have been made to tackle asbestos-related diseases; on the international policy front, however, it is not yet possible to achieve a consensus for the inclusion of chrysotile asbestos among the chemicals subject to the provisions of the Rotterdam Convention.

On a more positive note, institutional arrangements and policy provisions have made important progress in the Region. Far-reaching, legally binding international agreements are progressively extending their coverage. The 1999 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and Lakes – a key instrument for reducing water-related diseases and pursuing sustainable and equitable access to water resources – has now reached 26 parties, covering 60% of the population in the Region. Similarly, agreements on ambient air quality are being ratified or will be adopted by Member States, both at the pan-European level (for example, the Convention on Long-range Transboundary

Air Pollution, which since 2012 includes provisions for PM_{2.5}) and at the EU level, with a new policy package on emissions on its way. The new package will commit EU countries and will possibly become a compelling target for non-EU Member States.

More than 60% of the 35 Regional Member States that responded to the WHO survey on children's environments and injuries reported the introduction of new policies after the Parma Conference. Together with other policies emanating from the education and road safety sectors, a robust policy framework seems to be in place on this issue, integrating multisectoral policies, particularly for urban areas, and promoting a more meaningful engagement of young people in implementing the Parma commitments.

As reported in a survey of 35 Regional Member States, various policy measures have been undertaken to deal with risks from hazardous chemicals, again including initiatives at the national level, as well as commitments to international agreements on chemical safety, though with limited explicit provision for the protection of children. Finally, the consolidation of policy instruments available to tackle emergencies, notably through the International Health Regulations, has provided a strong framework to support Member States in addressing several environmental cross-border threats, both related to chemical accidents and to the more frequent occurrence of extreme weather events. These consolidated policy instruments emphasize the importance of improving preparedness and resilience to these events and strengthening international collaboration.

Thus, all in all, it appears that the degree of political awareness and normative response has become rooted more deeply in many Member States and at the supranational level. However, as discussed earlier in this chapter, such progress on the policy front is not fully reflected by hard indicators. A reason for the difficulty in achieving substantial and measurable returns from policies is that large gains in environmental health quality

had previously been attained by many European countries. Though incrementally more difficult to achieve, further improvement is still necessary, especially where substantial burdens of disease are documented. It is also important that the best quality of environment and health found in Europe be regarded as a realistic and feasible target for all Member States and be regarded as an investment in the attainment of better health and quality of life for all and in the social and economic prosperity of the Region.

A limited connection between policy action and policy impact can also be seen in such broader thematic areas as climate change and sustainable development. Global, regional and national efforts on climate change mitigation and adaptation have been fruitful in producing influential and legally binding instruments, preparedness and response schemes, and adaptation plans, among other things. Through its organizations and agencies, the UN has put in place a global policy framework for sustainable development that has proven its worldwide influence.

These remarkable developments, however, have taken place against a background of rapid and apparently unstoppable deterioration of climate and ecosystems, continuing unsustainable patterns of production and consumption, and a lack of decoupling between economic development and the use of material resources. In addition, the economic crisis that has affected several Member States since 2008 has brought with it the danger that the protection of health and environment can be regarded as a dispensable luxury whose pursuit may be at odds with economic recovery and growth in a globalized and highly competitive market.

Therefore, more stringent implementation of existing policies and enforcement of existing norms and standards are needed or, more generally, a closer translation from evidence to concrete policy action seems warranted. The gap between evidence and policy action has received some attention, as shown (for example) by the growing interest in it raised by economic

considerations. Increasingly, evaluations of the economic benefits achievable through preventive action are being used to supplement data on the adverse effects on health and the effects of environmental factors. Such estimated economic benefits can be as high as percentage points of entire gross domestic products, as in the case of transport. At times of slow expansion or even contraction of most European economies, such additional economic evidence provides, or should provide, a strong incentive for investment in environmental health.

Similarly, the increased prominence of inequalities that result from the uneven distribution of environmental exposures and impacts adds to the urgency of increasing the rate of implementing policies and commitments. Health inequalities, in point of fact, have become most prominent in several strategic deliberations, such as those for the Health 2020 policy framework for public health in Europe.

The cycle of producing evidence, formulating policy and concrete implementation is very complex. Strengthening this cycle's overall effectiveness, arguably an overarching goal of the environment and health process, requires consideration of several factors. Where observed, lack of progress should not be ascribed simplistically to ineffective implementation or poor compliance. Among the factors that need to be considered is the time lag, where the effects of policy developments may show up a few years later as measurable benefits. More importantly, available indicators are only able to provide a partial picture of the adverse effects on health of environmental factors – for example, because of their failure to detect important dimensions of well-being and quality of life. If this is the case, as indeed it appears to be, then it is also true that such indicators can only provide a partial picture of the overall benefits of existing policies. For example, although policies that tackle ambient air emissions from transport by curbing urban motor vehicle traffic may result in modest improvements

in air quality (because of the contribution of distant sources), they can bring about considerable co-benefits, such as less noise and improved quality and liveability in the urban environment. In other words, a more telling assessment of policies might result from broader evaluations that extend beyond their immediate area of pertinence.

Complexity, in point of fact, remains a challenge when studying the adverse effects on health of the environment and assessing policy responses. The production and evaluation of evidence and the use of indicators for monitoring partly reflect a compartmentalized view of environment and health (subdivided into air, water and other categories) that goes back several decades. In light of evolving evidence, this view has been maturing; but still needs to progress if it is to embrace the inherent complexity of contemporary challenges in environment and health. This is especially true if broad, distal determinants – those having indirect effects, such as national, institutional, political, legal, and cultural determinants – are going to be considered holistically. A number of lessons are being learnt from the science of climate change, and we may need more resources and greater capacity to deal with other complex systems, such as energy and agriculture – work that involves substantial uncertainty and calls for precautionary policies.

Moreover, institutional and societal complexity plays an important role. The ultimate effect of policies is modulated by political, strategic and socioeconomic considerations, opportunities, and constraints, which together embody a very challenging situation for the European Region.

The environment and health process is an ideal platform for pursuing this challenging agenda. It remains the only multilateral platform where both health and environment constituencies participate on an equal footing and can pursue common objectives. Its distinctive governance platform provides

the environment and health process with the necessary breadth of vision and understanding of the interactions between different sectoral policies and their effect on multiple exposures, which is necessary to embrace the irreducible complexity of addressing environment and health issues. Furthermore, the environment and health process can enhance the implementation of several multilateral environmental agreements, which are explicitly identified in the Parma Declaration as being key to the attainment of its goals and commitments.

The changing understanding of the relationship between environment and health and well-being implies, however, that the European environment and health process needs to update its objectives and priorities in light of the new knowledge and understanding of the interrelationships between environment and health. A renewed vision and focus – aligned with current and emerging knowledge, policy frameworks and processes – will ensure the continuing relevance of the environment and health process to Member States and their continued interest in this unique intersectoral policy platform in the WHO European Region.

To maintain its relevance and usefulness to Member States, the future shaping of the European environment and health process needs to be fully informed by these changes, as well as by an understanding of the political and socioeconomic context. Accordingly, it needs to adjust its capacity to:

- establish links and strategic partnerships with different actors, stakeholders and processes;
- utilize fully the already established policy instruments and tools;
- provide guidance and strengthen capacities to address environment and health challenges, while embracing their underlying complexity and uncertainty;
- enhance the understanding and use of economic arguments to support action on environment and health issues; and
- harmonize with the forthcoming post-2015 sustainable development agenda and contribute to its implementation in the European Region.



Annex 1. Inclusion of health in national climate change adaptation plans

Table A1 covers the national adaptation plans or strategies and health in the WHO European Region.

Table A1. Inclusion of health in national climate change adaptation plans, by Member State (Dec. 2013)

Member State	Year(s)	NAP/ NAS	H in NAP	HNAP	Source
Albania	2012	N	N	Y	Republic of Albania Ministry of Health (2011)
Austria	2012	Y	Y	--	Federal Ministry of Agriculture, Forestry, Environment and Water Management (2012)
Belgium	2010	Y	Y	--	NCC (2010)
Czech Republic	2004	Y	Y	--	Ministry of the Environment (2004)
Denmark	2012	Y	Y	--	Task Force for Climate Change Adaptation (2012)
Estonia	2012	N	N	Y	Sotsiaalministeerium [Ministry of Social Affairs] (2012)
Finland	2005	Y	Y	--	Ministry of Agriculture and Forestry (2005)
France	2011	Y	Y	--	Ministère de l'Écologie, du Développement durable, des Transports et du Logement (2011)
Germany	2011	Y	Y	--	Bundesregierung (2011)
Hungary	2008	Y	Y	--	NAK (2008)
Ireland	2012	Y	Y	--	Department of the Environment, Community and Local Government (2012)
Israel	2012	Y	Y	--	Ministry of Environmental Protection (2012)
Italy	2013	Y	Y	--	Ministero dell'Ambiente e della Tutela del Territorio e del Mare [Italian Ministry of Environment, Land and Sea] (2013)
Kazakhstan	2014	N	N	Y	Under approval
Kyrgyzstan	2011,	Y	Y	Y	Ministry of Health of the Kyrgyz Republic (2011)
	2013				Government of the Kyrgyz Republic (2013)
Malta	2010	Y	Y	--	Ministry for Resources and Rural Affairs (2012)

Table A1 (concluded)

Member State	Year(s)	NAP/ NAS	H in NAP	HNAP	Source
Netherlands	2011	Y	N	--	Ministry of Infrastructure and the Environment, Ministry of Economic Affairs, Agriculture and Innovation (2011)
Norway	2010	Y	Y	--	Norwegian Ministry of the Environment (2010)
Poland	2013	Y	N	--	Ministerstwo Środowiska [Ministry of the Environment](2013)
Portugal	2008	Y	Y	--	Agência Portuguesa do Ambiente [Portuguese Environment Agency] (2010)
Republic of Moldova	2011	Y	Y	--	Ministry of Environment of the Republic of Moldova (2011).
Russian Federation	2012	N	N	Y	Ministry of health and social development of the Arkhangelsk region, Northern state medical university (2012) [applied to the Arkhangelsk region]
Spain	2006	Y	Y	--	Ministerio de Agricultura, Alimentación y Medio Ambiente [Ministry of Agriculture, Nutrition and Environmental Affairs] (2006)
Sweden		Y	Y	--	Länsstyrelserna [County Administrative Boards] (2012)
Switzerland	2012	Y	Y	--	Federal Office for the Environment (2012)
Tajikistan	2014	N	N	Y	Under approval
The former Yugoslav Republic of Macedonia	2012	N	N	Y	Ministry of Health (2011)
Turkey	2011	Y	Y	--	Ministry of Environment and Urbanization (2011a)
	2011	Y	Y	--	Ministry of Environment and Urbanization (2011b)
United Kingdom of Great Britain and Northern Ireland	2013	Y	Y	--	HM Government (2013)
	2009	Y	Y	--	The Scottish Government (2009)
	2010	Y	Y	--	Welsh Assembly Government (2010)
Uzbekistan	--	N	N	Y	Under development

N: no;
Y: yes;
H in NAP: health in the national adaptation plan;
HNAP: national health adaptation plan;
NAP: national adaptation plan;
NAS: national adaptation strategy.

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Annex 3. Parma Declaration on Environment and Health



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Italian Minister of Health Dr Ferruccio Fazio, Italian Minister of Environment Ms Stefania Prestigiaco and the WHO Regional Director for Europe Dr Zsuzsanna Jakab holding the Declaration endorsed by the Fifth Ministerial Conference on Environment and Health, Parma, Italy, 10–12 March 2010.



Fifth Ministerial Conference on Environment and Health

“Protecting children’s health in a
changing environment”

Parma, Italy, 10–12 March 2010



EUR/55934/5.1 Rev. 2
11 March 2010
100604
Original: English

Parma Declaration on Environment and Health

1. We the Ministers and Representatives of Member States in the European Region of the World Health Organization (WHO) responsible for health and the environment, together with the WHO Regional Director for Europe, in the presence of the European Commissioners for Health and Consumer Policy and for the Environment, the Executive Secretary of the United Nations Economic Commission for Europe (UNECE) and the Regional Director for Europe of the United Nations Environment Programme (UNEP) have gathered in Parma, Italy from 10 to 12 March 2010 to face the key environment and health challenges of our time.
2. Building on the foundations laid in the European Environment and Health Process to date, we will intensify our efforts to implement the commitments made through previous WHO ministerial conferences, especially those set out in the Children’s Environment and Health Action Plan for Europe (CEHAPE).
3. We are committed to act on the key environment and health challenges of our time. These include:
 - (a) the health and environmental impacts of climate change and related policies;
 - (b) the health risks to children and other vulnerable groups posed by poor environmental, working and living conditions (especially the lack of water and sanitation);
 - (c) socioeconomic and gender inequalities in the human environment and health, amplified by the financial crisis;
 - (d) the burden of noncommunicable diseases, in particular to the extent that it can be reduced through adequate policies in areas such as urban development, transport, food safety and nutrition, and living and working environments;
 - (e) concerns raised by persistent, endocrine-disrupting and bio-accumulating harmful chemicals and (nano)particles; and by novel and emerging issues; and
 - (f) insufficient resources in parts of the WHO European Region.

Conference Secretariat

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4. We will address these challenges by setting up or strengthening existing mechanisms or structures that can ensure effective implementation, promote local actions and ensure active participation in the European Environment and Health Process. Recognizing that economic arguments are increasingly critical to develop sound policies, we will pay special attention to fostering strategic partnerships and networks, so that environment and health issues are better integrated across the policies of all sectors. We call on these sectors and relevant organizations to work with us more closely to ensure healthy environments.

5. We will intensify efforts to develop, improve and implement health and environmental legislation and to continue health system reforms as necessary, particularly in the newly independent states and countries of south-eastern Europe, aimed at streamlining, upgrading and strengthening the performance of public health and environmental services.

6. We will ensure that youth participation is facilitated across all Member States at both national and international levels by providing them with assistance, resources and the training required for meaningful and sustainable involvement in all aspects of the process.

7. We will advocate for investing in sustainable and environmentally friendly and health-promoting technologies, emphasizing the opportunities created by these activities, such as energy-efficient health services and green jobs.

8. We encourage international stakeholders, including international financial institutions, and the European Commission to offer further scientific, political, technical and financial assistance to help establish effective mechanisms and strengthen capacities to reduce exposures to environmental hazards and the resulting health impacts in the Region.

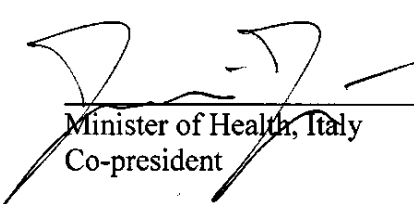
9. We call upon the WHO Regional Office for Europe, the European Commission, UNECE, UNEP and all other partners to strengthen their collaboration to ensure progress in environment and health implementation in the WHO European Region.

10. We endorse and will implement the “Commitment to act” and the goals and targets included therein. That document is an integral part of this Declaration.

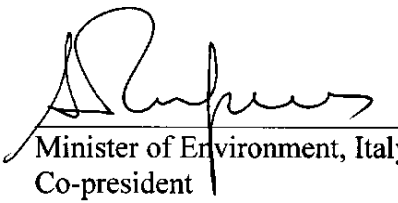
11. We endorse the institutional framework described in the “The European Environment and Health Process (2010–2016): Institutional framework”. We commend a stronger political role for the European Environment and Health Ministerial Board and we will follow up on implementation through the Environment and Health Task Force and the Ministerial Board will report annually to the WHO Regional Committee for Europe and the UNECE Committee on Environmental Policy.

12. We agree to meet again at the Sixth European Ministerial Conference on Environment and Health in 2016.

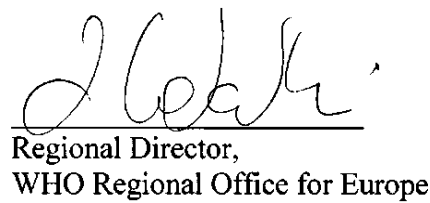
13. We the Minister of Health and the Minister of the Environment, Land and Sea of Italy, on behalf of all the ministers of health and environment in the European Region of WHO, together with the WHO Regional Director for Europe and in the presence of the European Commissioners for Health and the Environment, the Executive Secretary of UNECE and other partners, hereby fully adopt the commitments made in this Declaration.



Minister of Health, Italy
Co-president



Minister of Environment, Italy
Co-president



Regional Director,
WHO Regional Office for Europe



Fifth Ministerial Conference on Environment and Health

“Protecting children’s health in a
changing environment”

Parma, Italy, 10–12 March 2010



EUROPE

EUR/55934/5.2 Rev 2
11 March 2010
100105
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Commitment to Act

Building on the foundations laid in the European Environment and Health Process to date, including in particular the Fourth Ministerial Conference on Environment and Health and the Intergovernmental Mid-term Review held in Vienna in June 2007, we will increase our efforts to address the key environment and health challenges of our time, including climate change, emerging issues and the effects of the economic crisis, and we reaffirm our commitment to work together across sectors.

We recognize established political processes that ensure healthy environments for children, including all related United Nations processes, other WHO ministerial conferences as well as European Union legislation and the 2009 deliberations of the Group of Eight industrialized nations (G8), as tools for further implementation.¹

We take particular note of the Declaration of the Sixth Ministerial Conference “Environment for Europe”, of WHO’s Tallinn Charter on Health Systems, Health and Wealth² and of the European Union Declaration on Health in All Policies.

A. Protecting children’s health

1. We reconfirm our commitment to prioritized actions under the regional priority goals (RPGs) in the Children’s Environment and Health Action Plan for Europe (CEHAPE) as indicated below. We will strive to attain the targets in the RPGs as set out below.

Regional Priority Goal 1 **Ensuring public health by improving access to safe water and sanitation**

¹ Turkey declares that it does not consider itself bound by the commitments and undertakings in the paragraphs related to international treaties, conventions or protocols to which it is not a contracting party, namely the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the Protocols to the 1979 Convention on Long-Range Transboundary Air Pollution except the 1984 Protocol on Long-Term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe.

² Within the political and institutional framework of each country, a health system is the ensemble of all public and private organizations, institutions and resources mandated to improve maintain or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.

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- i. We will take advantage of the approach and provisions of the Protocol on Water and Health³ as a rationale and progressive tool to develop integrated policies on water resource management and health, addressing the challenges to safe water services posed by climate change, with clear targets and objectives, working in partnership with all concerned sectors.
- ii. We will strive to provide each child with access to safe water and sanitation in homes, child care centres, kindergartens, schools, health care institutions and public recreational water settings by 2020, and to revitalize hygiene practices.

Regional Priority Goal 2 Addressing obesity and injuries through safe environments, physical activity and healthy diet

- i. We will implement the relevant parts of the commitments set out in the Amsterdam Declaration of the Third High-Level Meeting of the Transport Health and Environment Pan-European Programme (THE PEP).
- ii. We will integrate the needs of children into the planning and design of settlements, housing, health care institutions, mobility plans and transport infrastructure. To this end we will use health, environment and strategic impact assessments and we will develop and adapt the relevant regulations, policies and guidelines, and implement the necessary measures.
- iii. We will work in partnership with local, regional and national authorities to advocate for actions to counteract the adverse effects of urban sprawl that cause socioeconomic, health and environmental consequences.
- iv. We aim to provide each child by 2020 with access to healthy and safe environments and settings of daily life in which they can walk and cycle to kindergartens and schools, and to green spaces in which to play and undertake physical activity. In so doing, we intend to prevent injuries by implementing effective measures and promoting product safety.
- v. We will implement the WHO European Action Plan for Food and Nutrition Policy (2007–2012), in particular by improving the nutritional quality of school meals, and support local food production and consumption, where it can reduce environmental and health impacts.

Regional Priority Goal 3 Preventing disease through improved outdoor and indoor air quality

- i. We will take advantage of the approach and provisions of the protocols to the 1979 Convention on Long-Range Transboundary Air Pollution and we will support their revision, where necessary. We will continue and enhance our efforts to decrease the incidence of acute and chronic respiratory diseases through reduction of exposure to ultrafine particles and other particulate matter, especially from industry, transport and domestic combustion, as well as ground-level ozone, in line with WHO's air quality guidelines. We will strengthen monitoring, control and information

³ Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

programmes, including those related to fuels used in transport and households.

- ii. We will develop appropriate cross-sectoral policies and regulations capable of making a strategic difference in order to reduce indoor pollution, and we will provide incentives and opportunities to ensure that citizens have access to sustainable, clean and healthy energy solutions in homes and public places.
- iii. We aim to provide each child with a healthy indoor environment in child care facilities, kindergartens, schools and public recreational settings, implementing WHO's indoor air quality guidelines and, as guided by the Framework Convention on Tobacco Control, ensuring that these environments are tobacco smoke-free by 2015.

Regional Priority Goal 4 Preventing disease arising from chemical, biological and physical environments

- i. We will take advantage of the approach and provisions of relevant international agreements.⁴ We will contribute to the Strategic Approach to International Chemicals Management (SAICM) and to the development of the global legal instrument on mercury.
- ii. We aim to protect each child from the risks posed by exposure to harmful substances and preparations, focusing on pregnant and breast-feeding women and places where children live, learn and play. We will identify those risks and eliminate them as far as possible, by 2015.
- iii. We will act on the identified risks of exposure to carcinogens, mutagens and reproductive toxicants, including radon, ultraviolet radiation, asbestos and endocrine disruptors, and urge other stakeholders to do the same. In particular, unless we have already done so, we will develop by 2015 national programmes for elimination of asbestos-related diseases in collaboration with WHO and ILO.
- iv. We call for more research into the potentially adverse effects of persistent, endocrine-disrupting and bio-accumulating chemicals and their combination, as well as for the identification of safer alternatives. We also call for an increase of research into the use of nanoparticles in products and nanomaterials, and electromagnetic fields, in order to evaluate possible harmful exposures. We will develop and use improved health risk and benefit assessment methods.
- v. We call upon all stakeholders to work together to reduce children's exposure to noise, including that from personal electronic devices, recreation and traffic, especially in residential areas, at child care centres, kindergartens, schools and public recreational settings. We urge and offer our assistance to WHO to develop suitable guidelines on noise.

⁴ Such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Stockholm Convention on Persistent Organic Pollutants, as well as the protocols on heavy metals and on persistent organic pollutants to the 1979 Convention on Long-Range Transboundary Air Pollution.

- vi. We will pay particular attention to child labour and exploitation as one of the major settings of exposure to relevant risks, and especially to hazardous chemicals and physical stressors.

B. Protecting health and the environment from climate change

2. We are committed to protecting health and well-being, natural resources and ecosystems and to promoting health equity, health security and healthy environments in a changing climate. Taking into account the ongoing work under the United Nations Framework Convention on Climate Change and recognizing subregional, socioeconomic, gender and age variability, we will:

- i. integrate health issues in all climate change mitigation and adaptation measures, policies and strategies at all levels and in all sectors. We will assess, prevent and address any adverse health effects of such policies by, for example, strengthening health promotion in environmental policies;
- ii. strengthen health, social welfare and environmental systems and services to improve their response to the impacts of climate change in a timely manner, for example to extreme weather events and heat waves. In particular, we will protect the supply of water and the provision of sanitation and safe food through adequate preventive, preparedness and adaptive measures;
- iii. develop and strengthen early warning surveillance and preparedness systems for extreme weather events and disease outbreaks, for example vector-borne diseases, at the animal-human-ecosystem interface, where appropriate;
- iv. develop and implement educational and public awareness programmes on climate change and health, to encourage healthy, energy-efficient behaviours in all settings and provide information on opportunities for mitigation and adaptation interventions, with a particular focus on vulnerable groups and subregions;
- v. collaborate to increase the health sector's contribution to reducing greenhouse gas emissions and strengthen its leadership on energy- and resource-efficient management and stimulate other sectors, such as the food sector, to do the same;
- vi. encourage research and development, for example with tools for forecasting climate impacts on health, identifying health vulnerability and developing appropriate mitigation and adaptation measures.

3. We call on the WHO Regional Office for Europe, to discuss with the European Commission, the European Environment Agency, the United Nations Economic Commission for Europe, the United Nations Environment Programme and other partners, on setting up European information platforms for systematic sharing of best practices, research, data, information, technology and tools focused on health at all levels.

4. We welcome the regional framework for action entitled *Protecting health in an environment challenged by climate change*. We recommend that the approaches described in it are used to support action in this area.

C. Involvement of children, young people and other stakeholders

5. We will ensure that youth participation in national as well as international processes is facilitated across all Member States by providing them with assistance, adequate resources and the training required, and by giving them opportunities for meaningful involvement.
6. We will increase our cooperation with local and subnational authorities, intergovernmental and nongovernmental organizations, the business community, trade unions, professional associations and the scientific community, drawing on their experience and knowledge in order to achieve the best possible results.
7. We call on the business community to address the challenges posed in this Commitment, for instance through relevant corporate and sectoral programmes.
8. We will seek to improve knowledge of environment and health issues and build the capacity of all professionals, with particular emphasis on health professionals and professional caretakers of children.

D. Knowledge and tools for policy-making and implementation

9. We support the development of the European Environment and Health Information System (ENHIS). We call on the WHO Regional Office for Europe, and also on the European Commission and the European Environment Agency to continue to assist Member States with the development of internationally comparable indicators, and to assist in the interpretation and practical application of relevant research results.
10. We encourage all relevant international organizations to further develop common tools and guidelines to address the economic impacts of environmental risk factors to health, including the cost of inaction, thereby facilitating the development and enforcement of legal instruments.
11. We will contribute to develop a consistent and rational approach to human biomonitoring as a complementary tool to assist evidence-based public health and environmental measures, including awareness-raising for preventive actions.
12. We acknowledge the contributions, conclusions and recommendations of the International Public Health Symposium on Environment and Health Research held in Madrid in October 2008. We agree to secure support for interdisciplinary research in line with the policy objectives of this Declaration and to improve the development of identified tools,⁵ including health impact assessment. We will use existing information for policy-making and apply the precautionary principle where appropriate, especially in respect of new and emerging issues.
13. We affirm the need for participation of the public and stakeholders in tackling environment and health issues. We will develop and implement initiatives on risk perception, assessment, management and communication.

⁵ Such as the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context.

The WHO Regional Office for Europe

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

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