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Regional strategy on health and the environment

Executive Summary

1. The key objective of the regional strategy on health and the environment and plan of action in the Eastern Mediterranean Region 2014–19 is to support countries of the Region in their concerted multisectoral efforts to reduce the toll of morbidity and premature mortality caused by environmental risks. The regional strategy is based on: rigorous review of evidence and the consensus outcome of two regional consultations in 2011 and 2012 concerning the magnitude of environmental risks and the related burden of disease; expressed demand from countries for technical support; WHO country cooperation strategies; and the WHO General Programme of Work (GPW) 2014–19.

2. The strategy provides a framework of action in the period 2014–19, illustrating the roles and responsibilities of the Member States and WHO in terms of: enhancing the capacity of the public health sector to evaluate, monitor, regulate and manage environmental risks; strengthening the advocacy, partnership building and leadership roles of the health sector for mobilizing resources and bringing synergy to the actions of pertinent sectors and of providers of environmental health services; and equipping the health sector with environmental norms and standards, guidelines and assessment tools in order to support stakeholders in integrating health protection measures into their development processes.

3. Environmental hazards are responsible for about 24% of the total burden of disease (including more than 1 million deaths and 38 million DALYs lost each year) in the Eastern Mediterranean Region. The health impact of environmental risks is reflected in terms of both communicable diseases and noncommunicable diseases in all three groups of countries in the Region. These groups are defined based on public health indicators and outcomes, and health system performance and expenditure. The grouping is also applicable to the burden of environmental disease and is therefore also appropriate to this regional strategy.

4. In Group 1 countries, where 7% of the population of the Region lives, the annual environmental burden of disease is 25.4 DALYs per 1000 population (with an overall GDP-based cost of US$ 26.5 billion per year). The main environmental risk factors prevailing include air pollution, chemical exposures, housing and environmental determinants of injuries. These contribute most significantly to the burden of noncommunicable diseases and injuries.

5. In Group 2 countries, where 44% of the population of the Region lives, the annual environmental burden of disease is 39.3 DALYs per 1000 capita (with an overall GDP-based cost of US$ 71.5 billion per year). The main environmental risk factors prevailing include water and sanitation, air pollution, and exposures to chemicals and wastes. These contribute to the burden of both communicable and noncommunicable disease.

6. In Group 3 countries, where 49% of the population of the Region lives, the annual environmental burden of disease is 94.4 DALYs per 1000 population (with an overall GDP-based cost of US$ 45.0 billion per year). The main environmental risk factors prevailing include water and sanitation, indoor air pollution, and exposures to chemicals and wastes. These contribute significantly to the burden of both communicable and noncommunicable diseases.

7. The strategy outlines seven environmental health priorities in the following areas: water, sanitation and health; air pollution; chemical safety; wastes management and environmental health services; environmental health emergency management; climate change and health; and sustainable development and health. Among the proposed actions in these respective areas are: monitoring water and sanitation sector indicators, evaluating sector performance, and updating national regulations and management practices; regulating, monitoring and evaluating air pollution; establishing risk reduction programmes and partnerships for chemical safety and management, and building capacity for implementation of the International Health Regulations (2005); regulating, monitoring and evaluating the impacts of wastes on health; developing the capacity of the health sector for management of environmental health services during emergencies, and providing such services in health care facilities during emergencies; developing the national preparedness and response capacity of the public health sector to manage the health effects of climate change; and enhancing and measuring the health gains from sustainable development, and greening the health sector.

8. In order to address these priorities and undertake proper actions to mitigate the impact of environmental risks, the ministries of health in the Region will need to assume the roles of stewarding broker and interlocutor in partnership with other actors within their respective governments. It is essential that a collaborative multi-agency approach is adopted, emphasizing the leadership of the public health sector in terms of governance and surveillance responsibilities, as well as advocacy and motivation of other specialized environmental health service agencies.WHO will provide technical support to Member States in support of these actions.

Introduction

9. Environmental determinants of health are responsible for about 24% of the burden of disease including more than 1 million deaths, and 38 million DALYs[1] lost each year in the Eastern Mediterranean Region (*1*). In economic terms, these can be translated into an estimated annual loss of US$ 144 billion[2] . Those mainly affected are children and women who live and work in areas that are polluted or have fragile ecosystems, and who are at greater risk from diverse environmental factors.

10. Environmental exposures are one of the key determinants of health across the life course. The enormity of the environment-related burden of disease means that these exposures and related health risks cannot be addressed effectively if they are addressed separately. It is essential to adopt and implement an integrated “ecological public health approach” which recognizes the complex interactions between biological, behavioural, environmental and social factors. The critical need for such a multisectoral approach has been stated many times, most recently at the 8th Global Conference on Health Promotion in Helsinki, Finland in June 2013, as well as at the Rio+20 United Nations Conference on Sustainable Development in 2012, and the United Nations High-level Meeting on the Prevention and Control of Non-Communicable Diseases in 2011. For such a multisectoral approach to work, the role and mandate of ministries of health and other government sectors need to be revisited.

11. The evidence linking environmental risks with communicable diseases is well established historically. Action on these factors is cost-effective and can result in major reduction in morbidity and mortality associated with waterborne, foodborne, and vector-borne diseases. Such a trend is clearly depicted for example within the progress tracking of, and interlinkages between, relevant Millennium Development Goals. The evidence linking environmental risks to noncommunicable diseases and injuries is also evolving rapidly. For example, almost one fifth of all cancers are

[1] DALYs: disability-adjusted life years. One DALY can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.

[2] Based on a very conservative assumption, this DALY loss equals the gross domestic product of Member States in the Region for one year.

attributable to the environment (*2*) and 16% of all cardiovascular diseases are estimated to be attributable to the environment (*3*). Action on these factors is cost-effective and can result in major reduction in the burden of disease associated with air and noise pollution, traffic accidents, chemical toxins, radiation and hazardous wastes.

12. The priorities, strategic directions and related actions set out in this strategy for responding to the environmental determinants of health in the Region for 2014—2019 are based on the magnitude of the problem in the Region, the current scientific evidence and justification for suggested interventions, the expressed demand from countries for appropriate interventions, and the binding international and regional framework agreements already in place. Rigorous review of evidence and expert consensus were employed systematically in developing the strategy to determine the size and magnitude of the problem in terms of burden of disease due to environmental risk factors. The strategy takes into account and is aligned with the priorities identified by countries in WHO country cooperation strategies and the 12th General Programme of Work 2014–2019, as well as the conclusions and recommendations of two regional consultations, held in June 2011 and November 2012. The outcomes of pertinent international and regional conferences, such as Rio+20 (2012), as well resolutions[3] adopted by the World Health Assembly and the Regional Committee for the Eastern Mediterranean and other international organizations were also taken into account.

Objectives and strategic framework

13. The overall objective of this strategy is to support countries of the Region in their concerted efforts to reduce the burden of morbidity, disability and premature mortality caused by environmental risks, by:

- reducing environment-related communicable diseases;
- controlling environmental risks for noncommunicable diseases and injuries;
- protecting the most vulnerable population groups from environment-related diseases;
- strengthening the resilience of the health system and reinforcing the capacities for emergency preparedness and response;

14. To achieve this objective, the following strategic framework will be followed:

- enhancing the capacity of the public health sector to evaluate, monitor, regulate and manage environmental risks;
- strengthening the advocacy, partnership building and leadership roles of the health sector for mobilizing resources and synergizing actions of pertinent sectors and providers of environmental health services;
- equipping the health sector with environmental norms and standards, guidelines and assessment tools for catalysing stakeholders to integrate health protection measures into their development processes.

15. The framework aims to address the fact that many aspects of environmental health services are outside the mandate of a single agency. Therefore, it is essential that a collaborative multi-agency approach is adopted, emphasizing the leadership of the public health sector in terms of governance and surveillance responsibilities, as well as advocacy and motivation of other specialized environmental health service agencies.

[3] The following resolutions are of particular relevance: World Health Assembly: WHA63.26, WHA63.25, WHA 64.25, WHA61.19; Regional Committee for the Eastern Mediterranean: EM/RC47/R.9, EM/RC49/R.8, EM/RC50/R.8, EM/RC55/R.8, EM/RC58/R.10.

Environmental health status of the Region

Burden of environment-related disease by country group

16. The countries of the Region differ greatly in terms of their socioeconomic, demographic, environmental and health conditions. Figure 1 provides a good example of this diversity in terms of environmental impact. In order to direct its work with countries appropriately, the Regional Office has grouped the countries of the Region based on public health indicators and outcomes and health system performance and expenditure. (*4*). This grouping is also applicable to burden of environmental disease and is therefore also appropriate to this regional strategy.

17. Socioeconomic development in group 1 has progressed considerably in recent years, supported by high income and good environmental health services. About 7% of the population of the Region lives in this group, with an estimated annual environmental burden of disease of 25.4 DALYs per 1000 population (an estimated 25 300 deaths every year are attributable to environmental risks). Recent (2013) data available in WHO databases indicate that environmental risk factors such as air pollution, chemical exposures, housing conditions and environmental determinants of injuries are contributing more significantly to the burden of noncommunicable diseases and injuries than when last reported (2008). Similar findings were indicated by a recent quantitative assessment of environmental risks to health in a typical country of this group (*6*,*7*).

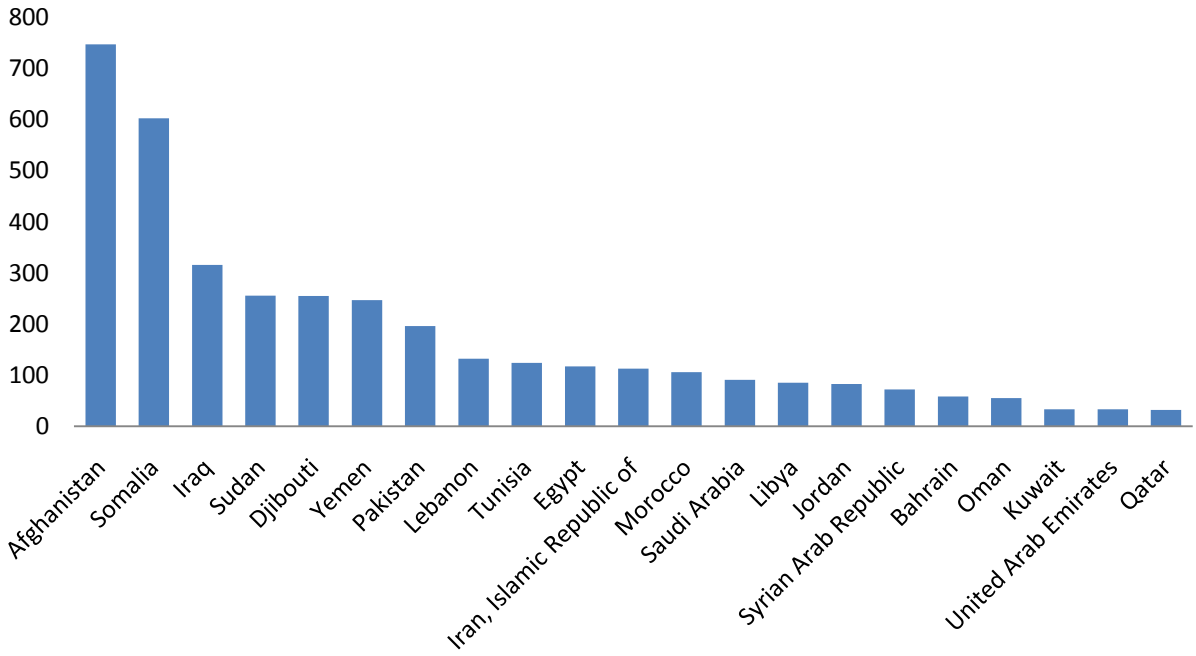

Figure 1. Total deaths attributable to environmental factors per 100 000 population in the Eastern Mediterranean Region, 2008

Source: WHO. Global health observatory (*5*)[4]

[4] The WHO Global Health Observatory, which provides much of the data on environmental health in this report, does not include data on the occupied Palestinian territory.

18. Group 2 comprises largely the middle-income countries which have developed a reasonable environmental health service delivery infrastructure but which still face constraints in terms of resources. About 44% of the population of the Region lives in this group, with an annual estimated environmental burden of disease of 39.2 DALYs per 1000 population (an estimated 372 200 deaths every year are attributable to modifiable environmental risks). Data available in WHO databases clearly indicate that environmental risk factors contribute to both communicable and noncommunicable diseases. While poor water quality and sanitation services are still major environmental hazards contributing to the burden of communicable diseases in some countries, there is a progressively increasing trend of air pollution and other (modern) risk factors responsible for the rising burden of noncommunicable diseases.

19. Group 3 comprises countries that are facing major constraints in improving population health outcomes as a result of lack of resources for health, political instability, conflict, and other developmental challenges. Almost half the population of the Region lives in this group, with an estimated average burden of disease of 94.4 DALYs per 1000 population per year, which is almost 4 times of the burden estimated for Group 1 (an estimated 693 900 deaths every year are attributable to environmental risks). Data available in WHO databases indicate that traditional environmental risk factors are contributing heavily to both communicable and noncommunicable diseases. Poor access to water supply and sanitation and indoor air pollution are responsible for about 50% of the environmental burden of disease.

20. It is worth noting also that several countries in the Region are undergoing emergency circumstances, and this may affect their environmental health needs and grouping status.

Environmental health issues in WHO country cooperation strategies

21. The Country Cooperation Strategy (CCS) is one of WHO's key instruments to guide its work in Member States in support of the country's national health policy and health development plan. It is a tool to assess the prevailing health situation and identify health priorities, challenges and needs at the national level. A global analysis of 116 CCSs was conducted by WHO in 2012, including all countries of the Eastern Mediterranean Region. More than two thirds (67%) of the CCSs specified water safety, waste management and sanitation as health priorities (*8*).

22. The CCSs of all countries of the Region were reviewed and analysed to examine the visibility and significance of environmental issues and programmes, and to check whether environmental risk factors are properly identified and accounted for by the health sector. Table 1 summarizes the environmental health thematic areas as depicted in the documents. Largely in line with the global analysis, the health sectors in the Region considered water supply and sanitation, waste management and chemical safety, and emergencies as leading environmental risk factors. Challenges relating to water, sanitation and health appeared as an environmental health priority in 18 countries (78.3%). Waste management and chemical safety issues appeared in 19 CCSs (82.6%). Preparedness and response for emergencies and disasters was highlighted as a priority by 20 CCSs (87%) of the Region. Air pollution appeared as a priority in the CCSs of only 10 countries (45%) and climate change in only 2 countries (9%). The low rating for these two factors is probably due to lack of awareness of their importance and inadequate monitoring of their health effects.

Table 1. Priority environmental health issues in country cooperation strategies

Country	Time span	Water and sanitation	Chemicals and waste	Air pollution	Climate change	Emergency preparedness
Afghanistan	2009–13	x				x
Bahrain	2005–10					x
Djibouti	2006–11	x				x
Egypt	2010–14	x		x		
Iran, Islamic Republic of	2010–14			x		x
Iraq	2012–17	x	x	x		x
Jordan	2008–13	x	x	x		x
Kuwait	2005–09		x			x
Lebanon	2010–15	x	x	x		x
Libya	2010–15	x	x	x		x
Morocco	2008–13					x
Oman	2010–15	x	x		x	x
Pakistan	2005–09	x	x	x		x
Occupied Palestinian territory	2009–13	x	x			x
Qatar	2005–09	x	x			
Saudi Arabia	2006–11	x	x			x
Somalia	2010–14	x	x			x
Sudan	2008–13	x	x			x
Syrian Arab Republic	2008–13	x	x	x		x
Tunisia	2010–14	x	x	x	x	x
United Arab Emirates	2005–09			x		x
Yemen	2008–13	x	x			

Key environmental health priorities in the Region

Identification of the priorities

23. In light of the previous burden of disease analysis, the country cooperation strategies and the expressed needs of countries, seven technical areas of work are recommended as priorities in the regional strategy on health and the environment. These areas are: water and sanitation, air quality, chemical safety, wastes management, emergencies, climate change and sustainable development. The following sections detail the situation in the Region, the objectives and the priority actions needed in these areas.

Water, sanitation and health

Problem overview

24. The 2012 WHO/UNICEF Joint Monitoring Programme on the Water and Sanitation Sector indicates that all group 3 countries and some countries in group 2 are not on track to achieve the targets of Millennium Development Goal 7 relating to water and sanitation (*9*). All group 1 countries and most group 2 countries have already met the goals and have established good management systems that deliver water supply and sanitation services to all the population. Variable challenges continue to face the countries of the Region in their efforts to improve the performance of the water and sanitation sector and public health outcomes.

- Of the populations of Afghanistan, Djibouti, Iraq, Morocco, Pakistan Somalia, Sudan and Yemen, between 8% and 70% remain without improved access to water and between 16% and 76% without improved access to sanitation (Table 2).
- The sustainability of the water and sanitation services is challenged by a lack of strong policy and regulatory streamlining framework, and by the absence of solid financial bases.
- Systems for managing quality and safety of drinking-water are reactive, fragmented and still evolving in most of the countries of the Region. The regulatory and surveillance roles of the public health sector agencies with regard to water safety is largely absent in group 3 countries and weak in some group 2 countries.
- Domestic water availability has declined steadily as a result of water scarcity and is aggravated by climate change and population growth. Many water supply systems experience interruptions, exposing the population to health threats due to lack of or insufficient water and/or degradation of water safety safeguards.
- Regulated and unregulated usage of wastewater in agriculture and other applications is a proven strategy that is used widely in the Region for coping with natural water scarcity. However, unless safely managed, the use of wastewater exposes the population to serious health risks.
- Inadequate access to water and sanitation facilities in schools is a source of concern in many countries.

Objectives

25. The objectives outlined for water and sanitation are as follows.

- Monitor and assess the performance of the water, sanitation and health sector and public health outcomes.
- Generate and provide evidence-based guidance and set health-based targets.
- Strengthen the regulatory and surveillance roles of the public health sector pertinent to the water and sanitation systems.
- Strengthen the capacity of countries to conduct strategic reviews, delineation and operationalization of best policies and programme options in the areas of water quality and safety, water security and health, and safe use of wastewater.

Table 2. Population without improved access to water and sanitation

Country	Water (%)	Sanitation (%)
Afghanistan	39	72
Djibouti	8	39
Iraq	15	16
Morocco	18	30
Pakistan	9	53
Somalia	70	76
Sudan	45	76
Yemen	45	47

Source: WHO/UNICEF. *Progress on sanitation and drinking-water 2013 update* (*9*)

Priority actions

26. The priority actions outlined for water and sanitation are as follows.

Strategic response	Action by countries	Action by WHO
Monitoring the water and sanitation sector and evaluating its performance for health protection	Generate biannual national report on assessment and analysis of the water and sanitation sector	Scale up GLAAS (Global Analysis and Assessment of Sanitation and Drinking Water), and maintain the Joint Monitoring Programme for monitoring and reporting on the status of the water supply and sanitation sectors and assessing the impact of these systems on health
Updating national regulations and management practices to address priority water and sanitation challenges and risk factors	Revitalize the public health surveillance functions of: drinking-water availability and quality and wastewater use in agriculture and other applications	Capacity-building and technical support to countries for updating their national drinking-water quality standards based on the WHO drinking-water quality guidelines, and for facilitating the application of these standards through water safety plans
	Develop and implement plans to extend water, sanitation and health services to the unserved and improve services to the under-served	Capacity-building and technical support to countries for updating their national wastewater reuse standards based on the WHO wastewater reuse guidelines and for protecting public health during the reuse process, through the application of preventive sanitation safety plans
	Develop national policies on domestic water security requirements for health	
	Update national standards for drinking-water quality and drinking-water management systems towards preventive water safety management (i.e. water safety plans)	
	Update and enforce national wastewater reuse standards and implement management systems for safe use of wastewater in irrigation	

Air quality

Problem overview

27. Air pollution continues to pose a significant threat to the health of everyone in developed and developing countries alike. The range of health effects is broad, but is predominantly linked to the respiratory and cardiovascular systems. It is estimated that some 22% of all deaths from ischaemic heart disease are due to outdoor air pollution. Nearly one third of deaths from adult chronic obstructive pulmonary disease, and about one half of pneumonia deaths among children under 5 years of age, are caused by indoor air pollution.

28. A recent WHO/CEHA air pollution assessment concluded that several countries of the Region still do not have adequate regulations and/or systems for monitoring air pollution (*10*). Data from the WHO 2011 database on air pollution shows that out of the 1100 cities that are reporting PM10 (particulate matter of less than 10 micrometres in diameter) data globally, only 39 cities are in the Eastern Mediterranean Region. According to Figure 2, which gives annual mean figures for PM10 for

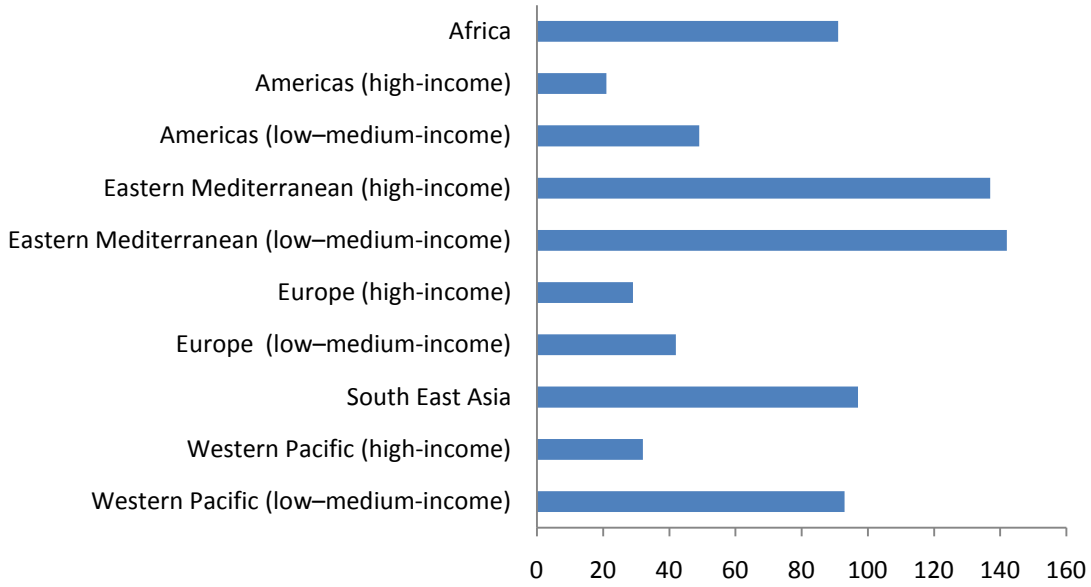

Figure 2. Annual mean PM10 (µg/m^3) by WHO region in 2008

Source: WHO. Outdoor air pollution in cities (*11*)

the six WHO regions, the highest levels of PM10 concentration are being recorded in the Eastern Mediterranean Region. In view of the near absence of land-based PM2.5 (particulate matter of less than 2.5 micrometres in diameter) data in the Region, data generated by computer models and satellite-derived maps (*12*) provide strong evidence that almost all countries of the Region exceed the WHO guideline of annual mean of PM2.5 (10 µg/m3).

29. About 6 million people currently lose their lives every year because of indoor and outdoor air pollution in the world. WHO estimates that in Eastern Mediterranean Region indoor air pollution kills about 145 000 annually (*13*). Figure 3 summarizes the situation in the Region and shows that most such deaths occur in group 3 countries, where about 170 million people still burn solid fuels for cooking and heating.[5] While further research is needed to investigate the precise magnitude of the problem, recent reports have revealed that, because of increases in clean fuel prices, the use of dirty fuels for cooking and heating is increasing. The major sources of indoor air pollution in group 2 and 3 countries are environmental tobacco smoke, building materials and heating practices.

30. WHO estimates that urban outdoor air pollution kills about 117 000 people annually in the Region (*1*). Figure 4 summarizes deaths attributable to outdoor air pollution in countries of the Region in 2008. Unlike indoor air pollution, outdoor ambient air pollutants have impact on all three groups of countries. Groups 2 and 3 are more affected by outdoor air pollution than group 3 countries. The major sources of outdoor air pollution in the Region are traffic air emissions, industrial emissions and sand and dust storms, which are aggravated by climate change. Recent estimates published by the Institute for Health Metrics and Evaluation in 2012 (*16*) indicate that the health impact of air pollution is much larger than the current estimations.

[5] Based on data extracted from the Global health observatory: % of population burning solid fuels in 2010.

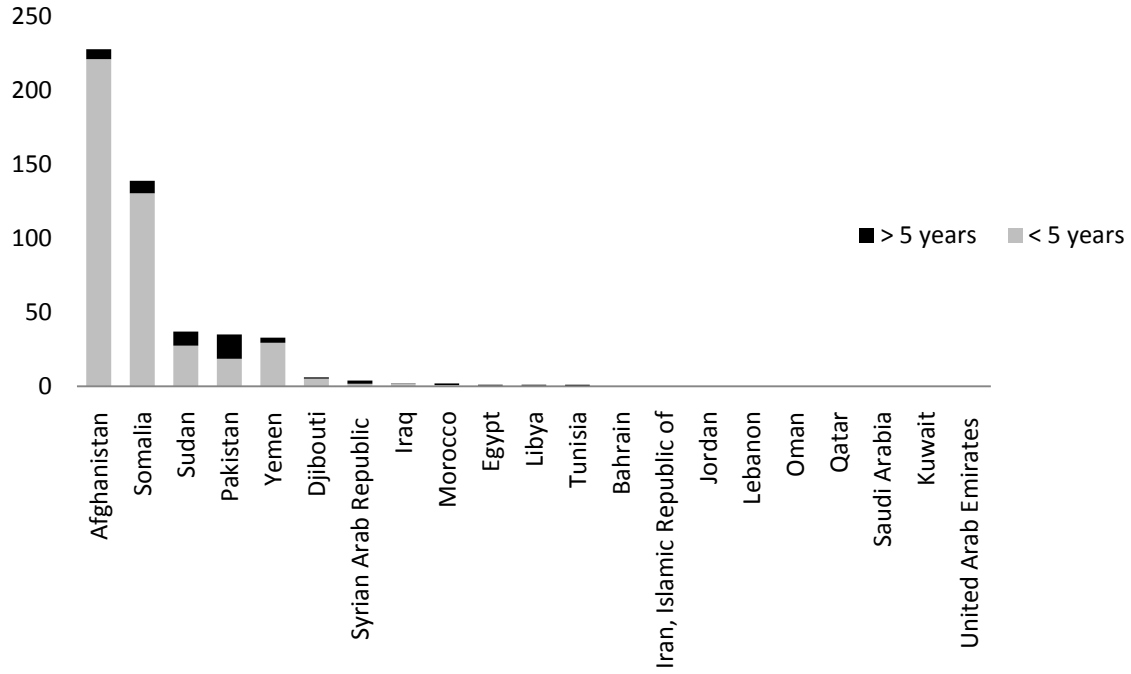

Figure 3. Deaths attributable to indoor air pollution per 100 000 population in the Eastern Mediterranean Region

Source: WHO. Global health observatory (*14*)

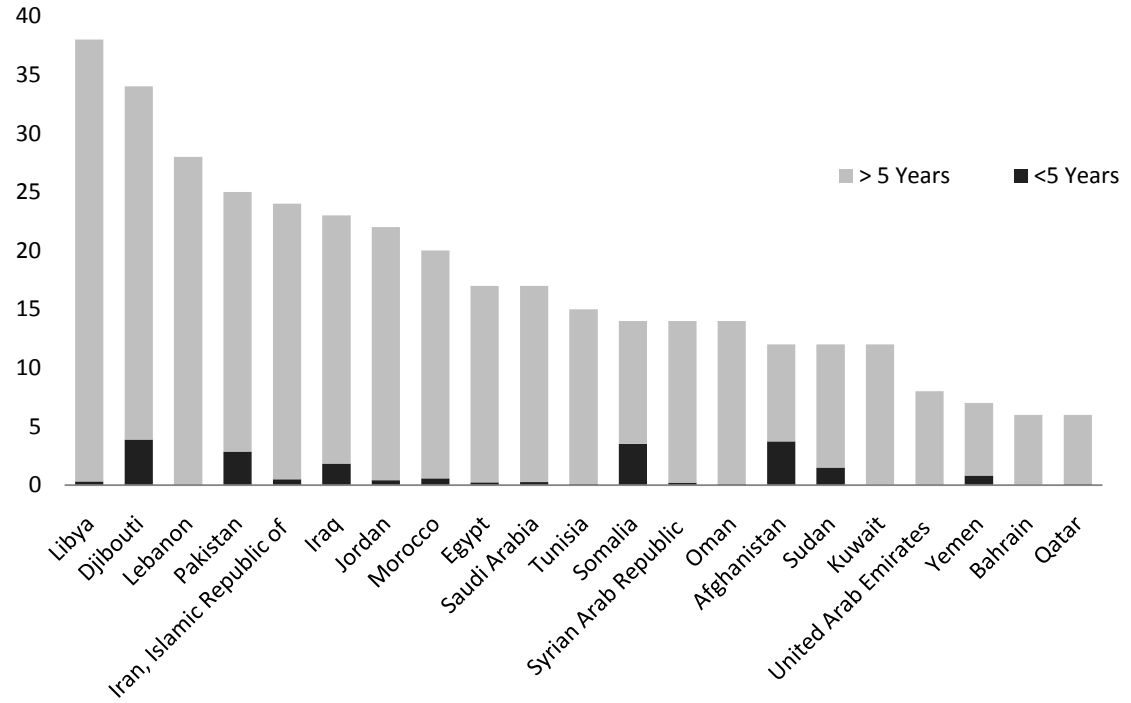

Figure 4. Deaths attributable to outdoor air pollution per 100 000 population in the Eastern Mediterranean Region in 2008

Source: WHO. Global health observatory (*15*)

Objectives

31. The objectives outlined for air quality are as follows.

- Strengthen the regulatory capacity and partnership building roles of the public health sector for establishing and monitoring national air quality standards in line with WHO air quality norms.
- Develop/strengthen the surveillance function of the public health sector with regard to air quality.
- Increase the awareness of all stakeholders (including the public) about air pollution risks.

Priority actions

32. The priority actions outlined for air quality are as follows.

Strategic response	Action by countries	Action by WHO
Regulating, monitoring and evaluating air pollution for health protection	Develop/update national air quality standards in line with WHO guidelines Advocate for establishing/updating air quality monitoring systems and sharing data with all stakeholders Develop/strengthen the surveillance function of the public health sector with regard to air quality, and estimate the impact of air pollution on health Raise awareness and advocate for action by all relevant stakeholders, including transport, energy and industry Develop an early warning system to alert the public about dust episodes and other ambient air quality pollutants	Support countries to establish/update their national outdoor and indoor air quality standards and monitoring systems in line with WHO air quality guidelines Strengthen the public health sector capacity for estimating the impact of air pollution on health Support studies and applied research for identifying cost-effective interventions for regional and national air quality challenges

Chemical safety

Problem overview

33. Despite the wide range of scientific knowledge on the impact of chemicals on health and the environment, there are major gaps in data on uses, emissions, exposure pathways and effects. Global understanding of the complexity of the environmental impact of chemicals is therefore markedly deficient (*17*).

34. 8.3% of global deaths and 5.7% of global DALYs are attributable to exposure to chemicals.[6] Only a number of chemicals for which data are available were included in the estimation, and therefore this is likely to be an underestimate of the actual burden (*18*). Although estimates are not available at the regional level, there is sufficient reason to believe that the same trend is valid for the Region since production and exposure to chemicals are increasing. It is estimated that production of chemicals in the Region will increase by 40% in 2012–2020 (*17*).

35. Most countries in the Region have ratified the various relevant international multilateral agreements and conventions (MEAs) pertinent to chemicals, e.g. Basel, Rotterdam and Stockholm Conventions, International Health Regulations (2005), and the Strategic Approach to International Chemicals Management (SAICM). In 2010, the World Health Assembly and, in 2011, the Regional Committee called for greater involvement of the health sector in the sound management of chemicals. Unfortunately, most of the countries of the Region are still not in full compliance with these commitments. For example, a recent WHO survey in the Region indicated that in 2011 the regional implementation of the relevant core capacities of the International Health Regulations was only 45% (*19*).

36. Several major challenges face the countries of the Region, particularly the low-income countries: lack of public awareness and of a culture of safety with regard to handling chemicals; lack of up-to-date databases and experienced human resources to carry out risk assessment of chemicals; lack of legislative frameworks and enforcement mechanisms; overlapping mandates between sectors and multistakeholder responsibilities for chemicals management, and delay in establishing national mechanisms to secure coherence and synergies; and lack of international financial mechanisms for multilateral environmental agreements.

Objectives

37. Sound management of chemicals and strengthening of national capabilities and capacities for management of chemicals to protect human health and the environment will require major investment, as well as the development of new practical techniques for chemical safety. Several objectives can be outlined for chemical safety and management, as follows.

- Integrate sound management of chemicals into national public health programmes and processes.
- Develop and strengthen regional and national integrated health and environment monitoring and surveillance systems for chemicals.
- Expand and disseminate international assessment of chemical risks to countries of the Region.
- Harmonize the classification and labelling of chemicals.
- Establish regional risk reduction programmes for chemicals, involving all stakeholders.

[6] Estimates of the burden of disease attributable to chemicals included estimates from the following sources: chemicals involved in unintentional acute poisonings; chemicals involved in unintentional occupational poisonings; pesticides involved in self-inflicted injuries; asbestos; occupational lung carcinogens; occupational leukaemogens; occupational particulates; outdoor air pollutants; indoor air pollutants from solid fuel combustion; second-hand smoke; lead; and arsenic in drinking water.

Priority actions

38. The priority actions outlined for chemical safety are as follows.

Strategic response	Action by countries	Action by WHO
Establishing risk reduction programmes and partnerships for chemical safety and management, involving all stakeholders	Establish/update national profiles for mapping chemical hazards	Support countries in implementing the health aspects of SAICM and other chemical-related MEAs
Building capacity for implementation of the International Health Regulations (2005), including development/enhancement of national poison information centres	Establish/update legislation, national policies and coordination on chemicals	Support countries to establish/update their national coordination mechanisms for chemicals management
	Establish a coordinated system of surveillance, preparedness and management of chemical accidents, in conformity to the International Health Regulations (2005)	Build a network of experts and institutions to strengthen regional cooperation in preparedness for and response to chemical incidents/accidents, in line with the International Health Regulations (2005)
	Establish/update capacity-building programmes on recognition and management of chemical exposures for public health professionals	Support establishment of regional risk reduction programmes and partnerships for chemical safety and management, involving all stakeholders
	Establish/upgrade national poison information centres	Facilitate access to chemicals databases and information

Waste management and environmental health services in the health sector

Problem overview

39. Only a few countries, such as the member states of the Gulf Cooperation Council, have already constructed treatment, storage and disposal facilities for hazardous waste. The majority of countries lack the technological capacity and financial means to build such sophisticated systems. In the absence of sound integrated waste management facilities, and exacerbated by weak regulatory enforcement as well as inadequate regional and international cooperation, wastes of all types (municipal, commercial, agricultural, industrial, electronic, medical, hazardous and non-hazardous) will continue to be a serious developmental and environmental health challenge in the Region.

40. Of special environmental health concern to WHO is the safe management and disposal of health care wastes. The quantity of hazardous health care wastes in the Region is estimated at a rate varying from 0.2 kg/bed per day to 1.9 kg/bed per day. The Region has only recently started to pay adequate attention to the proper management of such waste materials. Group 1 countries have initiated effective health care waste management, group 2 countries generally meet the minimum requirements for proper management, and group 3 countries have not yet begun to implement adequate management of such waste materials.

41. Given the diverse mixtures of toxic substances, microbial agents and harmful compounds embedded within waste streams, the risk of adverse health exposures throughout the waste

management cycle and beyond is very high. The role of national health authorities in the Region must be concentrated on the health aspects of integrated waste management throughout the life cycle, the safe and sound management of health care wastes, as well waste management during emergencies.

Objectives

42. The objectives outlined for waste management and environmental health services in the health sector are as follows.

- Strengthen national capabilities and capacities for management of wastes, focusing on the health implications of wastes management.
- Minimize health risks associated with exposure to health care wastes for both health workers and the public by promoting environmentally sound management policies and practices.

Priority actions

43. The priority actions for waste management and environmental health services in the health sector are as follows.

Strategic response	Action by countries	Action by WHO
Regulating, monitoring and evaluating the impact of wastes on health	Assess the public health impact of waste management policies and practices Participate in the formulation of national regulations and policies on waste management, integrating public health aspects	Strengthen national capacities in surveillance, monitoring and evaluation of the health impact relevant to integrated waste management Equip the health sector with standards and evidence on the health impact of wastes in order to guide and lead other sectors to integrate health into their waste management policies

Environmental health management in emergencies

Problem overview

44. During the past decade both man-made conflicts and natural disasters have hit many countries in the Region. More than half of the countries are currently suffering from acute or chronic crises. Globally, 13 out of the 33 countries that were in health crisis in recent years belong to the Eastern Mediterranean Region. Climate change, globalization and rapid urbanization are likely to expose populations to more frequent and complex disasters. The effects of environmental factors and environmental health services on morbidity and mortality rates during emergencies are well documented globally and regionally. The number of refugees and displaced people fleeing complex emergencies and disasters in the Region is increasing. Most of these people are displaced in countries in groups 2 and 3, which already suffer from weaknesses in their environmental health systems, and many of which are not yet prepared to respond to the additional demands placed on environmental health services during and after disasters.

45. A systematic approach to addressing the environmental health aspects of emergencies requires all countries to invest in vulnerability and risk assessment and preparedness.

Objectives

46. The objectives outlined for environmental health management in emergencies are as follows.

- Identify and assess environmental health risks and vulnerabilities in countries susceptible to crisis Improve capacities to effectively manage the environmental health aspects of emergencies.
- Lead the water, sanitation and health response activities within health care facilities during emergencies.
- Protect health from environmental risks throughout all phases of the disaster/emergency management cycle.

Priority actions

47. The priority actions outlined for environmental health management in emergencies are as follows.

Strategic response	Action by countries	Action by WHO
Developing the capacities of the health sector to manage environmental health services throughout the life cycle of emergencies	Develop environmental health emergency profiles and establish/update environmental health plans for emergencies	Develop systems for the prediction and early warning of, and preparedness for, environmental disasters and emergencies
Providing adequate environmental health services in health care facilities during emergencies	Operationalize policies, programmes and management systems pertinent to environmental health services in health care facilities, including assessment, provision and restoration of services	Establish a regional network of qualified environmental health specialists and sanitarians who can be mobilized and deployed in a timely manner to support countries in need
		Strengthen the health sector capacity to develop and operationalize policies, programmes and management systems pertinent to environmental health services in health care facilities, refugee camps and other areas hosting internally displaced persons

Climate change and health

Problem overview

48. All countries of the Region are observing environmental changes, among them increase in temperature, heat waves, reduction in rainfall, decline in productivity of crops and in food security, decline in air quality, and increase in dust storms. The type and severity of the health effects of climate change will vary widely across the Region. However, in terms of health impact, the Region is the second most affected in the world after Africa (Figure 5).The health effects of climate change

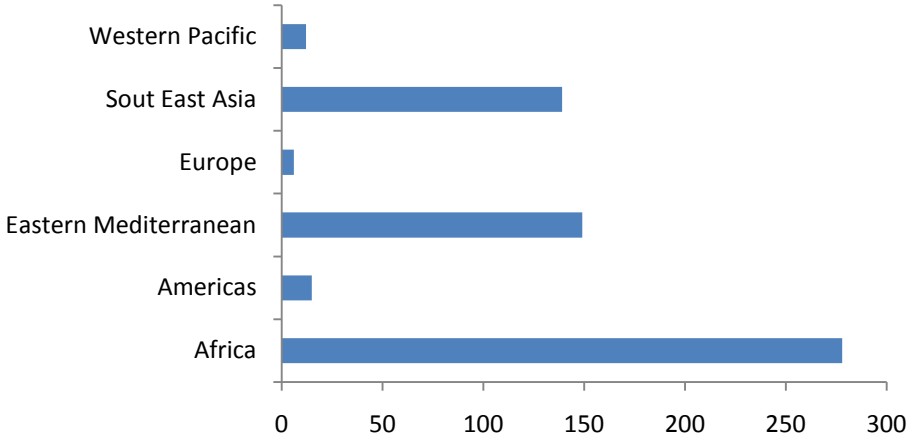

Figure 5. DALYs attributable to climate change per 100 000 population

Source: WHO. Global health observatory (*20*)

include: death and injuries due to heat waves and extreme weather events, and changing disease patterns, including increase in waterborne, foodborne and vector-borne diseases, malnutrition, respiratory diseases and asthma.

49. The Region already faces numerous emergency and humanitarian crises and climate change is likely to aggravate these situations (*21*). However, further research is needed to assess the health impact of climatic change in the Region. Such knowledge will allow countries to identify vulnerabilities, evaluate capacity to adapt to climate change, and develop adaptation strategies to allay the impact on health.

50. An integrated multisectoral and multidisciplinary approach to managing the adverse health effects of climate change is outlined in a regional framework for action which was endorsed in 2008 by the Regional Committee at its 55th session. The approach focuses on generating evidence on health and climate change, developing evidence-based policies to reduce emissions and slow down global warming, and increasing the resilience of health systems in order to minimize the impact on health of climate change.

Objectives

51. The objectives outlined for climate change and health are as follows.

- Develop the capacity of countries to assess the risks and develop national or subnational health adaptation strategies to reduce the adverse impact of climate change on health.
- Support countries in building the institutional capacity of the health sector in relation to extreme weather events, and in reinforcing surveillance, early detection and response in the areas of infectious disease, respiratory disease, water, food safety and nutrition.
- Support the health sector in countries in generating intelligence and establishing early warning systems on climate-sensitive diseases, and in integrating such intelligence into existing health information systems.

Priority actions

52. The priority actions outlined for climate change and health are as follows.

Strategic response	Action by countries	Action by WHO
Developing the preparedness and response capacity of the public health sector to manage the health effects of climate change	Assess the vulnerability of public health sector to climate change, identify the current and future health effects and establish early warning systems Develop health system response strategies, plans and projects and integrate them into national health strategies	Support countries in building capacity to assess risks and develop health adaptation strategies to protect health from the adverse effects of climate change Support the health sector in countries to generate intelligence and early warning on climate-sensitive diseases

Sustainable development and health

Problem overview

53. The relationship between health and sustainable development has three main components: 1) improvements in human health contribute to the achievement of sustainable development and to poverty reduction; 2) health can be one of the principal outcomes of investment in sustainable development and the green economy; and 3) health indicators provide a powerful means of measuring social, economic and environmental progress towards sustainable development. Heads of State and government and high-level representatives from around the world renewed their commitment to sustainable development at the Rio+20 meeting in 2012 stating (paragraph 138): "We recognize that health is a precondition for and an outcome and indicator of all three dimensions of sustainable development. … We are convinced that action on the social and environmental determinants of health, both for the poor and the vulnerable and for the entire population, is important to create inclusive, equitable, economically productive and healthy societies …". (*22*)

Objectives

54. The objectives outlined for environmental health management in emergencies are as follows

- Strengthen partnerships and alliances both inside and outside the health sector to address the emerging challenges.
- Position health at the centre of sustainable development through measuring and increasing the health gains from sustainable development. For example, promoting "green buildings" will result in reducing the prevalence of illnesses related to sick building syndrome, and improve the physical and mental well-being of residents/occupants.
- Promote health impact assessment for sustainable development policies and projects. Health gain from development is not automatic. Strategies need to be designed with health in mind.

Priority actions

55. The priority actions outlined for sustainable development and health are as follows.

Strategic response	Action by countries	Action by WHO
Enhancing and measuring health gains from sustainable development Greening of the health sector	Participate in the formulation of the national sustainable development agenda, streamlining health as a precursor for, outcome of, and an indicator for sustainable development. Strengthen environmental health in community development programmes and initiatives Establish national targets for environmental resource utilization, and increase efficiency of use of resources in the health sector	Provide evidence-based advocacy materials, technical support and guidance on methodologies and approaches for streamlining health as a precursor for, outcome of, and an indicator for sustainable development Provide tools, technical support and guidance on methodologies and approaches for greening the health sector

Monitoring and evaluation

56. The WHO results-based management framework will be used for monitoring and evaluation of implementation of the regional strategy on health and the environment. The targets and indicators (see Table 3) have been determined based on: 1) knowledge of current environmental health situation (paras 17–21); demand of countries; 3) expert consensus; 4) ongoing projects; 5) resource mobilization forecasting; and 6) alignment with the General Programme of Work 2014–2019. These will be used to monitor and evaluate environmental health action and outcomes throughout the whole chain of results. Inputs, activities and outcomes will be monitored by the WHO secretariat through the results-based biennial workplans for the coming three biennia. Monitoring outputs and impact is a joint responsibility with countries of the Region, and there is an urgent need to initiate a process for monitoring a set of indicators that will be designed jointly for this purpose.

Table 3. Regional strategy on health and the environment 2014–2019 targets and indicators

Priority	Indicator	Baseline in 2014	Target in 2019
Water and sanitation	No. of countries participating in GLAAS	8	15
	No. of countries actively verifying Joint Monitoring Programme (JMP) profiles	15	22
	No. of countries with updated drinking-water quality standards	15	20
	No. of countries adopting water safety plans	7	12
	No. of countries with updated wastewater reuse standards	7	12
Air quality	No. of countries that are reporting particulate matter data to the WHO Global Database	8	15
	No. of studies on burden of air pollution on health	0	6
	No. of countries with ambient air quality early warning systems	1	3
Waste management and environmental health services	No. of countries that assessed environmental health services in their health care facilities	6	12
	No. of countries with 50% of health care facilities meeting the WHO essential standards on environmental health services in health care facilities	6	12
	No. of countries that have assessed the public health impact of waste management policies	0	6
Chemical safety	No. of countries with public health strategies on the Strategic Approach to International Chemicals Management (SAICM)	0	5
	Percentage of countries with capacity developed to deal with chemical events under the International Health Regulations (2005)	45%	85%
	No. of countries covered by functional poison information centre services	11	15
Environmental health in emergencies	No. of countries with environmental health in emergency profiles	0	6
	Functional network for environmental health emergency experts and institutions	0	1
	Percentage of emergencies adequately responded to with integrated environmental health services	50%	90%
Climate change and health	No. of countries with vulnerability assessment and adaptation strategies on health adaptation to climate change	2	7
	No. of countries incorporating climate data into national health information systems	1	4
Sustainable development	No. of countries integrating public health into sustainable development policies as recommended by Rio+20	0	3
	No. of countries with programmes on greening the health sector	0	3

Conclusions and the way forward

57. This strategy is designed to support countries of the Eastern Mediterranean Region in their concerted efforts to reduce the toll of morbidity, disability, and premature mortality caused by environmental risks. In order to address these priorities and undertake proper actions to mitigate the impact of environmental risks, the ministries of health in the Region will need to assume the roles of stewarding broker and interlocutor in partnership with other actors within their respective governments. It is essential that a collaborative multi-agency approach is adopted, emphasizing the leadership of the public health sector in terms of governance and surveillance responsibilities, as well as advocacy and motivation of other specialized environmental health service agencies. The health

sector should also take on the responsibility of carrying out environmental risk reduction, management and control. Overall, the proposed strategy provides a framework of action for the period of 2014–2019, illustrating the roles and responsibilities of all pertinent stakeholders nationally and regionally, including countries and WHO.

58. This paper has described the high burden of modifiable environmental risk factors for communicable and noncommunicable diseases in the Region, and the availability of cost-effective environmental health interventions from prevention to mitigation to control. With this in mind, it is vital that a collaborative multidisciplinary approach is adopted, and that resources are made available to carry it out forward. WHO's Regional Centre for Environmental Health Action (CEHA) is well positioned to support Member States in developing their national environmental health strategies and in implementing their subsequent plans of action in the upcoming years.

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