MEMBER STATES CONSULTATION ON ADDRESSING THE HEALTH IMPACT OF AIR POLLUTION

23–25 October 2017
Manila, Philippines
MEETING REPORT

MEMBER STATES CONSULTATION
ON ADDRESSING THE HEALTH IMPACT OF AIR POLLUTION

Convened by:

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

Manila, Philippines
23–25 October 2017
NOTE

The views expressed in this report are those of the participants of the Member States Consultation on Addressing the Health Impact of Air Pollution and do not necessarily reflect the policies of the conveners.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for Member States in the Region and for those who participated in the Member States Consultation on Addressing the Health Impact of Air Pollution in Manila, Philippines from 23 to 25 October 2017.
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Air pollution / Environmental health / Regional health planning / Social determinants of health / Sustainable development
SUMMARY

The Member States Consultation on Addressing the Health Impacts of Air Pollution was organized by the World Health Organization (WHO) Regional Office for the Western Pacific in Manila, Philippines from 23 to 25 October 2017. This meeting was the first WHO multisectoral consultation on air pollution in the Region, responding to the growing concerns about the health impacts of air pollution in some Member States, and in connection with the recent prioritization by WHO on addressing the health impacts of climate and environmental change, as announced by WHO Director-General Dr Tedros Adhenaom Ghebreyesus. A total of 50 representatives from 13 countries attended the Consultation, as well as five temporary advisers and representatives from UN Environment and Clean Air Asia. Country representatives were balanced between the health and environment sectors.

The objectives of the meeting were:

1) to identify issues and challenges, and share experiences on policies and actions in protecting public health from air pollution; and

2) to formulate the priority actions for Member States and WHO to protect human health from air pollution.

The meeting participants concluded the following:

1) The health impacts of indoor and outdoor air pollution are a major public health problem, contributing to 2.7 million annual deaths in the Region.

2) In addition to air pollution originating within a country, transboundary air pollution has been identified as a challenging public health problem that can be addressed through international cooperation such as the ASEAN Agreement on Transboundary Haze Pollution, and with other international organizations.

3) Countries and WHO will work together to strengthen multisectoral cooperation to address the health impacts of air pollution at the local, national, subregional and regional levels.

4) WHO’s support and initiative to promote close coordination and cooperation between health and environment ministries and other relevant ministries were appreciated by Member States.

Member States may consider the following priority actions:

1) Assess indoor (including household) and ambient air pollution population exposure through improved methodologies, including indoor measurements and ambient monitoring stations.

2) Develop and implement national policy and an action plan to reduce the morbidity and mortality related to indoor and ambient air pollution linked to Sustainable Development Goal (SDG) 3.9.

3) Raise awareness of the public and policy-makers on the health impacts of air pollution.

4) Mobilize resources from SDG- and climate-related financing to improve air quality, paying special attention to the health impacts of climate change in fragile and vulnerable states (such as Pacific islands and Mekong countries).
5) Prepare project proposals addressing the health impacts of air pollution with WHO support to access funding opportunities from organizations such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF).

6) Participate in and contribute to the WHO Global Conference on Health and Air Pollution in Geneva, 30 October to 1 November 2018, with the outputs of this meeting.

7) Increase coordination and collaboration among relevant ministries and agencies on environment, health, transportation and local governance to improve awareness, action and implementation on health and air pollution.

WHO is requested to provide the following support:

1) Provide technical support to Member States on the above-mentioned priority actions.

2) Build institutional and human capacity of Member States in health impact assessment and calculation of burden of disease from air pollution, following WHO methodology for assessment of environmental burden of disease.

3) Assess the magnitude of the health impacts of transboundary air pollution such as haze in South-East Asia and dust and sandstorms in North-East Asia, and disseminate the information and evidence on health impacts of transboundary air pollution in the Region.

4) Prepare a regional report on the situation of air quality in terms of monitoring, health impacts, public concerns, risk communications and governance based on the information collected at the Consultation, with the support of the Thematic Working Group on Air Quality of the Asia-Pacific Regional Forum on Health and Environment.

5) Prepare international project proposals, in collaboration with interested Member States, addressing the health impacts of air pollution to access funding opportunities from organizations such as the GCF and the GEF.

6) Continue regional collaboration efforts and exchange of good practices on air pollution and health impacts through regional forums, consultation meetings, workshops and conferences.
1. INTRODUCTION

1.1 Meeting organization

The Member States Consultation on Addressing the Health Impacts of Air Pollution was organized by the World Health Organization (WHO) Regional Office for the Western Pacific in Manila, Philippines from 23 to 25 October 2017. This meeting was the first WHO multisectoral consultation on air pollution in the Region, responding to the growing concerns about the health impacts of air pollution in some Member States, and in connection with the recent prioritization by WHO on addressing the health impacts of climate and environmental change as announced by WHO Director-General Dr Tedros Adhanom Ghebreyesus.

The Consultation was attended by approximately 50 participants comprising representatives from health and environment ministries and other relevant ministries from 13 Member States: Cambodia, China (including Hong Kong SAR), Fiji, the Lao People’s Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, the Republic of Korea, Singapore, Solomon Islands, Vanuatu and Viet Nam. Besides country representatives, participants also included temporary advisers and observers. Country representatives were balanced between the health and environment sectors.

The list of participants is attached in Annex 1.

1.2 Meeting objectives

The objectives of the meeting were:

1) to identify issues and challenges, and share experiences on policies and actions in protecting public health from air pollution; and
2) to formulate the priority actions for Member States and WHO to protect human health from air pollution.

2. PROCEEDINGS

2.1 Opening session

In the opening session, Dr Hai-Rim Shin, Acting Director, Division of NCD and Health through the Life-Course, WHO Regional Office for the Western Pacific, welcomed the participants to the meeting. Following that, Dr Takeshi Kasai, Director, Division of Programme Management, WHO Regional Office for the Western Pacific, gave the opening address on behalf of Dr Shin Young-soo, WHO Regional Director for the Western Pacific. The main messages during the session were: 1) air pollution was identified as a top priority at the Asia-Pacific Regional Forum on Health and Environment; 2) governments have an opportunity to implement air pollution programmes through the Sustainable Development Goals (SDGs); 3) Member States should identify a champion to address air pollution; and 4) Member States are encouraged to develop ways of improving air quality in their respective countries by working as change agents.

The country participants, including the temporary advisers and observers, were then invited to introduce themselves.
The following officers were elected: Professor Jinliang Zhang of the Chinese Research Academy of Environmental Sciences in China as Chairperson; Mr Dip Chand from Fiji and Dr Norlen bin Mohamed from Malaysia as Vice-Chairpersons; and Ms Ma. Sonabel Anarna, Philippine Department of Health, as rapporteur.

Following the election process, the Secretariat presented the objectives and expected outcomes of the Consultation.

### 2.2 Review of the current situation of health impact of air pollution

Globally, air pollution contributed to 6.5 million deaths in 2012, but there has been little action by the health sector. Most countries in the Western Pacific Region recognize the sense of urgency in terms of it being a political issue that demands action. Air pollution has been traditionally thought of as an environmental issue, and has become an urgent public health crisis. Globally, ambient air pollution contributed to 3 million deaths, while household air pollution contributed to 4.3 million deaths in 2012. Ninety-two per cent of the world’s population breathe in air that is above the WHO Air Quality Guidelines values for air pollutants, and that thus contributes to major health risks – stroke, heart disease, cancers, chronic obstructive pulmonary disease (COPD), pneumonia and acute lower respiratory infections. The Western Pacific Region loses 2.7 million lives each year due to air pollution, which represents 41% of deaths attributable to air pollution globally.

Further, the session highlighted WHO’s position and activities undertaken to address air pollution. Air pollution, being the top environmental risk factor, is a priority for WHO. There is a need to strengthen the role of the health sector in terms of air pollution activities in different regions. Currently, WHO is developing a Clean Household Energy Solutions Toolkit (CHEST) to support countries in implementing the WHO Guidelines for Indoor Air Quality by addressing household fuel combustion.

Under the framework of the Climate and Clean Air Coalition (CCAC), WHO is involved in the following initiatives: 1) the Urban Health Initiative, which aims to support cities to identify policy options for air pollution and greenhouse gas mitigation with the greatest health benefits, such as capacity-building (e.g. development and use of tools and guidance on air quality monitoring/analytics, and economic evaluation of proposed options); and 2) the BreatheLife Campaign – a global communication campaign to generate demand for actions to address climate and health impacts from air pollution.

The Thematic Working Group on Air Quality (TWG-AQ) of the Regional Forum is conducting a health impact assessment (HIA) study for Member States and takes the city-level approach using integrated exposure-response (IER) functions. Official TWG representatives presented data on burden of disease from ambient air pollution in their Member States. Moreover, the TWG-AQ Chair encouraged other Member States in the Region to join the TWG to support its efforts.

It was pointed out that household air pollution contributes to ambient air pollution. The Asia region has relatively higher air pollution concentration compared to the European and American regions. Therefore, concentration-response functions for the Asia region need to be developed. Adverse health effects of household air pollution are noticeable from using coal.
and biomass as fuels. The following suggestions were made: 1) improve the accuracy of model evaluations; 2) utilize new technologies to extend monitoring networks, including remote sensors, big data mining, artificial intelligence, cheap and reliable monitors mounted in households to measure real-time pollution, etc.; and 3) focus attention on emerging new issues in household air pollution caused by building materials, furniture and use of consumer products (such as insecticides) as this has been a neglected problem.

Ways to control and prevent indoor air pollution were also discussed: 1) indoor air quality is affected by outdoor air pollution, sources, ventilation and decay; 2) indoor air quality in public use buildings is important; 3) source elimination in indoor settings such as smoke-free policies are effective; and 4) prioritization of control measures for biomass combustion should be based on more detailed information specific to the location.

Suggestions for controlling and preventing outdoor air pollution were also made: 1) a package of policies is needed; 2) the package has to be tailored to the specific location/region; and 3) to do this, quantitative understanding of source contribution and all the local conditions is required. Also, complexities have to be recognized. For instance, there are some pollutants/metrics that are known to significantly affect health, but there is no clarity yet on how to manage them (for example, ultrafine particles).

Governments/authorities may wish to consider viewing the cleaning of air as an economic benefit, not a burden; policies may be enforceable with political will and taking into account the economic reality. Communities may be made aware of the risk posed by polluted air and how to avoid it. All players must be involved in this conversation.

The country presentations conveyed rich data and information about individual countries, including their differences and similarities. A proposal was made to publish the regional reports on the situation of air quality in terms of monitoring, health impacts, public concerns, risk communications and governance based on the body of information collected from countries at the Consultation. The reports on identified topics could be prepared by a working group appointed by WHO. The participants may consider forming a subcommittee, which can then identify potential topics in consultation with the WHO Regional Office for the Western Pacific and submit relevant articles/monographs to appropriate journals.

For the country reports and presentations, meeting participants suggested compiling all the interventions that countries have implemented and showcasing their experiences to create a platform that can benefit many countries. Even though countries are heterogeneous, the SWOT analysis can be used as leverage as a way forward. There are synergies related to air pollution, especially with the Pacific island countries linking it to climate change and SDG funding.

2.3 Discussion of regional and national issues on air pollution

The European Convention on Long-range Transboundary Air Pollution (CLRTAP) is a unique international agreement that includes setting emission reduction targets, with strong science underpinning policy and capacity-building activities. Success stories of the CLRTAP include successful reduction of several pollutants, including particulate matter over the last 30 years; quantification of transboundary air particulate matter; and development of a Joint Task Force on Health under the Convention, which has provided scientific evidence and
contributed to capacity-building and policy development. Meeting participants suggested having a discussion about the possibility of replicating the CLRTAP in the Western Pacific Region, thereby showcasing their mandatory reporting mechanisms and accountability to reduce emissions.

The TWG-AQ includes representatives of Member States participating in the Asia-Pacific Regional Forum on Health and Environment (WHO and United Nations Environment Programme [UNEP]). The TWG-AQ is one of seven thematic working groups that serve as the technical backbone of the Regional Forum. The objectives of the TWG-AQ include: 1) reduce health burden; 2) strengthen cooperation at national and regional levels; and 3) strengthen capacity-building of researchers focusing on air quality and health effects. The TWG-AQ is developing a policy brief to support policy-makers that will cover topics such as the current air pollution health burden, HIA in cities and provinces, Air Quality Index system and priority actions. Included in this policy brief are recommendations on strengthening HIA in cities as well as in provinces by increasing PM$_{2.5}$ monitoring and capacity-building and by using a HIA tool in the form of a learning process on air pollution issues.

Clean Air Asia highlighted their activities on air pollution, which include: 1) working with various Asian countries at the national and subnational levels on improving air quality through capacity-building, stakeholder engagement and technical support; 2) developing the Guidance Framework For Better Air Quality in Asian Cities, which can be used to assist countries and cities in crafting air quality action plans – this framework also includes a study on HIA that can serve as a communication platform to speak to the appropriate policy-makers to affect change in the region; and 3) implementing Guidance Area 3: Health and other impacts, that is, to assess, plan and implement the health surveillance programmes by collecting mortality and morbidity information for selected health impacts.

WHO presented on the co-benefits of addressing air pollution and road safety. Opportunities for collaboration may include speed reduction in urban roads and highways, and vehicle restrictions such as limiting the importation of second-hand vehicles and reducing the lifespan of vehicles, as well as safety and emissions restrictions. The Asia-Pacific Regional Forum may consider collaborative actions on air pollution.

UN Environment highlighted several existing initiatives on air pollution, tackling multiple issues simultaneously such as local pollution, transboundary aspects and links with climate change, including the work of the Acid Deposition Monitoring Network in East Asia (EANET) and the ASEAN Agreement on Transboundary haze Pollution. Some observations made about the existing networks include: potential for duplication/overlapping of activities; different networks have different priorities and different modalities (some intergovernmental, some voluntary); funding is a challenge; and there is a need to strengthen the link between science and policy. There is an opportunity to maximize synergy among different networks in view of a common interest in the Asia region to strengthen international cooperation. UNE’s new approach was to establish the Asia Pacific Clean Air Partnership (APCAP), which was set up in response to the United Nations Environment Assembly Resolution on Air Quality. There are ongoing discussions with the Asia-Pacific Regional Forum on Health and Environment and the TWG-AQ on potential collaboration opportunities.
Transboundary air pollution issues, particularly dust and sandstorms (Asian dust) in north-east Asian countries, were emphasized. Desert dust is potentially toxic, but its health effects are still unclear. Measurements of Asian dust concentrations with LIDAR (light detection and ranging) can be used to distinguish between non-spherical mineral dust particles and spherical non-mineral dust particles. Recommendations for participants to consider included:
1) recognize the wide range of effects of transboundary air pollution in Asian countries and conduct multicity studies in collaboration with Asian Initiative for Research on Climate and Air Pollution (AIRCAP); 2) pay attention to vulnerable populations; 3) expand the routine monitoring network in the country; and 4) take into account transboundary air pollution when developing air pollution guidelines.

Following the presentation and discussion on regional partnerships and governance of air pollution, a panel discussion was held on regional and national issues. Key points of the panel were as follows:

- Some Association of Southeast Asian Nations (ASEAN) countries were affected by transboundary haze issues in addition to health effects, such as indirect costs to government (development of public advisory, health measures). The importance of the ASEAN Haze Agreement and its commitment to making the Region haze-free by 2020 was emphasized.
- There is a need for increased preparedness of countries in response to transboundary air pollution.
- There is a need for coordinated research to evaluate the health effects of transboundary air pollution; new technologies exist to measure and prevent transboundary air pollution.
- A request was made for the WHO Western Pacific Regional Office to monitor progress in different countries, particularly on the important work of research and solutions to the control of transboundary issues on dust and sandstorm.
- The success stories of CLRTAP should be replicated, but there needs to be a framework to do this.

2.4 Workshop exercise: current situation of air pollution

**North-East Asia**

Analysis of the current situation in North-East Asia recognized that this region’s strengths include existence of national programmes and public support, air quality monitoring in place, increased public awareness, air quality problem confined in the winter period, and implementation of regular review of air quality objectives. However, challenges still exist in North-East Asia, including the growth in the number of vehicles as well as increased congestion, especially in urban areas; high-density development with street canyons; lack of political will; poor capacity in HIA; difficulties in tackling secondary air pollutants; and limited studies about the chronic health impacts of air pollution.

Priority actions identified by the North-East Asian group (China, including Hong Kong SAR, Mongolia and the Republic of Korea) include: 1) strengthening capacity to monitor air quality and generating city- or province-level health and population census data for local HIA studies of air pollution; 2) facilitating indoor air quality actions by developing indoor air
quality standards and clean fuel use and encouraging communities to use clean fuels, conducting periodic monitoring and surveys for indoor air quality, and supporting regional networking for indoor air quality management by information sharing; and 3) developing an early warning system and action plans.

South-East Asia

The current air pollution issues for the South-East Asian group (Cambodia, the Lao People’s Democratic Republic, Malaysia, Singapore and Viet Nam) in terms of air quality include: PM$_{2.5}$ (from local and transboundary sources), vehicular/traffic emissions, stationary air pollution sources (industries, construction, open burning, domestic cooking) and setting up of monitoring stations and collection of air quality data. Health impacts include increased burden of diseases such as COPD, stroke, cancers; irritation to the eyes and throat; and increased anxiety during transboundary haze episodes. Public concerns in South-East Asia include air quality index (AQI) forecasting and updating, public awareness and education on the health impacts of smoking, and waste burning (including solid waste and agricultural waste).

South-East Asia’s strengths in terms of addressing air pollution include existing laws and regulations (smoke-free regulations, air pollution control regulations, standards), robust governance structure, expert networks and intersectoral collaboration platforms. Weaknesses include lack of effective enforcement, lack of funding and resources, lack of technical expertise, lack of health impact studies (capacity and activity), and sectors working in silos resulting in poor coordination in addressing air pollution.

Priority actions identified by the South-East Asia group include:

1) strengthening governance (Haze-free ASEAN 2020; implementation of ASEAN agreement; mid-term review of the roadmap);
2) raising public awareness – for the public: risk communications, common AQI systems, general awareness programmes on air pollution prevention and health impacts, health advisories (short- and long-term) for poor air quality; and for policy-makers/stakeholders: advocate co-benefits of climate policies, advocate health in all policies, advocate green initiatives;
3) strengthening monitoring and reporting of air quality systems through monitoring systems (including infrastructure, database, health surveillance related to air pollution);
4) conducting health impact studies (impact of transboundary air pollution, impact of ambient air pollution, impact of indoor air pollution);
5) enhancing knowledge-sharing platforms (intersectoral cooperation); and
6) building capacity for health impact studies/technical support for air pollution.

The priority actions identified are strengthening governance, conducting health impact studies and raising public awareness.
Similar issues on indoor air pollution in the Pacific islands cover the following topics:

1) Change of energy use for cooking and heating (move to clean stove):
   a) Preferred fuel sources for cooking are wood and biomass. The challenge is to transition to cleaner fuels for cooking. Access does not seem to be an issue, but factors to consider are cultural issues, affordability and ease of use.
   b) Differences between rural and urban household fuel sources will have implications in terms of the pollution control strategy.
   c) Actions on advocacy should be strengthened, but there are some successful experiences using economic incentives to shift towards use of cleaner fuels/stoves for households.

2) National guidelines for indoor air quality:
   a) These currently do not exist in Pacific island countries, but there are opportunities in some countries (like Solomon Islands) to link guidelines with other environment and related laws currently under review.
   b) Lessons can be learnt from the experience of tobacco control.

3) Health impact:
   a) There is a need to better understand the local health impacts of air pollution (need to develop a methodology and implement studies on HIA).

4) Public concern:
   a) There is a need to increase understanding of citizens on the impact of air pollution (focus on development issues versus on environment quality concerns).

Actions taken targeting air pollution in Pacific island countries include addressing resource issues such as technical expertise, human resources and finance; providing training and capacity-building; strengthening communication and awareness on impacts of air pollution; and banning open burning (cultural/traditional practices, solid waste burning, agricultural burning). Strengths of the Pacific islands include data and health information systems, legislation and strategies in place; strong government support and political will as well as institutional capacity; and public health laboratory in place. Weaknesses include lack of policy and guidelines on indoor air pollution; poor enforcement and execution (considering specific priorities by agencies); lack of technical capacity, human resources and financial resources; lack of equipment and technical expertise; and lack of basic data in terms of health impacts and no baseline information.

The top three priority actions targeting indoor air pollution in the Pacific islands are:

1) Conduct baseline studies on current situation (household and indoor air pollution), based on in-country reviews of status of policy, international commitments, data, etc., to inform further studies.

2) Build capacity in countries on indoor air pollution (monitoring, interventions, estimation of health burden, etc.) through regional networks (in Asia and the Pacific).

3) Move towards developing national standards in reference to WHO indoor air quality guidelines and household pollution guidelines (in-country guidelines).
The top three priority actions targeting outdoor air pollution in the Pacific islands are:

1) Conduct baseline studies on current situation (outdoor air pollution) and establish and enhance existing air quality monitoring networks (building on experiences from Australia and Asia).
2) Build capacity in countries (monitoring – set-up, operation and maintenance, interventions, data interpretation and analysis, modelling, etc.) through regional networks (in Asia and the Pacific), and strengthen local institutions/expertise on air quality management (exchange programmes, networking of universities).
3) Move towards developing national standards, where applicable (including AQI) in reference to WHO outdoor air quality guidelines (in-country guidelines).

2.5 Identification and development of priority actions to address air pollution

North-East Asia

The priority action identified for development for North-East Asia is “strengthening capacity to monitor air quality and generating city- or province-level health and population census data for local HIA studies regarding air pollution”. The proposed project name is “Enhancement of Air Quality and Health Monitoring System”. The objectives of this proposed project are to: 1) strengthen capacity of air quality monitoring; 2) enhance data sharing between air quality and health systems at the regional level; and 3) improve the accuracy of evaluation of disease burden attributable to air pollution.

South-East Asia

The goal of the priority action identified for South-East Asia is to “reduce mortality and morbidity due to air pollution by 2030”. The proposed project title is “Clean Air for a Healthy South-East Asia (CAH-SEA)”. The proposed project objectives are to: 1) assess the health impacts of air pollution; 2) increase public awareness of the health impacts from air pollution; 3) develop a response plan to reduce the health impacts of air pollution; 4) improve ambient and indoor air quality; 5) reduce the use of household polluting fuels to reduce indoor air pollution; and 6) establish/meet indoor air quality standards and ambient air. The next step is for all countries to prepare concept notes with the assistance of WHO by 2018 to achieve “clean air for a healthy South-East Asia”.

Pacific islands

The overall goal of the priority action identified for the Pacific islands is “elimination of children’s mortality due to air pollution by 2030”. Participating Pacific island countries include Australia, Fiji, Papua New Guinea, the Philippines, Solomon Islands and Vanuatu. General objectives of the proposed project include the following:

1) Indoor and household air pollution: Replace fossil fuels as energy sources with cleaner fuels for household energy use.
2) Outdoor air pollution: a) Shift towards cleaner fuels and vehicles in main transport modes in the country (land and water transport) and promote non-motorized transport (walking and cycling); b) increase efficiency of existing power plants and increase share of renewable energy sources; and c) reduce open burning.
3) Establish air quality and health monitoring network to ascertain the efficiency of the programme on reducing air pollution and its impact on children’s health and in reducing greenhouse gas emissions.
Correspondingly, the project’s specific objectives are to: 1) conduct baseline studies on the current situation (household and indoor air pollution), based on in-country reviews of status of policy, international commitments, data, etc., to inform further studies; 2) strengthen in-country capacities on indoor air pollution (monitoring, interventions, estimation of health burden, through regional networks in Asia and the Pacific); 3) develop national standards on indoor air pollution based on WHO Indoor Air Quality Guidelines and Household Pollution Guidelines (where applicable); and 4) develop and pilot sustainable financing mechanism(s) to shift use towards cleaner fuels for household energy use.

In moving forward with the proposed project, the following tasks, in the form of next steps, may be considered for WHO and Pacific islands and their respective WHO country offices: 1) form programme development group/team; 2) develop draft concept note; 3) convene consultation with stakeholders on draft concept note; and 4) develop final application.

3. CONCLUSIONS AND RECOMMENDATIONS

The participants discussed and agreed in principle on the conclusions and recommendations, taking into consideration the comments made during the meeting. The following conclusions and recommendations are described in this section.

3.1 Conclusions

The meeting participants concluded the following:

(1) The health impacts of indoor and outdoor air pollution are a major public health problem, contributing to 2.7 million annual deaths in the Western Pacific Region.

(2) In addition to air pollution originating within a country, transboundary air pollution has been identified as a challenging public health problem that can be addressed through international cooperation, such as the ASEAN Haze Agreement, and with other international organizations.

(3) Countries and WHO will work together to strengthen multisectoral cooperation to address the health impacts of air pollution at the local, national, subregional and regional levels.

(4) WHO’s support and initiative to promote close coordination and cooperation between health and environment ministries and other relevant ministries were appreciated by Member States.

3.2 Recommendations

3.2.1 Recommendations for Member States

Member States may consider the following priority actions:

(1) Assess indoor (including household) and ambient air pollution population exposure through improved methodologies, including indoor measurements and ambient monitoring stations.

(2) Develop and implement national policy and action plan to reduce the morbidity and mortality related to indoor and ambient air pollution linked to SDG 3.9.

(3) Raise awareness of the public and policy-makers on the health impacts of air pollution.
Mobilize resources from SDG- and climate-related financing to improve air quality, paying special attention to the health impacts of climate change in fragile and vulnerable states (such as Pacific islands and Mekong countries).

Prepare project proposals addressing the health impacts of air pollution with WHO support to access funding opportunities from organizations such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF).

Participate in and contribute to the WHO Global Conference on Health and Air Pollution in Geneva, 30 October to 1 November 2018, with the outputs of this meeting.

Increase coordination and collaboration among relevant ministries and agencies on environment, health, transportation and local governance to improve awareness, action and implementation on health and air pollution.

3.2.2 Recommendations for WHO

WHO is requested to provide the following support:

1. Provide technical support to Member States on the above-mentioned priority actions.
2. Build institutional and human capacity of Member States in HIA and calculation of burden of disease from air pollution, following WHO methodology for assessment of environmental burden of disease.
3. Assess the magnitude of health impacts of transboundary air pollution such as haze in South-East Asia and dust and sandstorm in North-East Asia, and disseminate the information and evidence on the health impacts of transboundary air pollution in the Region.
4. Prepare a regional report on the situation of air quality in terms of monitoring, health impacts, public concerns, risk communications and governance based on the information collected at the Consultation, with the support of the TWG-AQ of the Asia-Pacific Regional Forum on Health and Environment.
5. Prepare international project proposals, in collaboration with interested Member States, addressing the health impacts of air pollution to access funding opportunities from organizations such as the GCF and the GEF.
6. Continue regional collaboration efforts and exchange of good practices on air pollution and health impacts through regional forums, consultation meetings, workshops and conferences.

3.3 Closing

Dr Shin Young-Soo delivered the closing remarks and expressed his thanks to the Member States for their active participation at the Consultation. He pointed out that “addressing the health impacts of climate and environmental change” has become one of three top priorities of WHO. Accordingly, WHO and Member States are expected to work together through joint actions to reduce the burden of disease from household and ambient air pollution in the Region. The alarming situation of the public health crisis, with 2.7 million deaths from air pollution every year in the Region, should not be tolerated anymore. He expressed optimism that with the participants’ active support, participation, cooperation and close coordination current trends could be reversed and mortality and morbidity resulting from air pollution could be remarkably reduced, thereby achieving SDG 3.9 in time.
ANNEXES

Annex 1. List of participants

1. PARTICIPANTS

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Annex 2. Programme of activities

Member States Consultation on Addressing the Health Impact of Air Pollution
23-25 October 2017

<table>
<thead>
<tr>
<th>Day 1 : 23 October 2017 (Monday)</th>
<th>Time</th>
<th>Activity</th>
<th>Responsible person/s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>08:30–09:00</td>
<td>Registration</td>
<td></td>
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<tr>
<td></td>
<td>09:00–09:30</td>
<td>Opening session</td>
<td>Dr Hai-Rim Shin, Acting Director Division of NCD and Health through the Life-Course, WHO Regional Office for the Western Pacific</td>
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<tr>
<td></td>
<td></td>
<td>Welcome remarks</td>
<td>Dr Shin Young-soo WHO Regional Director for the Western Pacific</td>
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<tr>
<td></td>
<td></td>
<td>Opening address</td>
<td>To be delivered by: Dr Takeshi Kasai, Director Programme Management, WHO Regional Office for the Western Pacific</td>
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<tr>
<td></td>
<td></td>
<td>Self-introduction of participants and election of office bearers</td>
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<td></td>
<td></td>
<td>Presentation of the objectives and expected outcomes</td>
<td>Dr Rokho Kim, Coordinator, Health and the Environment, WHO Regional Office for the Western Pacific</td>
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<tr>
<td></td>
<td>09:30–10:10</td>
<td>Group photograph and mobility break</td>
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<tr>
<td></td>
<td></td>
<td><strong>Session 1: Reviewing the current situation of health impact of air pollution</strong></td>
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<tr>
<td></td>
<td>10:10–10:50</td>
<td>The health effects of air pollution on global and regional scale</td>
<td>Dr Sophie Gumy, Technical Officer WHO headquarters and Dr Rokho Kim</td>
</tr>
<tr>
<td></td>
<td>10:50–11:10</td>
<td>Burden of disease from ambient air pollution in Asian countries</td>
<td>Dr Yun-Chul Hong, Director Institute of Environmental Medicine, Seoul National University, Republic of Korea</td>
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<tr>
<td></td>
<td>11:10–11:30</td>
<td>Burden of disease from indoor air pollution in Asian countries</td>
<td>Dr Xiaoli Duan, Professor University of Science and Technology, China</td>
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<tr>
<td>Time</td>
<td>Activity</td>
<td>Responsible person/s</td>
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<tr>
<td>11:30–11:50</td>
<td>Current policies and control actions of ambient air pollution management</td>
<td>Dr Lidia Morawska, Professor Queensland University of Technology, Australia</td>
<td></td>
</tr>
<tr>
<td>11:50–12:10</td>
<td>Current policies and control actions of indoor air pollution management</td>
<td>Dr Kiyoung Lee, Professor Seoul National University, Republic of Korea</td>
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<tr>
<td>12:10–13:00</td>
<td>Lunch break</td>
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<tr>
<td>13:00–15:00</td>
<td>Country reports on air quality and health impact of air pollution</td>
<td>China, Hong Kong SAR (China), Mongolia and Republic of Korea</td>
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<td></td>
<td>- Northeast Asia countries</td>
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<tr>
<td></td>
<td>- Southeast Asia countries</td>
<td>Cambodia, Lao People’s Democratic Republic, Malaysia, Philippines, Singapore and Viet Nam</td>
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<tr>
<td>15:00 –15:30</td>
<td>Mobility break</td>
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<tr>
<td>15:30–16:30</td>
<td>Continuation of country reports</td>
<td>Fiji, Papua New Guinea, Solomon Islands and Vanuatu</td>
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<td></td>
<td>- Pacific island countries and areas</td>
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<tr>
<td>16:30–18:00</td>
<td>Panel discussion of regional issues on air pollution</td>
<td>Facilitated by Dr Rokho Kim</td>
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<tr>
<td></td>
<td>- Northeast Asia countries</td>
<td>Dr Yun-Chul Hong and Professor Shi Xiaoming, Director National Institute of Environmental Health, China Centre for Disease Control and Prevention, China</td>
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<td></td>
<td>- Southeast Asia countries</td>
<td>Dr Doan Ngoc Hai, Director General National Institute of Occupational and Environmental Health, Viet Nam and Ms Jelita Teper Deputy Chief Scientific Officer National Environment Agency, Singapore</td>
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<tr>
<td></td>
<td>- Pacific island countries and areas</td>
<td>Mr Dip Chand, Chief Health Inspector Ministry of Health, Fiji and Dr Lidia Morawska</td>
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<tr>
<td>18:00</td>
<td>Reception (Venue: Al Fresco)</td>
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<td>Time</td>
<td>Activity</td>
<td>Responsible person/s</td>
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<tr>
<td>Day 2: 24 October 2017 (Tuesday)</td>
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<tr>
<td>09:00–09:10</td>
<td>Summary of day 1</td>
<td>Dr Lidia Morawska</td>
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<tr>
<td>09:10–10:30</td>
<td>Session 2: Discussion of regional and national issues on air pollution</td>
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<td>Regional partnership and governance of air pollution</td>
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<td>- Lessons from the Convention of Long-range Transboundary Air Pollution (CLRTAP)</td>
<td>Dr Sophie Gumy</td>
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<td></td>
<td>- Policy brief of the Thematic Working Group on Air Quality</td>
<td>Dr Yun-Chul Hong</td>
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<td></td>
<td>- Health impact assessment for clean air action planning</td>
<td>Mr Alan Silayan, Director of Programs Clean Air Asia</td>
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<tr>
<td></td>
<td>- Governance and partnership of air pollution in Asia</td>
<td>Ms Maria Katherine Patdu, Coordinator Asia Pacific Clean Air Partnership UN Environment Asia and the Pacific</td>
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<tr>
<td>10:30–11:00</td>
<td>Mobility break</td>
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<tr>
<td>11:00–12:00</td>
<td>Group work 1: Current situation of air pollution</td>
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<td></td>
<td>Group 1. China, Hong Kong SAR (China), Mongolia and Republic of Korea</td>
<td>Dr Yun-Chul Hong and Dr Xiaoli Duan</td>
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<tr>
<td></td>
<td>Group 2. Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore and Viet Nam</td>
<td>Dr Doan Ngoc Hai</td>
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<tr>
<td></td>
<td>Group 3. Fiji, Papua New Guinea, Solomon Islands and Vanuatu</td>
<td>Dr Lidia Morawska and Dr Kiyoun Lee</td>
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<tr>
<td>12:00–13:00</td>
<td>Lunch break</td>
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<tr>
<td>13:00–16:00</td>
<td>Group work 2: Actions taken to address air pollution</td>
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<td></td>
<td>Group work 3: Analysis of current situation and actions</td>
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<tr>
<td>16:00–16:30</td>
<td>Mobility break</td>
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<tr>
<td>16:30–17:30</td>
<td>Group work 4: Regional and national priority actions</td>
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</tbody>
</table>
## Time Activity Responsible person/s

**Day 3: 25 October 2017 (Wednesday)**

<table>
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<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>09:00–09:10</td>
<td>Summary of day 2</td>
<td>Dr Sophie Gumy</td>
</tr>
<tr>
<td>09:10–09:40</td>
<td>Report of group discussion</td>
<td>Representative per group</td>
</tr>
</tbody>
</table>

**Session 3: Identification and development of priority actions to address air pollution**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Responsible person/s</th>
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<tbody>
<tr>
<td>09:40–10:40</td>
<td>Plenary discussion of potential resource opportunities in the Region and countries</td>
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<tr>
<td>10:40–11:00</td>
<td>Mobility break</td>
<td></td>
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<tr>
<td>11:00–12:00</td>
<td>Group work 5: Formulation of priority actions and possible projects to address air pollution</td>
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<td></td>
<td>- Northeast Asia countries</td>
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<td></td>
<td>- Southeast Asia countries</td>
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<td></td>
<td>- Pacific island countries and areas</td>
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<tr>
<td>12:00–13:00</td>
<td>Lunch break</td>
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<tr>
<td>13:00–15:00</td>
<td>Continuation of group work 5</td>
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**Session 4: Way forward**

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<tr>
<th>Time</th>
<th>Activity</th>
<th>Responsible person/s</th>
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<tbody>
<tr>
<td>15:00–15:30</td>
<td>Recommendations of groups on priority actions to protect human health from air pollution</td>
<td>Representative per group</td>
</tr>
<tr>
<td>15:30–16:00</td>
<td>Conclusions, recommendations and pledge</td>
<td>Chairperson</td>
</tr>
<tr>
<td>16:00–16:30</td>
<td>Closing remarks</td>
<td>Dr Shin Young-soo</td>
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<td></td>
<td></td>
<td>WHO Regional Director for the Western Pacific</td>
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</tbody>
</table>

Group photograph