



## SOUTH-EASTERN EUROPE HEALTH NETWORK

### MEETING REPORT

# SEEHN Expert Meeting *REDUCING HEALTH IMPACTS OF POLLUTED AIR- STRENGTHENING HEALTH SYSTEMS AND MULTISECTORAL RESPONSE IN SEE COUNTRIES*

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## Introduction

Air pollution is the largest single environmental risk to health, responsible for an estimated 7 million premature deaths every year globally and about 556 000 in the WHO European Region. South-eastern European countries, according to the World Health Organization<sup>1</sup>, suffer some of the highest rates of air pollution in the European region up to five times higher than the national, EU directive and WHO's Air Quality Guidelines levels, and as a consequence (among others) have the highest rates of associated premature morbidity and mortality.

Ambient and household air pollution is crucial to be tackled to improve the health and the quality of life of the people of South-east Europe and subsequently for achieving the goals of 2030 Agenda for Sustainable Development. In the Chisinau Pledge<sup>2</sup>, the Ministers of Health of SEEHN committed themselves to work towards sustaining and strengthening the regional cooperation in public health in South-eastern Europe by taking deliberate action to strengthen governance for health and well-being inter alia, in sustainable energy and environmental protection areas, thus promoting and protecting health through all policies. In addition, at the Sixth Ministerial Conference on Environment and Health, in 2017 in Ostrava, the ministers of health and the ministers of environment of 53 Member States committed to improving indoor and outdoor air quality for all.<sup>3</sup>

Under the framework of these commitments, SEEHN organized the first meeting of experts from South-east Europe to pave the way for the continuous sub-regional joint efforts with an objective to open few venues of dialog towards policy response:

- A. Scaling up overarching national health promotion and protection activities related to the adverse impacts of polluted air to human health
- B. Multi-sectoral response through improving governance for health and well-being to address negative air quality impacts on health including climate change adaptation and mitigation strategies (in energy, transport, cities, settings, etc.)
- C. Health system response through strengthening health system governance by using evidence-based decisions
- D. Professional performance improvement by sharing the best practices and building the capacities for using instruments and tools for estimating negative health effects of polluted air at the country and subnational level.

The meeting was attended by the experts from nine member states of SEEHN (Albania, Bosnia and Herzegovina, Bulgaria, State of Israel, Republic of North Macedonia, Republic of Moldova, Montenegro, Romania and the Republic of Serbia) and two observers (Kosovo<sup>4</sup> and Turkey).

At the meeting, the following topics were presented and discussed: the role of the health sector in achieving SDG goals in reducing health impacts of air pollution; air quality and health effects: overview of WHO's work on air pollution, climate change and health, including evidence, data, tools, training and initiatives, and air quality guidelines; regional challenges and priorities -country presentations; air pollution and workers health-protecting workers from air pollution); cleaning the world's air – governance, economic incentives and health sector leadership; air quality and health and the use of WHO decision support tools- preparatory steps for implementation; round table discussion on the role

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<sup>1</sup> [https://www.who.int/airpollution/data/AP\\_joint\\_effect\\_BoD\\_results\\_May2018.pdf](https://www.who.int/airpollution/data/AP_joint_effect_BoD_results_May2018.pdf)

<sup>2</sup> [http://seehn.org/web/wp-content/uploads/2019/01/CHISINAU-PLEDGE\\_SIGNED-VERSION-FOR-WEB.pdf](http://seehn.org/web/wp-content/uploads/2019/01/CHISINAU-PLEDGE_SIGNED-VERSION-FOR-WEB.pdf)

<sup>3</sup> [http://www.euro.who.int/\\_data/assets/pdf\\_file/0007/341944/OstravaDeclaration\\_SIGNED.pdf](http://www.euro.who.int/_data/assets/pdf_file/0007/341944/OstravaDeclaration_SIGNED.pdf)

<sup>4</sup> all References to Kosovo\* in this report shall be understood to be in the context of the UN Security Council Resolution 1244 (1999)

of the health sector in primary prevention activities, cross-sectoral actions, health system actions in ensuring the evidence on risks and solutions and building mechanisms for health system governance, political and social support in improving air quality, identification of the gaps and needs, priority actions and agreement on the common points for concrete actions under the SEEHN.

## Opening session

The meeting was opened by Dr. Mira Jovanovski Dašić, SEEHN Secretariat Director, who greeted the meeting participants and underlined that the polluted air is the single biggest environmental determinant of health, causing about one half of all diseases originated from the environment. However, this invisible killer has no borders. The SEEHN member states are sharing the challenge of polluted air, so there is an urgent need for common actions. Dr. Jovanovski Dašić stressed out that in Chisinau Pledge, the Ministers of Health of SEEHN committed themselves to work towards sustaining and strengthening the regional cooperation in public health in SEE Region by taking deliberate action to strengthen governance for health and well-being inter alia, in sustainable energy and environmental protection areas, thus promoting and protecting health through all policies. In order to foster the activities in SEEHN member states in the implementation of mentioned commitments, the Secretariat of SEEHN organized this expert meeting addressing the topic of environmental impacts to human health for the first time. Dr. Jovanovski Dašić stressed out the need to cooperate with the World Health Organization (WHO) in this area under the provisions of the Sub-Regional Cooperation Strategy (SCS) which was jointly produced and signed by the SEEHN Secretariat and the World Health Organization Regional Office for Europe and covering the period 2018-2023.

Dr. Vladimir Miloshev, State Secretary of the Ministry of Health of the Republic of North Macedonia greeted the meeting participants on behalf of the country which is hosting the Secretariat of SEEHN. Dr. Miloshev congratulated the Secretariat on excellent work that was performed in fostering public health in SEE Region and by this supporting the improvement of the health and well-being of the people of the Region. He wished the meeting participants successful work.

### **Adoption of the Scope and Purpose and the Program of the Meeting**

The Scope and Purpose and the Program of the meeting was proposed by Dr. Jovanovski Dašić and was adopted by the meeting participants. Final list of participants is presented in Annex 1.

## The role of the health sector in achieving SDG goals in reducing health impacts of air pollution

The presentation on this topic was delivered by Dr. Elizabet Paunovic, consultant. At the UN Summit that took place in New York, (25-27 September 2015), Member States of the United Nations adopted 2030 Agenda for Sustainable Development with a set of 17 Sustainable Development Goals (SDGs) at its core. The 2030 Agenda is the product of the largest consultative process in the history of the United Nations, led by Member States and including broad participation by stakeholders such as civil-society organizations, the private sector and academia. The Agenda strives for a world that is based on justice, human rights, equitable and inclusive. An emerging impetus for the work in the area of environment and health (including the impacts of polluted air to human health) is set by the 2030 Agenda for

Sustainable Development. Health and well-being that are linked to environmental and work-related factors are outcomes, determinants and enablers of sustainable development. SDGs are seen as integrated and indivisible, and cover the economic, environmental and social pillars of sustainable development with a strong focus on equity expressed by “no one will be left behind”.

Tackling ambient and household air pollution is crucial to achieving the 2030 Agenda for Sustainable Development. There are three Sustainable Development Goals’ (SDGs) targets directly aiming to reduce impacts of polluted air:

- 3.9: by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination,
- 7.1: by 2030 ensure universal access to affordable, reliable and modern energy services, and
- 11.6: reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

In the presentation related indicators were discussed, as well as the role of the health sector in fulfilling the goal and providing the mortality rates from air pollution at the country level, as well as the roles of other sectors that have to provide input data for the calculations of the burden of pollution related burden of diseases to be performed by the health sector (e.g. air quality monitoring data to be provided by the environmental protection sector and household fuel use to be provided by national statistical offices ) as these data are being used to generate the estimates of the burden of disease to be reported under SDGs implementation. Feedback from countries is critical to ensure that data are accurate and up to date at the global level. WHO is the custodian agency for data collection and follow-up engagements.

## Air quality and health effects: overview of WHO’s work on air pollution, climate change and health, including evidence, data, tools, training and initiatives, and air quality guidelines

The presentation was delivered through remote connection by Dr. Dorota Jarosinska, Programme Manager in WHO European Centre for Environment and Health (WHO/ECEH). Dr. Jarosinska explained that WHO has a long lasting tradition of work in the area of environment and health. WHO European Centre for Environment and Health was established in 1991 as a scientific centre of excellence which provides countries with evidence to support policy-making in environment and health, but also develops international guidelines and policy advice.

The main source of data related to the impacts of polluted air WHO is coming from WHO Air Quality Database. WHO has updated its air quality database and estimates of the disease burden attributable to air pollution in May 2018. In the WHO European Region, 556 000 premature deaths were attributable to the joint effects of household and ambient air pollution for 2016. More than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the World Health Organization (WHO) limits.

While all regions of the world are affected, populations in low-income cities are the most impacted. According to the latest urban air quality database, 98% of cities in low- and middle -income countries with more than 100 000 inhabitants do not meet WHO air quality guidelines. However, in high-income countries, that percentage decreases to 56%.

In the past two years, the database – now covering 3000 cities in 103 countries – has nearly doubled, with more cities measuring air pollution levels and recognizing the associated health impacts.

As urban air quality declines, the risk of stroke, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma, increases for the people who live in them. As health consequences of the polluted air represent significant public health problem, in May 2015, the Sixty-eighth World Health Assembly (WHA), the decision-making body of the WHO, adopted a resolution

under the title *“Health and the Environment: Addressing the health impact of air pollution”* which was endorsed by 194 Member States. This resolution stated the need to redouble the efforts of Member States (MSs) and WHO to protect populations from the health risks posed by air pollution. In 2016, the Road Map to the WHA resolution on Air Pollution was also adopted at 69<sup>th</sup> World Health Assembly.

The road map covers the period 2016–2019 and articulates the path towards an enhanced global response to the adverse health effects of air pollution around four categories: expanding the knowledge base, monitoring and reporting, global leadership and coordination, and institutional capacity strengthening. Air quality and health continues to be high on the agenda of the European Environment and Health Process, as reflected in the outcome documents of the Ministerial Conferences on Environment and Health, including at the recent Sixth Ministerial Conference, in Ostrava, 2017.

In the Ostrava declaration, 53 Member States of the WHO European Region recognize air quality as one of the most important environmental risk factors and as an important element in attainment of human rights.

The annex I to the Ostrava Declaration offers a compendium of actions for Member States for the improvement of ambient and indoor air quality, towards meeting the WHO air quality guidelines. WHO is currently working on updating the global air quality guidelines in order to provide an up to date set of public health recommendations. The project started in 2016 as a response to a number of factors, including a greater recognition of air pollution as a public health priority, the emergence of a substantial amount of new scientific evidence on the health effects of air pollution, and a specific mandate from Member States at the World Health Assembly in 2015 to update air quality guideline. Dr. Jarosinska underlined that it is important to be clear what WHO guidelines are and what they are not – that these are objective, public health recommendations, but not legal standards.

It is desirable/recommended that Air Quality Guidelines (AQG) are used to set national (or international) air quality standards. In Europe, WHO AQG are explicitly referred to in the European Union AQ legislation (even though the levels set in the legislation are higher than in WHO AQG). Dr. Jarosinska mentioned one more WHO activity which is specific for WHO European Region. The Joint Task Force on the Health Aspects of Air Pollution was established within the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP) in 1998. WHO/ECEH chairs the Task Force on the Health Aspects of Air Pollution. Members include experts designated by countries that are Parties to the Convention. National focal points on air quality and health and invited experts to the Task Force meet annually and the recent, 22<sup>nd</sup> meeting was held in May 2019. In order to support all these activities, WHO has created several tools for estimating health risks. Dr. Jarosinska mentioned that AirQ+ tool is designed to calculate how much of a particular health effect is attributable to selected air pollutants and compared to the current scenario, what would be the change in health effects if air pollution levels changed in the future. The tool is used world-wide and according to the analysis of the uptake of the tool, mainly by academia for research as well as by different institutions for evidence-based policy making at the national and subnational levels. Dr. Jarosinska concluded her presentation by mentioning that air pollution has significant negative health impacts in SEE and that was the main reason to organize the first training workshop for the use of AirQ+ tool in Sarajevo, for the participants from SEE countries. She has expressed readiness to continue cooperation with SEE countries on this topic through the work with SEEHN.

## Regional challenges and priorities-country presentations

The SEEHN Member States representatives presented the situation in their countries according to the template with the suggested following elements in order to apply unified approach for further collaboration and set up the minimum common data baseline according to SDG indicators:

- A. Presentation of country data on ambient air quality and attributed burden of disease from WHO Global Ambient Air Quality Database covering following areas:  
<https://www.who.int/airpollution/data/cities/en/>
1. Country estimate for PM 2.5 for 2016
  2. Country estimate of burden of disease from ambient air pollution for 2016
  3. Country estimates for access to clean fuels (2000-2016)
  4. Country estimates of burden of disease from household air pollution for 2016
  5. Country estimates of burden of disease from joint effects of air pollution for 2016
- B. Country specific health system response to air pollution related burden of disease – current activities
- C. Country specific health system response to air pollution related burden of disease-proposal for future activities
- D. Multi-sectoral activities in improving air quality in the country and the role of public health advice in policy development and interventions implementation
- E. Short country gap analysis related to the role of health system in reducing health impacts of polluted air
- F. The proposal for the way forward at country and SEE regional level (proposals for cooperation in strengthening health systems response in reducing health impacts of polluted air)

## Albania

Elida Mataj and Jonida Seferi presented the situation in Albania and started with the statement that the assessment of the air pollution related burden of diseases is not feasible yet in Albania due to the insufficient air quality monitoring data (lack of monitoring especially in hotspot areas). They have presented the way of functioning of the new malignant diseases reporting system which started in 2015. The system consists of:

- Data on newly diagnosed cases per year (incidence recorded), based on cancer registry
- Aggregate data on all cases (prevalence recorded), registered with family physicians across the country (2010-2017).
- Cancer death data, based on the INSTAT administered death file system (2012-2017)
- Crude and Standardized Mortality Rate from All Cancers (per 100 000 inhabitants), in Albania, 2012-2017

Future activities:

- Drafting an Institutional Reform Plan for the Environmental Health Structure under the Institute of Public Health and Regional Public Health
- Strengthening capacities of the environmental health sector and developing laboratory capacities (infrastructure at the central and regional level)
- Setting up sustainable and continuous data collection systems for risk assessment (training on: reporting, analysis, interpretation of air quality data and health impact expectations-specific software)

Multi-sectoral activities:

- Development of National Environmental Health Action Plans in collaboration with responsible institutions that generate environmental and health data
- Strengthen the legal framework on environmental health in Albania through harmonization with European legislation
- Improvement of environmental health management, sustainable environmental policy development and strengthening of the cross-institutional cooperation.

Country gap analysis:

- Air quality monitoring data are not covering the whole country including the-
- Lack of air quality monitoring in 86% of cities (including the cities with industrial activity)

- Non-reporting of health data relevant for air quality health impact assessment to the Public Health Institute

Proposal for the way forward for common actions in SEE countries:

- Development and adoption of a plan for common action to address regional challenges in SEE countries
- Building common strategies on environmental public health tracking
- Developing a permanent forum for inter-sectional know-how exchange on environmental health

## Bosnia and Herzegovina

Aida Vilić Švraka and Milkica Grabež presented the country situation for Bosnia and Herzegovina. Several areas in Bosnia and Herzegovina have a common denominator of poor air quality, with annual mean concentration of PM 2.5 significantly exceeding recommended values of WHO global air quality guideline and the air quality limit values for PM10 and PM2.5 of the European Union.

Especially during winter months, urban areas face severe smog episodes, caused by the excessive use of wood and coal for household heating. In the two entities (Federation of Bosnia and Herzegovina and Republic of Srpska) operate two separate air quality monitoring networks. Monitoring data continuity is a challenge in both entities. Annual mean concentration of PM2.5 in Federation of Bosnia and Herzegovina is estimated at 30  $\mu\text{g}/\text{m}^3$ . In Republic of Srpska PM2.5 annual mean concentration is estimated at 19  $\mu\text{g}/\text{m}^3$ . In Brod, where a refinery is located, the average annual mean concentration of PM2.5 reaches 33  $\mu\text{g}/\text{m}^3$ . The PM10 limit value (set up by national legislation at 40  $\mu\text{g}/\text{m}^3$ ) was exceeded at Zenica-all stations, Kakanj, Sarajevo- all stations, Prijedor and Refinery Brod stations.

Country estimate the burden of disease from ambient air pollution for 2016:

- About 3,300 people die prematurely every year as a result of exposure to ambient PM2.5 air pollution in Bosnia and Herzegovina
- About 16 % of this health burden is occurring in Sarajevo and Banja Luka.
- 9% of the total annual mortality in Bosnia and Herzegovina is attributable to air pollution.
- 81% of the 3300 ambient air pollution (AAP) related deaths in Bosnia and Herzegovina are from cardiovascular diseases.
- The majority of AAP-related mortality occurs in people that are 50 years of age and older.
- 68% of ischemic heart disease and 57% of strokes caused by AAP occur in people over 70 years of age.
- Cardiovascular diseases mostly affect people older than 65 years of age

Country estimates for access to clean fuels (2000-2016)

- According to the latest available data (2005), the share of renewables in the total energy potential was 26.5%. According to the calculations of the Energy Community of South East Europe, there is a possibility to increase the share of renewables in the total energy potential to 33% by 2020.

Country estimates the burden of disease from household air pollution for 2016

- There are no country estimates of burden of disease from household air pollution for 2016

Country estimates the burden of disease from joint effects of air pollution for 2016

- There are no country estimates of burden of disease from joint effects of air pollution for 2016

Health system response:

- During air pollution crisis in Sarajevo, Banja Luka, Brod, Tuzla, Zenica and other urban settings, the experts from the Network of Institutes of Public Health (IPH) offered public health advice for population.
- IPHs assessed the impact of air pollution on health using data from network of automatic stations in both entities and AirQ + software as a tool.
- Two years ago, the competent cantonal institutions from all relevant sectors (in cantons with the highest concentrations of air pollutants - Canton Sarajevo, Canton Tuzla and Zenica-Doboj

Canton), took measures in accordance with the adopted local plans of intervention measures for cases of excessive air pollution.

- These plans identify the types of risks and hazards, the procedures and measures for the elimination of hazards, the institutions in charge of implementing the measures, the responsibilities related to the application of the plans.

#### Proposal for future activities

- Strengthening health statistics and harmonizing country reporting system with international system of disease classification (WHO ICD 11)
- Strengthening capacities, especially in transboundary air pollution matters
- Improving collection and reporting of morbidity data by disease and age group
- Improving assessment of the impact of ambient air pollution on health using AirQ+ software
- Development of indoor air quality legislation
- Assessment of the impact of indoor air pollution on health.

#### Multi-sectoral activities

- Development of the legal and policy framework related to ambient air pollution
- Harmonizing legal and institutional framework for AQM and environmental management
- Strengthening Inter-Entity Coordination Body to facilitate harmonization of policies and organizational frameworks
- Development of Air Quality Index to disseminate understandable and easily accessible information on air quality to the public and facilitate issuance of health-related air quality alerts (IPHs in cooperation with the entity Hydrometeorological Institutes).

#### Country gap analysis

- Problems of data completeness as experienced in monitoring stations constrain accurate assessment of long-term air quality trends
- For the purpose of air quality assessments, it would be useful to conduct simultaneous measurements of PM<sub>2.5</sub> and PM<sub>10</sub> at the same station (which is currently not the case)
- To better understand the health impacts of AAP on affected population, Bosnia and Herzegovina needs to strengthen health statistics and harmonize country reporting with international systems of disease classification (WHO ICD 11)
- Health system is not fully involved in the development of the sectoral policies by applying health in all policies approach and in the development and implementation of 2030 Agenda
- Strengthening capacities to address transboundary air pollution and indoor air pollution
- “Refreshment”/Strengthening capacities of human resources and development of public health laboratories

#### Proposal for the way forward for common action in SEE countries

- Strengthening the air quality monitoring network focusing on pollutants such as PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, lead and other toxic substances
- Reduction of coal consumption
- According to the health in all policies approach, health system needs to be involved in all aspects of policy development linked to potential air pollution and its consequences, such as climate change, environmental sustainability and waste management

## Bulgaria

Plamen Dimitrov presented the situation in Bulgaria.

Country estimate for PM<sub>2.5</sub> in 2016 was 27 µg/m<sup>3</sup> for urban and rural areas and 30 µg/m<sup>3</sup> for urban areas.

Estimated number of deaths attributable to AAP was 8634. Estimated rate per 100 000 of population was 118 and age standardized rate per 100 000 of population was 55.

Country estimates for access to clean fuels (2000-2016)-

It is estimated that 89% of population had the access to clean fuel in 2016.

Country estimates of burden of disease from household air pollution for 2016-

No data availability

Country estimates of burden of disease from joint effects of air pollution for 2016-

No data availability

Up-to-date AAQ information for major Bulgarian cities is obtained through the Air Quality Index (AQI) available on national and regional web platforms. This indicator provides real-time information on AAQ and a forecast for the next 24/48 hours, allowing the population concerned to identify periods of intense pollution and to take informed measures to reduce personal inhalation exposure.

Country specific health system response:

- In compliance with the legal framework (laws and regulations) in force in Bulgaria and consistent with the European policies on air quality, the Minister of Health together with the Minister of Environment and Water establishes the limit values for the harmful substances concentrations (pollutants) in the ambient air.
- Based on the obtained data on the ambient air quality (AAQ) from the National Automated System for Control of Ambient Air Quality (NASCAAQ), operated and maintained by the Ministry of Environment and Water (MoEW), the Ministry of Health (MoH) and its structures conduct a health risk assessment compliant with the toxicological characteristics of each atmospheric pollutant.
- The concentrations of fine particulate matter (PM10 and PM2.5), sulphur dioxide, nitrogen oxides, carbon monoxide, ozone, benzene, lead, cadmium, nickel, arsenic and polycyclic aromatic hydrocarbons are monitored daily by the NASCAAQ.
- Additionally, depending on the nature and specificity of the emission sources, the levels of: ammonia, toluene, xylene, styrene, sulphur carbon, hydrogen sulphide, etc. may also be controlled in individual areas. The AAQ assessment is prepared in accordance with the statutory standards for the protection of human health for each specific pollutant.
- In areas with identified air quality problems, municipal programmes with the regional structures of the MoH, MoEW and municipal administrations are jointly being developed and implemented with the purpose of reducing harmful substances emissions within the shortest time-limits.

Proposal for future activities

- Improving public awareness of real-time air quality, along with enhancing environmental and health culture of society, with a view to creating behavioural models that enable active participation in the environmental protection and healthy lifestyle processes
- Improving air quality monitoring (outdoor and indoor) and more rigorous and responsible control over major polluters
- Defining research priorities and supporting epidemiological studies that allow for an objective assessment of the independent effect of ambient air pollution on health and the effectiveness of interventions in the polluting sectors;
- Identifying and forecasting the expected health risks and benefits associated with the existing polluting industries, and focusing on the tendency to utilize biomass as a renewable energy source in specific combustion plants. This process should be based on optimal and responsible decisions of competent authorities and prevent further AAQ aggravation with more and more diverse harmful substances emissions into the ambient air.

Multi-sectoral activities

- Removing industrial activities outside urbanized areas;
- Gasification of settlements;
- Optimization of transport traffic;
- Promotion of innovative and low-carbon technologies aimed at the creation of environmentally friendly industries;
- National Air Pollution Control Program, Bulgaria (2019-2030), developed and adopted this year, is a product of the efforts to mitigate the negative impact on population's health associated with air pollution and aims at reducing sectoral emissions (30%), including greenhouse gas emissions (up to 40%);

- Switching to healthy energy by changing massively used fuels – from wood and coal to gas or electricity;
- Introduction of national standards for solid fuels quality or their alternatives;
- Introduction of requirements for the quality and efficiency of heating appliances in compliance with eco-design regulations;
- Modernization of vehicles meeting higher Euro standards and enhanced emission control;
- Introduction of low-emission zones that envisage increased powers of regional key decision-makers;
- Implementation of good agricultural practices for the control and reduction of ammonia emissions associated with the use of nitrogen/animal fertilizers and the activities of livestock farms;
- Improving waste management and gradually reducing the amount of biodegradable deposits

Country gap analysis:

#### *Regulatory*

- Lack of standards for the quality of solid fuels as well as for the quality and efficiency of heating appliances (under development)
- Lack of adequate sanctions to the regional administrations for the adoption of wrong urban planning decisions that create significant problems with the dispersion of ambient air pollutants in settlements as well as for the failure to implement regional programmes for AAQ improvement
- Ineffective financial mechanisms (reduced sanctions) regulating the activity of significant anthropogenic emitters of harmful substances in the ambient air. Lack of incentives and policies that motivate and encourage businesses (motor vehicle owners) to voluntarily comply with environmental protection.

#### *Organizational*

- Low control when importing and registering motor vehicles with low Euro standard
- Refusal of a large part of households to use central heating and switching to solid fuel heating (for financial reasons)
- The approach to comply with the best available practices is not optimally applied when permits are issued for new industries
- Reducing the number of the highly qualified healthcare professionals engaged in the assessment of the health risk for the population associated with environmental risk factors
- Lack of sustainable funding for environmental and health research.

Proposal for the way forward for common actions in SEE countries

- Development of economic mechanisms that promote reduction of harmful emissions from both stationary and mobile pollution sources. Introduction of low taxes encouraging investments in low emission technologies and/or non-waste technologies
- Strict emissions control over the quality (toxicity) of exhaust gases when performing a technical roadworthiness test of motor vehicles, including sudden inspections by traffic police
- Proactive health sector policy focusing on long-term primary prevention associated with contemporary environmental challenges (air pollution not only with traditional pollutants but also with nanoparticles and chemicals that disrupt endocrine activity)
- Strengthening the capacity and the leading role of the health sector in the coordination with other health-related sectors such as the environment, work environment, climate change
- Improving evidence-based databases on the toxicity of conventional pollutants and on the new challenges mentioned above
- Optimized monitoring of atmospheric pollutants and raised awareness of the population on the risk of polluted air as well as encouraging the activity of the population in building a healthier environment
- Ensuring adequate and sustainable financing of research and innovation in the field of environment and health.

## State of Israel

Isabella Karakis presented the situation in the State of Israel.

Mean annual concentration for PM 2.5 and trends over the time period from 2007 in selected urban settlements were below or at the level of national limit value set up at 25  $\mu\text{g}/\text{m}^3$

National estimate of burden of disease due to ambient air pollution for 2015 was 1908 deaths.

Country specific response of health system to the burden of diseases caused by air pollution

Ministry of Environmental Protection and the Ministry of Health issued recommendations on how to act in the episodes of high air pollution for the general population and for vulnerable populations such as children, pregnant women, elderly and people with heart or lung diseases.

Multi-sectoral activities

- National Program for the Prevention and Reduction of Air Pollution in Israel (Government Decision No. 707 dated 25.08.2013 and update 18.09.2017)
- National Plan to Reduce Air Pollution and Decrease Environmental Risks in the Haifa Bay Area (Government Decision No. 529 dated 06.09.2015)
- National Program in Environmental Health- preparation of national action plan (Government Decision No. 1287 dated 20.03.2016)

Gap analysis

- Periodical update of air pollution standards
- Participation of Public Health professionals in building and constructing process (cities and industry)
- Health risk assessment and Health impact assessment
- Adaptation of recommendations to struggle with severe level of air pollution (kindergarten, schools, travellers)
- Development of renewable energy sources based on new technology (natural gas, biofuel)
- Increasing of knowledge in medical professions (doctor and nurse students) and in general population
- Epidemiological and clinical studies in environmental health issues (causality studies, biomonitoring, etc.)

Way forward at SEE level

- Regional epidemiological studies in environmental health issues (causality studies, biomonitoring, etc.)
- Cooperation between Ministries of Health related to air pollution exposure
- Air pollution monitoring regional system included VOC's and meteorological data.

## Republic of Moldova

Valentina Zagnitzko and Liliana Karp presented the situation in the Republic of Moldova.

Country estimate for PM2.5 mean annual level was 24  $\mu\text{g}/\text{m}^3$

Country estimate of burden of disease from ambient air pollution for 2016 was 84 deaths per 100 000 of population

Access to clean fuels

92% of total population of Moldova has the access to clean fuels

Country specific health system response -current activities

- Bringing awareness through media outlets about the issues and impacts of air pollution at ministry and agency levels
- It is prohibited by law to burn leaves in households and composting is encouraged

- Bikes, public transportation (prices are accessible) electric cars are promoted as a clean means of transportation
- Import of cars older than 15 years is discouraged
- Law nr.1422 since 17.12.1997 Law on Air protection
- Sanitary rules (guidelines) on indoor air quality is under the development

#### Country specific health system response- proposed activities

- Creation of pass belts for crowded areas in order to streamline traffic and improve air quality
- Gradual transition to ecologic means of transportation by economically incentivizing citizens to buy electric cars
- Monitoring the air quality with the creation of a database that would include the maximum and minimum values at the control points

#### Multi-sectoral activities

- Republic of Moldova has a law on ambient air protection that stipulates the role of the Ministry of Health in this area
- At the moment the National Agency for Public Health collects and analyses the data on certain parameters: carbon dioxide, nitrogen oxide, soot, ozone, ammonia, PM total
- Collaboration with other ministries and sectors of the economy to implement policies preventing the air pollution
- Inclusion in the school curriculum of more topics on air quality protection with the role of educating children
- A closer collaboration with transportation and road traffic authorities to divert high weight vehicles from entering residential areas of towns and villages at working hours
- Collaboration with NGOs on intensification of usage transportation alternatives (bikes, public transportation)

#### Country gap analysis

- Problem: Lack of access to online real time data about air pollution specific to towns and villages (State Hydrometeorological Service provides data for the capital and a few other cities, as non-real time data)
- What needs to be done: Create an app to offer immediate access to accurate on-line data to the general population
- Raising awareness about what actions should be taken by any single citizen related to air pollution prevention (strengthening promotion of healthy environments)
- Stressing the importance of air quality for a healthy upbringing of children and youth
- Identified gap: Insufficient number of modern stations spread across the country to monitor air quality (including PM 2,5 and PM 10)

#### Proposal for the way forward in SEE

- Support in spreading awareness and country sharing experience based on case studies
- Providing access to expert consultation in case any issues arise.

## Montenegro

Borko Bajić presented the situation in Montenegro.

Annual mean levels of PM10 over the time has a decreasing trend at the presented data for four cities, but in Pljevlja and Nikšić are above national limit value of 40  $\mu\text{g}/\text{m}^3$  with the peak of 100  $\mu\text{g}/\text{m}^3$

Annual mean levels of PM2.5 have similar decreasing time trend, but in Pljevlja and Nikšić are also above national limit value of 20  $\mu\text{g}/\text{m}^3$

#### Burden of disease associated with air pollution

More than 250 premature deaths and 140 hospital admissions per year, and a number of other health outcomes are associated with the exposure exceeding level of particulate matter recommended by WHO air quality guidelines in Pljevlja, Nikšić and Podgorica. More than half of these effects are

associated with elevated levels of pollution in the winter caused mainly by combustion of solid fuels for heating.

Occurrence of health effects of air pollution in Pljevlja is more common than in the other cities, but absolute burden of pollution to health is similar in Podgorica and Niksic to that in Pljevlja.

Further studies are necessary to estimate exposure of urban population to traffic-related pollution and its health impacts

Country specific health system response:

- National Strategy for Air Quality Management with Action Plans set long term goals:
  - alignment of the national legal framework with EU law
  - improvement of air quality monitoring and reporting system
  - reduction of air pollution
  - integrating air protection policies into relevant sectoral policies
  - raising public awareness of the importance of air quality for human health
- Air Quality Plans prepared for the cities of Pljevlja, Nikšić and Podgorica
- National Strategy for Air Quality Management in Montenegro 2013 -2016 Action Plan imposed an obligation on the Institute of Public Health to conduct study on the impact of air pollution on human health at the local level
- In 2015 WHO was requested to assist in evaluation and quantification of these effects in Montenegro, and in particular in Podgorica, Pljevlja and Niksic.
- WHO expert Michal Krzyzanowski conducted an assessment in the framework of the Bi-annual Collaboration Agreement between Montenegro and the World Health Organization.

Proposed activities:

- Energy / economic sectors: revise energy policy to promote clean, sustainable energy sources and energy efficiency
- Local authorities: facilitate shift to clean energy sources for heating
- Households and communities: Eliminate/reduce pollutants emission from combustion of solid fuels (coal, wood) for residential heating. This requires increased energy efficiency through better insulation of homes; shift to cleaner fuels (gas, electricity) for heating and cooking and increased use of sustainable sources (solar, wind) for heat and electricity production.
- General public: replace polluting energy sources by clean options, increase energy efficiency of houses, support clean policies.
- Environmental authorities: monitor and enforce compliance with AQ standards.

Country specific health system response proposed activities:

- Specific recommendations for public health: Improve the assessment of health impacts of air pollution on health;
- Assure high quality data on population exposure to air pollutants;
- Assessment of the precision of population exposure to PM2.5 and PM10 based on the existing monitoring data in Pljevlja
- Development of other methods for population exposure assessment (including sensors, modelling)
- Maintain high quality monitoring of mortality and hospital morbidity (age and cause specific)
- Consider a time-series study (studies) on effects of air pollution on daily mortality in all larger cities of MNE.

Specific recommendations for Pljevlja:

- Radically reduce (or eliminate) emissions from Pljevlja thermal power plant. As a minimum, bring its emissions to compliance with the requirements set by the EU rules (currently: Directive 2010/75/EU)
- Eliminate coal & wood combustion by households (by provision of affordable central heating or other energy sources)
- Reduce pollution from mining activities (self-burning of coal in open pits, transport).

Country gap analysis

- Improve the assessment of health impacts of air pollution on health;

- Improve quality of data on population exposure to air pollutants;
- Development of other methods for population exposure assessment (including sensors, modelling)
- Quality data on mortality and hospital morbidity (age and cause specific);
- Daily mortality data in all larger cities for time-series study (studies) on effects of air pollution on health
- Lack of capacities in institutions, lack of collaboration on inter-sectorial level

## Republic of North Macedonia

Michail Kochubovski presented the situation in North Macedonia.

Annual mean levels of PM<sub>2.5</sub> for the period of 2012-2016 is set up at 45.9 µg/m<sup>3</sup> for North Macedonia with in particular high level in Tetovo set up average for this period at 81.7 µg/m<sup>3</sup>

Burden of diseases associated to air pollution

Estimated Years of life lost (YLL) due to the exposure to premature mortality caused by polluted air are 380.7 YLL per 100 000 of population for the population over 30 years of age for the year 2016.

Burden of diseases from all causes (without external causes of death) as YLL is highest in Tetovo, because of exposure to PM<sub>2.5</sub> (11.16/100,000). In Skopje's region is 4821/100,000 with national average value of 4426/100,000 population. If there are provided health and all other measures for eliminating of the air pollution, benefits will be enormous – number of saved healthy lives in Tetovo would be 8.289/100,000, in Skopje's region 1987/100,000 while in North Macedonia 1865/100,000 population.

Because there is a linear association between PM<sub>2.5</sub> concentrations and Mt from pulmonary carcinoma, highest number of YLL is in Tetovo 1784/100,000, then in Skopje and North Macedonia (627 и 490/100,000 population).

In Tetovo if are provided all measures for eliminating of the air pollution health benefits of saved healthy lives would be 5 times more on 100,000 populations (Tetovo 1376, Skopje 263 and North Macedonia 190).

Relating to the mortality from cardio-pulmonary diseases, assessed BoD is 9.282/100,000 population in Tetovo, while in Skopje 3.784 and in North Macedonia 3.315/100,000 population. Number of saved healthy lives would be 6965, 1568 and 1366 for Tetovo, Skopje and North Macedonia.

Country specific health system response

National experts performed a thorough analysis with the support of WHO and the team of international experts. This study provides very valuable data to be used by policy makers:

- In 2012, long-term exposure to PM<sub>2.5</sub> (49.2 µg/m<sup>3</sup>) caused an estimated 1199 premature deaths (CI95 % 821–1519).
- The social cost of the predicted premature mortality in 2012 due to air pollution was estimated at between 570 and 1470 million euros.
- Moreover, PM<sub>2.5</sub> was also estimated to be responsible for 547 hospital admissions (CI95% 104–977) from cardiovascular diseases, and 937 admissions (CI95% 937–1869) for respiratory disease that year.
- Reducing PM<sub>2.5</sub> levels to the EU limit (25 µg/m<sup>3</sup>) could have averted an estimated 45% of PM-attributable mortality, while achieving the WHO Air Quality Guidelines (10 µg/m<sup>3</sup>) could have averted an estimated 77% of PM-attributable mortality.
- Both scenarios would also attain significant reductions in attributable respiratory and cardiovascular hospital admissions.

Multi-sectoral activities in improving air quality

- In 2018 have been registered 517,023 vehicles in MKD - 294,735 are diesel, 218,554 petrol, 12,111 on natural gas and the rest on other (Ministry of Interior).
- In 2020 Ministry of Economy is planning to subsidize natural gas units in the vehicles, 250,000 Euros, (50% of costs for natural gas units, but no more than 300 Euros per vehicles. According to the calculations, this opportunity could be used for 900 vehicles on petrol, which are not produced in 2015 and after.
- Monitoring of the ambient air quality
- Strengthening of the capacities of the environmental inspectorates
- Raising public awareness
- Reducing of emissions from residential heating
- Urban green spaces
- Waste management
- Transport
- Industry
- Construction

#### Country gap analysis

The attainment of the European Union standards for PM can provide substantial health and economic benefits, but the attainment of WHO air quality guidelines levels can provide further benefits and should eventually constitute a policy goal. There is the urgency of implementation of measures to reduce emissions and, ultimately, exposure.

#### Proposals for the way forward in SEE

Even a limited assessment like the one featured in North Macedonia can provide useful evidence for policymaking. This is currently very relevant, as MKD continues to align its regulations with the EU acquis (EEA, 2015) on environmental issues and is in the process of implementing a National Environmental Health Action Plan to tackle the main environmental concerns in the country.

More research and local evaluations on the health and economic impacts of urban air pollution are needed, particularly in EU accession countries and other neighbouring countries in which the local evidence base on this topic is scarce.

## Romania

Angelica Marilena Voinoiu presented the situation in Romania.

Country estimate for PM<sub>2.5</sub> for 2016 was 15.4 µg/m<sup>3</sup> for urban areas.

#### Burden of disease

There is an estimate of 16 644 deaths in total for 2016 and 1658 DALYs attributable to air pollution per 100 000 of population. Percentage of population using polluting and unclean fuels is 86%. Household attributable burden of disease per 100 000 is 586 DALYs. 86% Of households has the access to clean energy sources.

#### Country specific health system response

Romania carries out some specific programs in order to assess the impact of air pollution on the health of the population:

- National program for monitoring the determinants of living and working environment for two determinants:
  - Air
  - Climate change – RESANMED (the first specific and new tool created at the national level, a computer system that includes data records on: disease cases that are caused by climate change)
- Additional epidemiological studies in the urban environment in case of exceedances of the pollutant concentration in the air. The studies are performed in Bucharest, Ploiești and Iași.

Proposal for the future health system activities:

- Continuous and punctual monitoring of health indicators in relation to air pollution
- Good collaboration with all the authorities involved in the national monitoring regarding ambient air pollutants in order to take specific measures for the protection of the population's health

Multi-sectoral activities

In Romania the regulatory authorities and decision makers in the field of assessment and management of ambient air quality throughout the country are:

- Central public authority for environmental protection (MMP)
- The National System of Integrated Evaluation and Management of Air Quality (SNEGICA)

According to the data, the system of monitoring the quality of the ambient air in Romania is realized through 148 automatic stations that are part of the National Network for Air Quality Monitoring.

Directive 208/50/EC was transposed into national legislation by the Law No. 104/2011 and by Government Decision No. 739/2016 which stipulates the allowed limit values for ambient air pollutants and approves the National Action Plan and the National Strategy on climate change and economic growth based on low carbon emissions for the period 2016-2020.

Country gap analysis

1. Real-time communication of air quality monitoring in the register ReSanMed - communication to the Ministry of Health and other authorities at national level
2. Monitoring of indicators - making decisions at national or local level following short and / or medium-term analyses.

Proposal of the way forward in SEE:

In 2018, the Court of Justice of the European Union was notified of six Member States regarding non-compliance with EU air quality standards, including Romania.

Our proposals aim at the collaboration between the Member States, the exchange of information and guides to good practice in order to reach the objectives of the European Parliament Resolution of 13 March 2019 on a Europe that protects: clean air for all (2018/2792 (RSP))

## Republic of Serbia

Ljiljana Jovanović presented the situation in the Republic of Serbia

Country estimate for PM<sub>2.5</sub> for 2016 was 25 µg/m<sup>3</sup> in urban areas.

Associated burden of diseases was 6592 deaths attributable to ambient air pollution, while crude rate per 100 000 capita is estimated to be 75 and age standardized rate is estimated to 39 per 100 000 capita.

76% of households has the access to clean energy sources.

Residential heating appliances emit 76% of the PM in Serbia (EMEP, 2018) and conventional stoves, the most inefficient wood-fuelled stove type, is most common in Serbia. A conversion to high-efficiency stoves would also greatly improve Serbia's air quality (resulting in a 64% reduction in pollutants).

Country specific health system response

Health system through National Public Health Institute and the network of Public Health Institutes is dealing with the air pollution problem jointly with the environmental sector, an effort being strongly supported by the WHO. As the result of this cooperation a joint publication: Health Impact of Ambient Air Pollution in Serbia (A call to action) was just published<sup>5</sup>.

This publication assesses the effects of air pollution on health in 11 major cities. The investigation collected data on air quality, the population and its health in 2010–2015. Levels of pollutants exceeding the values of the WHO air quality guidelines and the limits set by European Union legislation on air quality were recorded in several Serbian cities. The WHO AirQ+ software was used to calculate the

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<sup>5</sup> <http://www.euro.who.int/en/countries/serbia/publications/health-impact-of-ambient-air-pollution-in-serbia-a-call-to-action-2019>

proportion of deaths due to air pollution for the main Serbian cities. Exposure to PM<sub>2.5</sub> accounts for 3585 premature deaths per year in the 11 analysed cities, including 1796 in Belgrade. Over the next 10 years, 150 865 YLL due to air pollution are expected if current levels of air pollution persist. Of these, 75 261 YLL will occur in Belgrade.

Simulations of progressive reductions in current PM<sub>2.5</sub> concentrations point towards major health benefits from improving air quality in the country. The results of this analysis indicate the importance of a reliable monitoring of air quality and the need for interventions to reduce the burden of air pollution in Serbia.

During periodic extreme air pollution episodes (mainly during the winter time and heating season) in Belgrade and other urban settings, the experts from the Network of IPHs offer public health advice, using data from SEPA State network of automatic stations.

IPHs Network in addition to State network of automatic stations performs AQ monitoring within the Local Network of Stations & works together with other stakeholders on Local AP for monitoring AQ in order to provide more specific and locally tailored public health advices.

Multi-sectoral activities

Another joint inter-sectoral project activity is epidemiological study that was performed in cooperation with WHO at one of the most polluted cities in Serbia, Bor. Due to industrial activity (copper mine and smelter), by using SENTIERI method, cancer incidence and mortality data were analysed for the period 2000 – 2015 by using relevant data sources (National Cancer Register data and mortality data from National Statistical Service).

In this case, insufficient environmental data together with strong health data basis, indicates the need for further in-depth analysis of all potential sources (including air pollution) of human absorption of toxic chemicals in order to link it to health status of exposed population.

Health system proposed activities according to health in all policies approach, health sector needs to be involved in all aspects of policy development and issues linked to potential air pollution and its consequences, such as:

- Climate change mitigation and adaptation
- Environmental sustainability of the health sector facilities
- Waste management: potential instalment of incinerators, irregular municipal waste dump sites
- Health system has means and human resources within its IPHs Network to promote environmentally sustainable behaviour of the general population, with specific concern for vulnerable groups if AQ does not meet the standards

Country gap analysis

- Health system needs to upgrade itself in line with current IT/software achievements in the field of environment and health impact assessment
- This assignment needs “refreshment” of human resources, but the task is challenging as there is the prohibition for the employment of new employees in all public services
- Health system is not fully involved in the implementation of the Health in all policies approach and in the national implementation of 2030 Agenda
- Health system needs strengthening capacities in air quality health impact assessment both at local and at national levels, especially in transboundary air pollution matters
- There are NO by-laws regulating individual household burning of fossil fuels (for the fuel and for the emission performance of the stoves).

Proposal for the future SEE activities

Strengthening capacities through common project activities, in air pollution matters due to similarities in:

- Industrial and urban sources of air pollution
- Modes of exposure
- Socio-economic and demographic conditions

## Observer: Kosovo<sup>6\*</sup>

Antigona Ukëhaxhaj presented the situation in Kosovo\*.

Air quality is monitored by the network of 12 stations managed by the Hydrometeorological Institute, according to the national legislation harmonized with relevant EU Directive (2008/50/EU). Monitored components are SO<sub>2</sub>, O<sub>3</sub>, NO<sub>2</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub>.

The US Embassy in Pristina has also an operational monitoring station measuring PM<sub>2.5</sub>.

All data monitored by the network of 12 stations are presented in real time by Kosovo\* air quality application.

Estimates of burden of disease from household, industry and traffic were performed through the project activity supported by JICA and will be published in December 2019.

According to World Bank Report which is published in March 2019, it is estimated that about 760 people die prematurely every year in Kosovo\* as a result of ambient air pollution. About 53 % of all ischemic heart disease and 63% of strokes before attaining the age of 70 are also caused by polluted ambient air.

It is estimated that benefits of reduction of PM<sub>2.5</sub> by 5 µg/m<sup>3</sup> in Prishtina will save 53 lives every year.

Country specific health system response

- Kosovo is facing severe air pollution problems that are affecting the health of its citizens, especially vulnerable groups. In absence of concrete efforts by governmental institutions and industry to tackle the issue of pollution due to more urgent priorities and lack of funds, the international community has taken the lead.
- The Millennium Challenge Corporation Threshold Program Kosovo\* is a four-year project. The key aim of this project is to bring together knowledge, expertise and data on environment and health research and surveillance, and translate them into practical public health advice. Public education campaigns of the impact of air pollution on health (one public education campaign carried out every year).
- WHO, UNDP and UNV is implementing environmental health project with one of the main components dealing with air pollution, assessing its economic costs and providing appropriate public health advices through building the capacities of IPH.

Proposal for future activities

- Invest in the communication with the civil society, including the general public, media, NGO, active laymen, and the involved governmental organizations on open-sharing data, information, insights and understanding to better arrive at feasible and widely supported measures for improving environmental health conditions. Communication strategies will be supported by the insights and understanding from the field of environmental psychology.
- Tackling major health challenges of air pollution and burden of disease.
- Addressing environmental determinants of health by promoting multi and inter-sectoral policies taking care of health impact, inequalities and economic cost.
- The health national strategy policy for air quality and low on ambient air quality were adopted, but need to be enforced.
- Develop a long-term strategy for addressing environmental health challenges.

Multi-sectoral activities

- Discussions between the Ministry of Environment and the Ministry of Health were carried out concerning the role of health sector implementing the plan.
- NIPH strongly support the foreseen role of health sector and started capacity building actions even before the plan was approved by Government.
- WHO European Regional Office provided needed support and carried out two days practical training of AQ+ tool.

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<sup>6</sup> \* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

### Country gap analysis

- Health sector is involved in the implementation of the measures foreseen to achieve appropriate air pollution monitoring systems, but the results should be more accessible to all stakeholders.
- There is the need to raise public awareness of heating emissions impact on health, including health effects of solid fuel and waste used as fuel for individual heat production in stoves and boilers of family houses.
- Dissemination of such outcomes in society would significantly increase public awareness of the adverse health effects of air pollution, encourage themselves to contribute to the reduction of air pollution, for example by changing transport habits and using more non-motorized, public transport, more walking.
- Mitigation strategies that go beyond the control of combustion-related PMs must be implemented to reduce the health effects of PMs in urban areas.
- Environment Health Information System must be established in Kosovo in order to enable a proper Environmental Health Risk Assessment studies.
- HIA of ambient air pollution is focused mainly on long term impact, while public interest in short term effects is clearly expressed.

Proposals for the way forward in SEE: (However, important to be mentioned that Kosovo\* is not a signatory to any of the protocols, conventions or international agreements, related to air protection.)

- Despite great efforts that are made to incorporate and implement the international norms, primarily those of the EU in the legal framework, as well as on implementation this presents a huge limitation
- Develop regional approach to address trans- boundary air pollution.

## Observer: Turkey

Elif Tosun presented the situation in Turkey.

In Turkey, Air Quality Assessment and Management Regulation entered into force 06.06.2008

Air Quality Monitoring in Turkey is presented at the Web Site <http://www.havaizleme.gov.tr>

There are 330 air quality monitoring stations and 8 Clean Air Centers.

Mean annual concentrations of PM<sub>10</sub> are improving in the past decade, so mean annual concentration of PM<sub>10</sub> was 71.1 µg/m<sup>3</sup> in 2009 and 50.35 µg/m<sup>3</sup> on 2018. The same trend is seen in PM<sub>2.5</sub> with the mean annual level in 2009 of 28.44 µg/m<sup>3</sup> and 22.57 µg/m<sup>3</sup> in 2018.

Burden of disease

Using AirQ+, which is a software tool that demonstrates the relationship of air pollution developed by WHO, the predictions for the associated health effects have been put forward.

Air quality data is monitored to prevent/reduce the harmful effects of air pollution. This study includes assessment of PM<sub>10</sub> pollutant levels in 2016 measured through the Air Quality Monitoring Network.

In the study, the temporal change of PM<sub>10</sub> data measured between 2009-2018 was evaluated and the areas with high pollution were determined. In the study, the temporal change of PM<sub>10</sub> data measured between 2009-2018 was evaluated, the areas with high pollution were determined.

In the most polluted regions, attributable rates of health effects occurring in cases of long/short exposure to pollution by different exposure scenarios were determined according to 3 scenarios: current air pollution values; EU limit values and WHO Guideline recommendations.

Country estimate of burden of disease from ambient air pollution for 2016 is 39984 associated premature deaths.

Country estimate of burden of disease from ambient air pollution for 2016 is 342 premature deaths.

Country estimates for access to clean fuels (2000-2016) is showing steady increase in primary energy supply as well as in renewable energy supply.

Looking through a lens of achieving Sustainable Development Goals Turkey's 2030 goal is to achieve electricity generation by using 38,8% of all resources from renewable sources. Baseline is 32,4% of all resources from renewable sources in 2016.

Proposals for the way forward at the country level:

Improve the quality of life of citizens through the implementation and enforcement of the EU environmental acquis within the scope of ambient air quality.

- Multi-sectoral Health Responsibility Development Program
- Health Cost of Air Pollution Project
- Cityair Project
- Raising Awareness Activities etc.
- Promotion of clean energy
- Fossil alternative renewable resources
- Use of new and clean technologies
- Energy Efficiency

## Occupational health impacts of polluted air

Jovanka Bislimovska and Jordan Minov delivered the presentation on the "Air pollution and Workers Health: Breathe clean air: everywhere, for everyone -Protecting workers from air pollution".

Air pollution at the workplace can occur indoors in the work premises, or during work outdoors. The 13<sup>th</sup> WHO General Program of Work (2019–2023) states that "with respect to air pollution (incl. workplace air pollution) and climate change mitigation, WHO will scale up its work with different sectors – at the national and local level to monitor air quality, develop strategies for transitioning to healthier technologies and fuels and for ensuring that all populations breathe air that meets the standards of WHO's air quality guidelines."

In 2016, 91% of the world population were living in places where the WHO standards for air quality were not met.

Worldwide at least 1.2 billion workers work outdoors most of their work time (agricultural workers, street vendors and delivery workers, urban transport, traffic police, road repair, construction, waste collection etc.)

In addition to breathing polluted air they are exposed to other environmental risks (heat and cold, heavy rain, wind, other climatic conditions - solar UV and allergenic pollens). They are also exposed to a range of occupational hazards from the specific work activities (fumes, particles and fibres, toxic chemicals, noise, vibrations, manual handling of loads, awkward work posture, psychological harassment and accidents).

The exposed population is large and the conventional measures for engineering controls of workplace hazards, are not applicable to the outdoor environment.

Employers and workers may have little or no control over the sources of outdoor air pollution.

However, all workers, including those working outdoors, should enjoy the right to adequate working conditions and to the highest attainable standard of physical and mental health.

The ILO Conventions apply to all workers and in all workplaces, including outdoor workplaces

Protective measures are applied according to the principle "as far as reasonable practical"

- Reduction of exposure-reducing the working time outdoors
- Providing respiratory protection programs
- Medical surveillance of workers and health surveillance of working environment
- Reporting of cases of occupational diseases that can be caused by ambient air pollution among exposed workers

Well-established line of interventions:

- Elimination or substitution of the occupational hazard

- Engineering controls to reduce exposure (local and general ventilation and wet processes)
- Administrative controls (organization of work and rotation of workers, training of workers, use of PPE)
- Medical surveillance of exposed workers:
  - preventive medical check-ups during work
  - to identify any medical contraindication for work in ambient air pollution
  - to determine early health effects of the occupational exposure and to take preventive measures

Measures at national level

Well-established line of interventions:

- Elimination or substitution of the occupational hazard
  - Engineering controls to reduce exposure (local and general ventilation and wet processes)
  - Administrative controls (organization of work and rotation of workers, training of workers, use of PPE)
  - Medical surveillance of exposed workers:
    - preventive medical check-ups during work
    - to identify any medical contraindication for work in ambient air pollution
    - to determine early health effects of the occupational exposure and to take preventive measures.
- “Breathing clean air is not a privilege, but a basic human right for the thousands of people who are undertaking vital work outdoors” concluded the presenters.

## Cleaning the world’s air – governance, economic incentives and health sector leadership (Paris Agreement, SDGs, Ostrava Declaration)

In the continuation of the meeting, Elizabet Paunovic was presenting on the following topic: Actual environment and health approach is often narrow and only hazard focused. Currently, the experts have to deal with fragmented approach and divide social and environmental determinants. Risk is not fragmented. Health outcome should be the start. The WHO Regional Office for Europe estimated that the annual economic cost of premature deaths and diseases caused by air pollution in the European Region stood at US\$ 1.6 trillion in 2015. This, combined with the growing health impacts of other environmental factors and unsustainable production and consumption patterns, implies that the significance of these environmental factors is greater than previously thought and requires bolder political action to be effectively addressed.

Environment-related deaths and diseases are mostly preventable, and there is scientific evidence, policy instruments, tools and interventions to do so: health is a political choice. There is a wide range of international frameworks that aim to support and frame actions at the national level. UNEA Resolution from 2014 encourage governments to take cross-sectorial action to improve AQ, formulate action plans, implement AQ standards, establish emissions standards and share results/experiences of their efforts and encourage relevant actors to make AQ data more easily accessible and understandable to the public.

World Health Assembly Resolution from 2015 urge countries to act on 13 measures including: cross-sectorial policymaking, dialogue and cooperation, research and knowledge creation, management and sharing, monitoring and impact assessment.

UNECE Environment for Europe Ministerial declaration\_‘Greener, cleaner, smarter!’ with committing statements related to sustainable development, the environment, and air pollution and health Batumi Action for Cleaner Air is a list of concrete actions to be implemented by Governments or stakeholders (2016-2021), related to:

Establishment of monitoring activities, emissions inventories, and national action programmes; improvement of public awareness; capacity-building and technical support and policy.

This is the background that preceded the Sixth Ministerial Conference on Environment and Health held in Ostrava in the Czech Republic in June 2017. Ministerial Declaration, in addition to SDG framework, promoted common work in several priority areas and contained set of policy interventions in order to

improve the quality of environment and human health, through addressing of social determinants of health. The main points of action are the content of the Annex I of the Ministerial Declaration including actions related to air pollution and health:

- Develop, in line with the Batumi Action for Cleaner Air and World Health Assembly resolution WHA68.8, comprehensive national and local strategies
- Encourage the implementation of the UNECE Convention on Long-range Transboundary Air Pollution
- Develop and strengthen cross-sectoral and multi-stakeholder cooperation
- Ensure that public health and environment authorities take a leading role in raising public awareness
- Improve air quality monitoring
- Develop and/or strengthen a national emission inventory and monitoring system
- Provide training opportunities
- Reduce indoor air pollution
- Pay special attention to vulnerable populations
- Take into account the WHO air quality guidelines and indoor air quality guidelines in the policy-making process.

The New Urban Agenda (adopted by the Habitat 3 Conference in October 2016) recognises the critical role of cities in achieving sustainable development, reiterating the commitment to inter-linked social, economic and environmental principles, and rethinking the way we build, manage and live in cities.

The Paris Climate Agreement of 2015 reflects a changing landscape in international climate policy. It renews the emphasis on reducing greenhouse gas (GHG) emissions (mitigation) and on preparing for and managing current and projected consequences of a changing climate (adaptation). SDG 13 underlines that the task is being advanced under the UNFCCC in order to minimize the duplication of efforts and optimize finite resources.

The Paris climate agreement provides a critical opportunity to advance public health as a central element not only of the response to climate change, but of the overall 2030 Agenda for Sustainable Development.

The Member States of the WHO European Region have made very substantial commitments to reducing their GHG emissions by 43% by 2030, estimated in comparison with their baseline emissions in 1990. WHO EURO estimated health co-benefits of implementation of INDC in the Region. The preventable premature mortality from reduced air pollutant emissions in year 2030 could be 74 000 deaths. The economic cost of reduced health illnesses and mortality in 2030 is 277 billion US dollars if valuing avoided premature deaths. Put in another way, these results represent between 0.4% and 1.2% of the annual GDP of the 53 Member States of the WHO European Region.

These are only several existing international frameworks that are providing a solid basis for action in improving air quality.

## Air quality and health and the use of WHO decision support tools (AirQ+) and the others- preparatory steps for implementation

Elizabet Paunovic presented the supportive tools to be used in order to estimate burden of diseases caused by different aspects of air pollution in order to provide evidence based public health advice at different levels.

Air Quality Plus toll (AirQ+) is a software developed by WHO with the aim to produce estimates of the health impacts of air pollution that support decision-makers to develop appropriate actions to protect public health.

- AirQ+ WHO software calculates estimates of risks and their health impacts of air pollution
- For calculating estimates that support decision-makers to develop appropriate actions to protect public health
- AirQ+ is designed to calculate:

- How much of a particular health effect is attributable to selected air pollutants?
- Compared to the current scenario, what would be the change in health effects if air pollution levels changed in the future?

The following policy questions can be answered by the application of this tool:

- What is the public health burden associated with current levels of air pollution?
- What are the human health benefits associated with changing an air quality policy or applying a more stringent air quality standard?
- What are the human health impacts of emissions from specific sources? or selected economic sectors, and what are the benefits of policies related to them?
- What are the human health impacts of current policy or implemented action?
- What are the policy implications of the uncertainties of the assessment?

Another tool developed by WHO is The Carbon Reduction Benefits on Health (CaRBonH) calculation tool which allows quantification of the physical and economic consequences for human health achieved through improvements in country-level air quality from domestic carbon reductions, specifically policy mitigation actions and measures as reported in the NDCs submitted by the Conference of the Parties to the UNFCCC in support of the objectives as set out in Article 2 of the Convention.

Having in mind the fact that 30% of car journeys in Europe cover distances of less than 3 km; 50% cover less than 5 km. These distances can be covered within 15–20 minutes by bicycle or 30–50 minutes by brisk walking. The HEAT tool was developed by WHO (Health and economic assessment tool for cycling and walking). To facilitate evidence-based decision-making, WHO has developed, in collaboration with experts, an online tool to estimate the value of reduced mortality that results from regular walking or cycling. The health and economic assessment tool (HEAT) for cycling and walking is intended to be part of comprehensive cost–benefit analyses of transport interventions or infrastructure projects; complements existing tools for economic valuations of transport interventions, for example on emissions or congestion; can also be used to assess the current situation or past investment; is based on best available evidence, with parameters that can be adapted to fit specific situations. Default parameters are valid for the European context.

HEAT calculates the answer to the following question: if x people cycle or walk y distance on most days, what is the economic value of mortality rate improvements?

CHEST is WHO Clean Household Energy Solutions Toolkit to promote clean and safe interventions in the home. CHEST provides the tools for countries and programs to create or evaluate policies that expand clean household energy access and use. CHEST is an analytical framework that was created from expert input, and contains tools for assessment of the current state of household energy use, air pollution and health impacts.

CHEST facilitates the design of policies that promote the adoption of clean household energy at a local, programmatic, or national level.

The toolkit is intended to help health sector professionals and policy-makers implement the recommendations found in the WHO Guidelines on indoor air quality: household fuel combustion. CHEST provides resources to guide the energy planning process, using evidence from WHO databases and training materials.

Green Spaces Brief for Action: Green spaces and other nature-based solutions offer innovative approaches to increase the quality of urban settings, enhance local resilience and promote sustainable lifestyles, improving both the health and the well-being of urban residents. Parks, playgrounds or vegetation in public and private places are a central component of these approaches and can help to ensure that:

- urban residents have adequate opportunities for exposure to nature;
- urban biodiversity is maintained and protected;
- environmental hazards such as air pollution or noise are reduced;
- the impacts of extreme weather events (heatwaves, extreme rainfall or flooding) are mitigated;

- the quality of urban living is enhanced;
- the health and well-being of residents is improved.

## Discussions and Recommendations

Mihail Kochubovski moderated the Round table discussion in order to present and agree on the way forward and further common points for action. During the discussion the following points were mentioned as the challenges, but also enablers for future common actions:

- Estimates of mortality attributable to PM<sub>2.5</sub> exposure exceeding the WHO's AQG level in Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia are higher than for most EU Member States.
- Lignite power plants in North Macedonia, Bosnia and Herzegovina, Montenegro and Serbia are major sources of SO<sub>2</sub> in the region, while high concentrations of dust (particulate matter) are mostly attributed to plants in Kosovo, North Macedonia and Serbia.
- This serious situation requires special attention and cooperation between SEE countries in order to strengthen the capacities of the health sector to provide reliable health impact assessment data related to premature mortality and morbidity associated with the exposure to high levels of air pollution.
- Most of the countries share common challenge in lacking the reliable health statistics data that are necessary to be paired with air quality monitoring data in order to perform health impact assessment.
- The use of WHO AirQ+ tool and the training organized by WHO for SEE countries in 2018 in Sarajevo was very useful, but insufficient as only a one or two experts from each country attended the training, so there is the need to organize more trainings.
- Household air pollution data and associated morbidity need more attention as they are insufficient.
- In several countries AQ monitoring is insufficient and provided data can't be used for assessing health impacts (from the insufficient number of monitoring stations to the lack of functioning in some periods).
- Human resources need to be trained further in estimating health impacts of polluted air but also the number of existing personnel is insufficient.
- Awareness raising of general population must be one of the priorities in SEE countries.
- Sharing the examples of good practice between SEE countries is a must.
- More common actions in environmental health area through joint trainings, workshops, capacity building and awareness raising events, Webinars etc. are necessary.
- More common actions of SEEHN in environmental health area at several levels are needed: expert, political and Secretariat.
- Need for cooperation between epidemiologists and hygiene specialists as well as other multidisciplinary experts is necessary for fulfilling all the necessary roles of the health system in providing usable and reliable information for policy makers in all sectors.
- Need for cooperation not only in the area of air pollution and health, but also in climate change, chemical safety, waste management etc.
- That will significantly empower health systems to be reliable partners in the approach Health in all policies which is not well developed in the majority of the countries in SEE Region.
- Performing joint epidemiological studies on environmental health impacts including air pollution health effects is needed as the pollution does not stop at borders.
- European Environment and Health Process is a solid political platform that shapes the action in the whole WHO European Region, but SEE countries share common specificities related to air pollution and health which require more tailored actions.
- Educational role in terms of efforts to strengthen capacities of SEEHN should be foster and that will make things different.

## Conclusions

Closing remarks were provided by Dr. Mira Jovanovski Dašić. Dr Dasic highlighted the big common challenge in the entire SEE Region related to the air quality: higher in the urban areas, the winter period. Nevertheless, many aspects vary and have to be addressed according to each country's specificities. Air pollution is one of the biggest threats to health, and SEE Region can tackle this problem with joint actions.

The Sub-Regional Cooperation Strategy (SCS) SEEHN-WHO 2018-2023 has defined as objective Enhancement of the capacities of the SEEHN member countries to assess the health impacts of air pollution, therefore based on the programmatic framework this event could mark the kick-off to following more sustainable regional efforts targeted to policy solutions.

This meeting of experts on Reducing health impacts of polluted air- strengthening health systems and multi-sectoral response allowed to map and have detailed snapshot of the individual countries situations. Based on the above-mentioned information, there have been noticed common features which can be taken by the SEEHN for further SEE Regional actions:

1. Inter-sectoral actions are of key importance and have to be considered including to have present other sectors at the discussion table on environment issues. SEEHN along with policy makers have to concentrate, as well, to promote the HEALTH IN ALL POLICIES approach and involve other sector's stakeholders in all policies and strategies linked to potential air pollution and its consequences, such as Climate change, Environmental sustainability and Waste management.
2. SEEHN shall be used as regional platform to drive activities at the inter-country and South Eastern European level.
3. As Data are the key to informed based policies, the focus shall be on strengthening data collection and analysis, harmonization of country's reporting systems with international systems of disease classification.
4. Human capital is another core pillar that has to develop continuously and strengthen capacities of the health system experts.
5. Another crucial domain of action is to increase general population knowledge and awareness on how to protect during the especially high polluted days and on the other hand how individually they can reduce the pollution index of the household.
6. Health risk assessments and Health Impact Assessments are steps in order to advance and evaluate the state of art in each country. Scale-up the assessment of the impact of ambient air pollution on health using AirQ+ tool has to be considered for interested countries.
7. Support towards the development of national/regional strategies/action plans on indoor/outdoor air quality and the decrease of air pollution.
8. Support Regional epidemiological studies in environmental health issues (studies on pollution sources, biomonitoring, etc.)

Furthermore, in accordance with the expressed and mentioned proposals from the participants at the Round table, there are some proposals that might be taken forward in different formats, and individual countries, as following:

- Developing a permanent forum for inter-sectional know-how exchange on environmental health (in some countries exist, some does not have it);
- Strengthening the air quality monitoring network focusing on pollutants such as PM2.5, SO2, NOx, lead and other toxic substances;
- Reduction of coal consumption;

- Improve public awareness using real-time air quality, along with enhancing environmental and health culture of society, with a view to creating behavioural models that enable active participation in the environmental protection and healthy lifestyle processes;
- Improve air quality monitoring (outdoor and indoor) and more rigorous and responsible control over major polluters;
- Define research priorities and supporting epidemiological studies that allow for an objective assessment of the independent effect of ambient air pollution on health and the effectiveness of interventions in the polluting sectors;
- Air pollution monitoring regional system included VOC's and meteorological data.
- Establish a network of experts and improve data sharing, the exchange of information and guides to good practice in order to reach the objectives of the European Parliament Resolution of 13 March 2019 on a Europe that protects: clean air for all (2018/2792 (RSP));
- Common project development on in air pollution matters as: industrial and urban sources of air pollution, modes of exposure, socio-economic and demographic conditions;
- the health national strategy policy for air quality and low on ambient air quality were adopted, but need to be enforced.
- Develop a long-term strategy for addressing environmental health challenges in the SEE Region.

Finally, diseases and epidemics do not stop at national borders. Responsibility for healthcare improvement does not end there either. Regional approach and partnerships shall be used to advance our efforts and as it was mentioned ACTION is a key for the change of the situation. In conclusion, SEEHN will take further regional efforts and recommendations to boost activities and aim for better and cleaner air for all of us.

## Annex 1



MONTENEGRO

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Date: 29 October 2019  
ORIGINAL: ENGLISH

### SOUTH-EASTERN EUROPE HEALTH NETWORK

### REDUCING HEALTH IMPACTS OF POLLUTED AIR- STRENGTHENING HEALTH SYSTEMS AND MULTISECTORAL RESPONSE IN SEE COUNTRIES

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