SUMMARY* OF WHO 2nd GLOBAL CONFERENCE ON AIR POLLUTION AND HEALTH

"Accelerating action for clean air, clean energy access and climate change mitigation"

25-27March 2025*

Centro de Convenciones Cartagena de Indias, Cartagena, Colombia

*** with pre- and post conference sessions on 24 and 28 March**

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- **It contains the full programme and the description of the main themes of the sessions attended by Giovanni Viegi**

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March 24 (Pre-Conference Day)

9:30-11:00 Health advocacy for making the WHO air quality guidelines a breathable reality: Lessons learnt from European engagement

Vanessa Lopez (President HEAL): brief introduction.
Olga Villa Lopez Secretary of EU MEP Javi Lopez: ENVI role determinant for the new EU Ambient Air Quality Directive (AAQD). Goal: to reduce 55% of deaths from air pollution in 2030.
Brief story of the new EU AAQD. Movement for social justice. Contribution by HEAL which has advocated a lot. The next challenge is to adopt the new values by 2030.
(slides will be distributed afterwards)

Sophie Perroud-Akkerman (Senior policy coordinator, HEAL): new European air quality directive published on November 20, 2024, on Official EU Journal. 100+ Health groups call for full alignment with WHO AQG. 80+ organizations in 28 countries.
3 pillars: AAQQ Directive; National Emission reduction Commitments Directive; Source specific emission standards. She presents updated data from EEA and invites to consult the European Parliament Research Service (EPRS). She explains the European legislative process. The objective is "Zero pollution by 2050".
There has been a joint letter to EU environment ministers from health sector organizations.
There is a new coalition: EUHAC. Heals has delivered: +20 letters, +10 meetings, 3 webinars and events.
The Key messages are: Health impacts of air pollution; Economic costs of air pollution; Vulnerable groups; Highlighting inequalities; Cobenefits of actions; Solutions to air pollution and shareable experiences.
To involve all medical associations across Europe.

Dimitris Kontopidis (Chair of European Lung Foundation - ELF): He tells his story as Cystic Fibrosis patient (he is an architect, with a Master in Public Health). BREATHELIFE. Within Greece, air quality levels are worst in Athens; he has now moved to a Greek island, and his health has benefitted a lot. Doctors should prescribe living in an island for CF patients.

Pippa Powell (Director of ELF): Engaging with patients is important through: providing evidence based information, holding webinars and conferences, opportunities for discussion and debate. Patients are working with EUHAC on AAQD implementation. Healthy lungs for Life campaign. A personal story is a powerful tool that is hard to dismiss. The public feel more connected to people like them sharing their experiences. Spirometry and saturimeter tests will be performed on Wednesday and Thursday afternoon in the Parque del Centenario, in front of the Convention center (model of ERS spirometry tent).

Sara Bertucci (Policy Manger of European Public Health Alliance - EPHA): +40 members, founded in 1993, Belgium, focusing on legislative action to create healthy living ambients. Calling for science-based policy actions. Contributing to evidence base and strategic data dissemination. Leveraging alliances at key policy junctures. Same concepts as HEAL. A unified health voice with powerful narrative can make the difference.
Be early, bring data and be consistent. Putting pressure at different levels of governments. Shared lessons learned complement and amplify each other's effort.

Zorana Andersen (Chair, Environment and Health Committee, ERS): she presents the ERS effort story on this matter. ERS Advocacy on air pollution. Environment and Health Committee. Air

pollution and COVID. Publications and Editorials. WHO 2021 AQG: Launch Day Webinar. Clean air for healthy lungs. A joint ERS-ISEE statement to support adopting WHO AQG (+140 organizations). ERS/HEI Webinar on health effects of low pollution levels: ELAPSE. EU Clean Air Forum, November 2021, Madrid. Meeting with the EU Commission. Reaction to published proposal for new AAQD. Many meetings with HEAL and others. Clean Air in Europe for All, Bruxelles, May 2023. Sessions at ERS Congresses. How do we translate knowledge into policy.

Barbara Hoffmann (ERS Advocacy Council Chair): Value of science-to-policy translation and collaboration.
Other legislations in other sectors matter for AAQD: NERC, Clean Industrial deal. She quotes William Foege, Consequential Epidemiology, 1983: epidemiology is a tool to change the world. She also quotes Howard Frumkin, 9 principles of consequential epidemiology (including environmental epidemiology). There are 4 pillars of science-to-policy translation:

1. Produce the evidence (ask and answer policy relevant questions; synthesize evidence (WHO AQG, GBD Health Impact Assessment); present and explain what the results mean for political decisions.
2. Act as Multiplier (educate and empower health care professionals; build alliances; incorporate air pollution topic in clinical guidelines; transfer knowledge to new generations in medical curricula).
3. Advocate for clean air policies (position statements, conferences; engage with all relevant levels – supra national, national, local).
4. Co-create solutions (participatory research; interconnectedness - investigate and show benefits across seemingly different policies).

General discussion with the audience
Note: Giovanni Viegi has proposed international – national collaborations (webinars from HEAL) and more engagement of clinical societies.

12:00 – 13:30 International panel of mothers at the frontline of air pollution (Our Kid's Climate)

Panel discussion "Mothers for Clean Air – Voices from the frontlines of air pollution crisis". Participants: Susan Pacheco, USA, Pediatrician, Public Health Specialist & University of Texas Academic; Ana Badillo, Ecuador, Pacha Ayllu Co-founder; Bahvreen Kandhari, India, Warrior Moms Co-founder; Maya Mayler, UK, Our Kids' Climate, Co-Director; Rosamund Adoo-Kissi-Debrah, UK, Founder of the Ella Roberta Foundation & Global advocate for clean air; Xoli Fuyani, South Africa, Black Girls Rising Founding Director.

13:30 – 14:00 Clean Air Fund

Air pollution is the greatest external threat to public health globally. Clean air measures enable governments, donors and policy makers to maximize their resources and unlock health and climate benefits.
Here are some relevant publications and briefings:
- The State of Global Air Quality findings: Analysis of funding from international development donors to tackle air pollution;
- Philanthropic Foundation Funding for Clean Air: Analysis of philanthropic funding, including from health foundations;
- Tackling Black Carbon: How to unlock fast health, climate and clean air benefits;
- Real-world Solutions for Clean Air and Health: Case studies on engaging the health sector to drive clean air and climate action in cities;
- Plus more resources from our health partners.

Launch of the new report: "Tackling Black Carbon: How to unlock fast health, climate and clean air benefits", https://www.cleanairfund.org/resource/tackling-black-carbon-report/.

14:00 – 18:00 First global air quality cooperation network meeting

Presentation of participants

Samantha Pegoraro (WHO, Geneva) quotes the Call for Action signed by thousands of doctors.

Another WHO representative explains all the planned initiatives.

Health strategy theory of change -> 2026 clean air as a global health priority.

COP28 Health day & climate and health declaration.

WHO resolution 2024-> Global Plan of Action at 77th World Health Assembly, Geneva (CH), May 27 – June 1, 2024.

Group of friends of Clean Air for Health.

WHO Executive Board approved new Air Pollution Roadmap: to reduce air pollution's health impacts – with the ambitious global goal of cutting mortality attributable to human-produced sources by 50% by 2040.

Next events: 4th UN High Level meeting to prevent and control NCD on September 24, 2025 (https://www.who.int/teams/noncommunicable-diseases/on-the-road-to-2025); COP30 in South America, Bélem, Brazil, November 10-21, 2025 (https://unfccc.int/cop30).

Panel discussion of representative of different organizations, starting from ERS (B. Hoffmann).

Relevant SDGs.

Regional WHO meetings.

G20 will be hosted in South Africa: G20 Johannesburg Summit, from 22 to 23 November 2025.

To work for national action plans.

Influencing global finance institutions.

Lung function tests for awareness, even on policy makers.

All countries have to present their national plan on climate change action in 2025, to be integrated with the NCD action plans.

Example of Cracow: ban to carbon and wood.

Strategic environmental litigation in South Africa.

In India, advocacy through all medical specialties: to make a monthly clean air day.

Special session on superpollutants

Elisa Puzzolo (Lancet)

Superpollutants (Non-CO_2 climate forcers with significant impact on climate change).

Methane, BC, tropospheric O_3, HFCS, N_2O.

Super Pollutant Programme: >100 countries committed to overcome.

The case for action on tropospheric ozone.

Black Carbon contributes to ice melting.

18:30 – 20:30 Opening night reception

March 25 (Day 1)

09:00 – 09:30 Opening Plenary Session
Introduction
Gerry Eijkemans, Director of the Social and Environmental Determinants for Health Equity (DHE) Department, Pan American Health Organization (PAHO)
Opening Remarks
Jaime Hernan Urrego Rodriguez, Vice-Minister of Health, Colombia
Examples of Colombia activities against air pollution and climate change. Contrary to fracking. Support WHO.
Gina Tambini, Representative OPS/OMS Colombia
Jarbas Barbosa, Director PAHO-WHO
Maria Neira, Director of the Department of Public Health and Environment, WHO: Advancement regarding 1st conference of 2018, but still to work. Air pollution is killing us and causes diseases. Cartagena is magic: site of Gabriel Garcia Marquez "One Hundred Years of Solitude".
Folk music show.

09:30 – 11:00 Setting the scene: Aiming for SDGs and triple wins – air quality, climate change mitigation & health protection

Rosamund Adoo-Kissi-Debrah, Representative of The Ella Roberta Foundation: Rosemund is the mother of the asthmatic child killed by air pollution in London in 2013 at the age of 9, first condemnation by a judge to the Authorities.

Arvind Kumar, Indian surgeon, Founder of Lung care foundation, India: shows figures of polluted lungs in children and presents a case of a non-smoking 26 yr old female, without family history, who lived in a high pollution area all her life and died of lung cancer; her only risk factor: the air she breathed. Dr. Kumar also presented the change in Lung Cancer demographics in India in 36 years:
- 1998, main risk factor was smoking; 90% of lung cancer in smokers, 10% in non-smokers; average age 50-60yr; almost no women; colour of lungs: pink in non-smokers, black in smokers.
- 2024, main risk factor is air pollution; 50% of lung cancer in smokers, 50% in non-smokers; average age 40-50yr (10%, 30s); 40% women; colour of lungs: black in smokers and non-smokers.
He finally presents "Doctors for clean air and climate action", a network of passionate & informed doctors leading the fight for clean air & climate action.

Fany Kuiru Castro, Coordinadora de las Organizacion Indigenas de la Cuenca Amazonica (COICA) (la Organizacion Indigena mas grande do mundo): Amazonia para la vida y vida para la Amazonia. She speaks of the environmental risks for the Amazonia natives (gas flame solid) in Ecuador.

Elvis Ndikum Achiri, Cofounder and President, Global Youth Strategy on Air Pollution and Climate Health, Camerun: Asthma and air pollution, referring to the data of Global Asthma Network (GAN).

Kalpana Balakishnan, Director, WHO Collaborative Center, India: household indoor air pollution.

Jaime Hernan Urrego Rodriguez, Vice-Minister of Health, Colombia: Conclusion.

Two students from Colombia: clean air advocates. Clean air is a human right
Over 47 million voices from the health community are calling for urgent action.
Awareness. Teaching to medical students. Advocacy.

Maria Neira and Heather Adair-Rohani (Technical officer & Acting Unit Head Air quality, Energy and Health):
presentation of demonstration slides. The science is as clear as our skies should be. Sources of air pollution are all around us. In 2023, 99.9% of the world's population is exposed to unhealthy air. Over 2 billion people are exposed to household air pollution every day due to the lack of access to clean cooking in the home.
Air pollution among the top 10 global health risk factors in 2021: deaths – 1st high blood pressure, 2nd particulate matter; DALYs - 1st particulate matter, 2nd high blood pressure. Air pollution is a leading risk factor for both mortality and morbidity worldwide, comparable or worse than other major risk factors such as high blood pressure, smoking and BMI. Disproportionally harms low- and middle-income countries – 90% of air pollution related deaths occur in LMICs.
Air pollution – The silent risk: every year, around 7 million deaths are due to exposure to both outdoor and household air pollution.
Air pollution, mainly arising from inefficient energy use, is a major environmental risk to health.
By reducing air pollution levels, countries can reduce: stroke; heart disease; lung cancer, chronic obstructive pulmonary disease, pneumonia and asthma.
Air pollution impacts organ system across the body: lung/respiratory system, brain, heart, pancreas, liver, kidney, blood vessels/veins, bones, skin, reproductive male and female systems.
The big picture in data: Air pollution kills around 7 million people every year; >9 out of 10 people live in areas where air pollution is exceeding WHO global air quality guidelines; 2.1 billion people still rely on polluting energy for cooking, being exposed to harmful air pollution; ¼ of global deaths are associated with environmental risk factors.
Common drivers of climate change and air pollution: two-thirds of outdoor air pollution emissions are generated by fossil fuel combustion (Karagulian et al, 2015; IPCC, 2014).
8.1 trillion USD: global health costs from $PM_{2.5}$ in 2019, representing 6.1% of the global gross domestic product (GPD).
Air pollution and noncommunicable diseases (NCD):
- 5 main NCD risks: Unhealthy diet; Tobacco use; Air pollution; Harmful use of alcohol; Physical inactivity.
- 5 main NCDs: Cardiovascular diseases; Chronic respiratory diseases; Cancer; Diabetes; Mental health conditions.
What is the health sector response?
WHO efforts and timeline: WHO consolidates evidence and strengthens the capacity of the health and other sectors to take action to protect public health from air pollution:
- WHO's first report on air pollution & health (1958)
- Long-range transboundary air pollution convention (1979)
- 1st WHO guidelines published (1987)
- Sustainable Development Gooals (SDGs) indicators on air pollution & health (2015)
- 1st Global conference on air pollution (2018)
- Most recent version of air quality guidelines published (2021)
- Revised air pollution roadmap WHA78 (2025).
WHO's action for clean air for public health:
- Institutional capacity building & technical support
- Knowledge, evidence & Measuring progress
- Leadership & coordination.
Environmental Health Pathway: Health impact assessment on sectoral interventions – Sources of emissions – Concentration – Exposure – Dose – Health effects.
WHO Air Quality Guidelines: 1987; 2000; 2006; 2016->2021;
- Robust public health recommendations
- Support informed decision-making
- Intended for worldwide use

- Comprehensive assessment of the evidence.
Monitoring exposure and health impacts from air pollution – Leveraging experts and collaboration across the UN for the SDGs:
- SDG3. Good health and well-being: SDG 3.9.1 Mortality from air pollution
- SDG11. Sustainable cities and communities: SDG 11.6.2 Air quality
- SDG7 Affordable and clean energy: SDG 7.1.2 Household energy access.
Air quality standards aligned with WHO Air Quality Guidelines – Inequity across income groups: 14% Low middle income; 36% Lower middle income; 42% Upper middle income; 76% High income.
Air pollution and Health Training Toolkit for public health workers: Learn, communicate and drive change for clean air and better health for all (https://www.who.int/tools/air-pollution-and-health-training-toolkit-for-health-workers).
WHO tools for Health Impact Assessment:
- AirQ+ (Software tool for health risk assessment of air pollution)
- BAR HAP (Benefits of Action to Reduce Household Air Pollution tool)
- CLIMAQ-H (Climate change Mitigation, Air Quality and Health)
- HEAT (Health Economic Assessment Tool for walking and cycling)
- GreenUR (Green Urban spaces and health tool)
- SUSTRAQ-H (Sustainable Transportation, Air Quality and Health assessment tool)
These tools can be applied in various areas of environment and health: green spaces; active mobility; transport; air pollution.
Preventing diseases through multi-sector engagement: Leverage public health evidence and arguments to influence policy actions to reduce air pollution in the transport, agriculture, energy, industry and waste management sectors.
Tools and resources: health impact assessments across sectors; inform the development of regulatory frameworks; support planning and implementations of interventions; methods for monitoring and evaluation of policies. Training stakeholders on health impact across sectors. Early warning systems.
WHO outreach on air pollution, energy and health:
- Raise Awareness: inform the public, policymakers, and health workers about air pollution, energy access gaps, and health risks.
- Drive Action: Present health, climate economic arguments to push for policies reducing air pollution and expanding energy access.
- Monitor & Engage: Use media and tracking to assess progress and refine strategies.
Let's work together to make this a world with clean healthy air for all!
Can you pledge to help reduce the health impacts from air pollution by 50% by 2040?
The time to act is now!

11:00 – 11:30 BREAK

11:30 – 13:00 Clean air for a healthy and equitable future

Francesco Forastiere, National Research Council (CNR) IFT, Palermo, and Imperial College, London, "Health effects of air pollution":
he starts remembering the pioneering article of Doll and Bradford Hill on mortality of doctors in relation to their smoking habit (Br Med J, 1954) and the current knowledge about the fact that smoking can damage every part of the body, as it is the case of air pollution (Thurston GD et al, A joint ERS/ATS policy statement: what constitutes an adverse health effect of air pollution? An analytical framework, Eur Respir J 2017; 49: 1600419). Then, he remembers the sources of outdoor and indoor pollution. According to GBD 2021, 8.1 million total deaths are due to air pollution, which is the second largest risk factor of deaths after blood pressure; countries in South Asia and Africa face the highest burden; in children under 5 years, there are 709,000 total deaths due to air pollution.

According to the report "State of Global Air, 2024", the percentages of global deaths from specific causes attributable to total air pollution in 2021 are: 48% for COPD, 28% for ischemic heart disease, 27% for stroke, 19% for lung cancer, 18% for type II diabetes. On December 1952, during the London smog episode, caused by smoke from factory and house chimneys, over 4000 deaths were attributed to smog at that time, whilst more recent evidence estimate over 12000 deaths. Subsequently, there was a combination of large epidemiological studies and toxicological investigations, which brought to the publication in 2021 of the WHO global air quality guidelines, that aim to save millions of lives from air pollution. Then, he quotes a study showing a combined effect of high fat diet and $PM_{2.5}$ air pollution on the development of atherosclerosis in mice (Sun et al, JAMA 2005; 294: 3003-3010) and a study showing development of myocardial ischemia during 15-minute intervals of exercise-induced stress and exposure to diesel exhaust or filtered air in 20 men with coronary heart disease (Mills NL et al, NEJM 2007).

Then, he shows the pathway of particles from inhalation to all organs: with each inhalation, we breathe in millions of particles; inhaled particles travel through the respiratory tract; larger ones (>10μm) are trapped in the nose and throat, smaller ones (2.5–10μm) reach the bronchi, and fine particles (<2.5μm) penetrate deep into the alveoli; ultrafine particles (<0.1μm) can enter the bloodstream. Inhaled particles can cause oxidative stress, inflammation and carcinogenic effect on the lung. Through the transfer of inflammatory mediators and particle components in blood stream and organs, there are short- and long-term effects on nearly all organ systems (*Image Source: http://www.reimaginegas.com/?p=2483*). In the article "Ambient particulate air pollution and daily mortality in 652 cities", published on NEJM 2019, Liu C et al show that there is no threshold in the relationship between PM2.5 concentration and percentage difference in mortality. Then, Forastiere quotes the «low-level» Health Effect Institute (HEI)-funded cohort studies: Canadian MAPLE study (about 7 million persons; mean $PM_{2.5}$ exposure 8 $\mu g/m^3$), US Medicare study (about 69 millions; mean $PM_{2.5}$ exposure 10 $\mu g/m^3$), European ELAPSE study (about 28 millions; mean $PM_{2.5}$ exposure 15 $\mu g/m^3$) (Boogard et al, 2024): all these studies show a continuous relationship of $PM_{2.5}$ concentration with hazard ratio of all-cause or non-accidental mortality, even at very low concentrations of air pollution. Then, he lists causality determinations on long-term effects of air pollutants ($PM_{2.5}$, NO_2, O_3) from the US-EPA Integrated Science Assessments: e.g. *likely*, either for respiratory effects for all pollutants or for neurological effects or for cancer for $PM_{2.5}$ exposure; *causal*, for cardiovascular disease and mortality for PM2.5 exposure. To be remembered that, according to IARC 2013, $PM_{2.5}$ and PM_{10} exposures are carcinogenic to humans (Group 1). Then, he refers to the article "Choices of morbidity outcomes and concentration-response functions for health risk assessment of long-term exposure to air pollution" (Forastiere F et al, Environ Epidemiol 2024 Jun 25;8(4):e314), aimed at compiling, from the existing systematic reviews and meta-analyses, concentration-response functions (CRFs) for the incidence of several diseases that could be applied in health risk assessment (HRA). In the final evaluation, list A includes six CRFs for $PM_{2.5}$ (asthma in children, chronic obstructive pulmonary disease, ischemic heart disease events, stroke, hypertension, and lung cancer) and three outcomes for NO_2 (asthma in children and in adults, and acute lower respiratory infections in children). Three additional outcomes (diabetes, dementia, and autism spectrum disorders) for $PM_{2.5}$ are included in list B+. No specific suggestions are given for ozone because of the lack of relevant systematic reviews. Furthermore, he quotes Yuan et al, 2019, who showed a risk increase of 16% for stroke per 10 $\mu g/m^3$ $PM_{2.5}$ exposure (*https://www.freepik.com/free-photos-vectors/cerebrovascular%20stroke*). At last, Forastiere states that Air Pollution Harms Everyone, But Some Are at Greater Risk: Babies and children; Pregnant women; Elderly; Chronic disease patients, e.g. patients with Asthma, COPD, IHD, Heart failure, Diabetes, Cancer…; People with lower socioeconomic status (more likely to live in air pollution hotspots areas, poorer access to health care, poorer lifestyle, etc.). There is an interaction between

susceptibility (innate or acquired physical predisposition that increases the relative risk of experiencing health effects of air pollution exposure) and *vulnerability* (increased exposure to air pollution due to external factors). In conclusion, air pollution is the most significant external threat to human life expectancy on the planet; everybody is affected, but young and elderly patients are especially vulnerable; to protect the population, limit values should be aligned with health-based recommendations by WHO; it is important to act now to prevent and reduce lifelong effects!

Hongbin Shen, National Health Commission, National Disease Control and Prevention Administration, Chinese Center for Disease Control and Prevention, People's Republic of China, "China's successful fight against air pollution over the past Decade":
comparing data of 2024 vs 2013, "China blue" is becoming the new normal: e.g. 87 vs 61% days with good air quality nationwide; 290 vs 176 days with good air quality and 2 vs 58 days with heavy air pollution in Beijing. There have been simultaneous achievements of improved air quality and steady economic growth (green development): GDP 135 vs 60 trillion CNY (+74.5 trillion CNY) and $PM_{2.5}$ 29 vs 72 $\mu g/m^3$ (-43 $\mu g/m^3$, i.e. -60%).
China's experience: clean air actions through national strategic planning, technological innovation support, pollution source control, health risk prevention and control. China has adhered to the strategy of prioritizing health development, guided by ecological civilization construction. Through the implementation of these policies, China has integrated the construction of a Beautiful China with the goal of a Healthy China.
Scientific and technological innovation support - Multi-channel to strengthen air health research and development investment. Chinese government has invested over 100 billion RMB to strengthen research and development across the entire chain: Pollution causes -> Formation mechanisms -> Health impacts -> Emission reduction technologies -> Governance solutions.
Pollution source control – Accelerating energy structure transformation: through controlling traditional energy consumption and promoting the transformation to clean energy: by 2024, the share of coal energy consumption has continued declining and has reached 53.2%, whilst the share of clean energy consumption has continued to increase and has reached 28.6%.
Health risk prevention and control – Strengthen national air and health monitoring networks: by 2025, over 2000 monitoring points covering 6 pollutants and 167 monitoring points for health outcome monitoring and literacy.
Health risk prevention and control – Developing innovative health protection technologies: the National Disease Control and Prevention Administration has issued 4 major public protection guidelines nationwide, providing individual-level behavioural guidance for protection from air pollution and climate change, covering key populations; health risk forecasting and early warnings are now operational in disease control centers in 27 cities, benefitting 180 million people. Clean air actions avoided 563000 premature deaths.
Health risk prevention and control – Promote whole-of-society participation in co-construction: Public participation in building a healthy environment; Children's painting exhibition: air pollution and health from the perspective of Chinese primary and secondary school students.
New challenge from further improvement of air quality: by 2024, with an average $PM_{2.5}$ concentration of 29 $\mu g/m^3$, China has overcome the 35 $\mu g/m^3$ WHO IT-1 and is close to the 25 $\mu g/m^3$ WHO IT-2. However, great effort is needed to attain the WHO guideline value of 5 $\mu g/m^3$.
New challenges from new pollutants: so far, more attention has been paid to traditional air pollutants ($PM_{2.5}$, PM_{10}, NO_2, O_3, SO_2, CO) and less attention to new pollutants (VOCs, POPs, Bioaerosols). The continuous emergence of new pollutants, combined with traditional air pollutants, has exacerbated health risks.
New challenge from climate change: Heat-Ozone compound exposure is 26-fold of the average level in 1995-2014, under SSP3-7 in 2080s, respectively; Wildfire risk may be amplified under climate warming, with more length of fire season and additional people exposed (with medium and high confidence); Sand and dust storm (SDS) emissions may increase significantly under climate change,

compared to 2015-2024, under climate warming scenarios in 2091-2100 (Data source: Ban et al, 2022; IPPC AR6 2021; WMO Airborne Dust Bulletin 2023).
Clean, healthy air is a shared global target: as WHO states, 99% of the world's population lives in places with unhealthy levels of $PM_{2.5}$ pollution. As a big and responsible nation, China will actively respond to WHO air pollution control initiatives (Data source: Health Effect Institute. 2024. State of Global Air 2024. Available: www.stateofglobalair.org; Global Burden of Disease Study 2021. IHME, 2024).
China strategies:
- Healthy China: healthy environment promotion; climate change health adaptation.
- Beautiful China: sustained air quality improvement; large-scale land afforestation.
- Dual carbon: green and low carbon approaches: peak CO2 emissions before 2030.
China actions:
- Improve national standards: construct a health-oriented air quality standards system.
- Capability construction: promote capabilities on monitoring- early warning - emergency response - public health intervention.
- Technology development: build up health protection system coping with air pollution based on artificial intelligence.
- Global collaboration: promote global collaboration in the field of air, climate change and health.
Achievement of the goals of Healthy China, Beautiful China and Carbon Neutrality:
- 2030 Healthy China: Life expectancy reaches 79 years; Significantly increase the average healthy life expectancy; Health literacy rate reaches 25% and higher.
- 2050 Beautiful China: A comprehensive formation of green development modes and life style; Deep decarbonization in key fields; Healthy and beautiful ecological environment.
- 2060 Carbon Neutrality: Increase the share of non- fossil fuels in primary energy consumption to 80% and higher; Achieve carbon neutrality.
In conclusion, China is willing to share clean air action experience with the world and build a community with a shared future for mankind.

Cafè style conversation:
Ronald Law, Director, Health and Climate Change Office, Department of Health, Philippines
Poornima Prabhakaran, Chair of Air pollution and Climate Change Expert Group, World Hearth Federation
Mary B. Rice, Associate professor, Harward T. H. Chan School of public Health
Katia Dain, Chief Executive Officer, NCD Alliance
Description of their own experiences on air pollution and health.

Astrid Puentes Riaño, UN Special Rapporteur for the Human Right to a clean, healthy & sustainable environment.
Mother, lawyer.
https://www.ohchr.org/en/special-procedures/sr-environment
Email: ohchr-InfoDesk@un.org
Email: hrc-sr-environment@un.org
Elements of the Human Right to a Healthy Environment:
- Procedural Elements (& Human Rights): Access to information; Public participation; Access to justice.
- Substancial Elements: Clean air; Safe climate; Safe and sufficient water; Healthy and sustainable food; Non-toxic environments; Healthy ecosystems and biodiversity.
50 years process to achieve UN recognition: 1972, Stockholm declaration -> since 1970s, national jurisdiction (Today: 164 Constitutions and legislations recognize the right) -> 1980's, African and Inter-American Systems -> 1992, Rio declaration -> 2004, Arab chart -> 2012, ASEAN (mentions it)

-> 2021, UN Human Rights Council recognizes the right: Resolution 48/13 -> 2022, finally UN General Assembly approves Resolution 76/300 recognizing the right.
Report from UN Special rapporteur on breathing CLEAN AIR (A/HRC/40/55, 2019): UN General Assembly, 8 Jan. 2019, Human Right Council, 40th session, 25 February – 22 March 2019, Agenda item 3, "Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the rights to development" – Issue of human rights obligations relating to enjoyment of a safe, clean, healthy and sustainable environment – Report of the Special Rapporteur, which focuses on the right to breathe clean air is one of its components and describes the negative impact of air pollution on the enjoyment of many human rights, in particular the right to life and the right to health, in particular by vulnerable groups.
Overview Report on the human right to a healthy environment (A/79/270, 2024): UN General Assembly, 2 Aug. 2024, 79th session, item 71 (b) of the provisional agenda, "Promotion and protection of human rights: human rights questions, including alternative approaches for improving the effective enjoyment of human rights and fundamental freedoms"; Note by the secretary General "Overview of the implementation of the human right to a clean, healthy and sustainable environment".
Cites two examples of European court sentences against Italy and Spain.
Main challenges:
1. Economic model and unsustainable development
2. Current and worsening consequences of the triple planetary crises
3. Weak rule of law
4. Weakening of existing policies, legal frameworks and institutions
5. Limitations to access to information, participation and justice
6. War, conflict and illegal activities
7. Increased risks for environmental human rights defenders and closing of civil spaces.

Identified key solutions to address these challenges:
- Transform the economy
- Advance the legal recognition of the right to a healthy environment
- Implementing existing frameworks and strengthening the rule of law
- Reviewing and updating frameworks with the human right to a healthy environment at the centre
- Intersectional approach.

State Obligations: respect, protect and fulfil human rights
- Prevent, control and reduce harms, from public and private actors:
    1. Establish air quality legislation, regulations and standards
    2. Monitor air quality and health effects
    3. Assess sources of air pollution
    4. Public report on air quality
    5. Having air quality action plans
    6. Implementing and enforce air quality rules (laws and regulations).
- Procedural:
    1. Access to information
    2. Public participation
    3. Access to Justice, including effective remedy
    - Considering obligations to:
      * Provide special protection to marginalized population
      * Equity and non-discrimination.

Panel discussion

Bhavreen Kandhari, Co-Founder, Warrior Moms, India
Eliane Ignotti, Coordinator, Environmental Health Surveillance, Ministry of Health, Brazil

Astrid Puentes Riaño, UN Special Rapporteur for the HR to a clean, healthy & sustainable environment
Discussion on the morning themes on air pollution and health.

13:00 – 14:00 LUNCH

13:00 – 14:15 Lunch event: Air quality monitoring networks and low-cost sensors
13:00 – 14:15 Lunch event: Global flagship report on air pollution
14:30 – 16:00 Noncommunicable diseases from air pollution exposure & policy actions
14:30 – 16:00 Heat and wildfires: At the nexus of climate change, air pollution and health

14:30 – 16:00 Healthy indoor spaces: Improving indoor air quality to protect our health

Junfeng Zhang Chinese professor at Duke University, Durham (NC), USA
Indoor concentration to outdoor concentration (I/O) ratio (in the absence of indoor sources and absence of filtration) varies with windows closed vs open: 0.7 and 1 for $PM_{2.5}$; 0.2 and 0.7 for O_3; 0.8 and 1 for NO_2.
Heating Ventilation and Air Conditioning (HVAC) systems vs natural ventilation.
Portable HEPA purifiers: improved asthma symptoms, reduced medication, reduced FeNO (children). In adults, improvement of vascular functions.
Need implementation science research.
O_3 loss indoors (I/O 0.2-0.7) = Outdoor – Indoor equal about k*O_3 reaction products -> associated with 8 biomarkers of deep lung and cardiovascular effects.
Reducing ozone sources -> air purification technologies.

Lidia Morawska, Professor and Director, International Laboratory for Air Quality and Health; Co-Director for Australia, Australia-China Centre for Air Quality Science and Management, Queensland University of Technology (QUT) in Brisbane, Queensland, Australia:
Different indoor microenvironments – different exposures.
AQG WHO 2011 should be valid also for indoor.
Attributable burden of disease (BOD) due to indoor exposure in 2010 in EU-26: for COPD, it is higher from outdoor sources, whilst for asthma it is almost equal from outdoor and indoor sources (Askainen et al, Environmental Health 2016; 15: 61-72).
Impact of indoor air pollution: a global comparison. It reports data of DALYs for: China, 2004 and 2010; USA, 2010; France, Germany and Italy, 2004 (Morawska L, Science Bulletin 2024; 69(9): 1161-64) (Liu et al, Lancet Planetary Health 2023; 7: e900-e911).
Impacts of respiratory infection transmission: every year acute respiratory illnesses, such as colds and influenza, cause about 18 billion upper airway infections and 340 million lower respiratory infections. Cost of COVID: $1 trillion (monthly); Cost of other transmissions in USA: $50 billion (annual); Cost of respiratory infections in Australia: $ 1.6 billion (annual).
Morawska L et al, "Mandating indoor air quality for public buildings – If some countries lead by example, standards may increasingly become normalized", Science 2024; 383: 6690.

Giorgio Buonanno, University of Cassino and Lazio Meridionale, Italy
Airborne particle dynamics in indoor environments depend on various factors:
Outdoors - Infiltration/Ventilation; Exfiltration; Cleaning; Filtration.
Indoors – Process & Activities; Emission sources; Deposition; Resuspension.
Morawska L et al, Indoor aerosols: From personal exposure to risk assessment, Indoor Air 2013; 23(6): 462-487.
Indoor (CO_2) vs outdoor (particles) sources: Stabile L et al, The effect of the ventilation retrofit in a school on CO_2, airborne particles, and energy consumption, Building and Environment 2019; 156: 1-11.

Benefits of mechanical ventilation system (MVS) on pollution.
Buonanno G et al, "Increasing ventilation reduces SARS-CoV-2 airborne transmission in school: A retrospective cohort study in Italy's Marche region", Front Public Health 2022; 10: 1087087->
The government of Central Italy's Marche region on March 2021 launched a 9 million€ call to fund the installation of MVSs in classrooms to prevent the airborne transmission of SARS-CoV-2 and limit the adoption of distance learning solutions. There were a total of 10441 classrooms with an average occupancy of 20 students per classroom. 10125 classrooms relied on natural ventilation (i.e. ventilation due to the leakages of the building and to the manual opening of the windows), while 316 were equipped with MVSs. The maximum (nominal) air flow rates of the MVSs installed in the different classrooms ranged between 100 to 1000 $m^3 h^{-1}$ (with 25th, 50th, and 75th percentiles equal to 360, 600 and 800 $m^3 h^{-1}$, respectively) resulting in a ventilation rate per person between 1.4 and 14 L s^{-1} $student^{-1}$. In order to stratify the analyses, the Authors have also introduced two sub-cohorts: i) the sub-cohort 1 represents the classrooms with MVSs characterized by a ventilation rate per person between 1.4 and 10 L s^{-1} $student^{-1}$; ii) the sub-cohort 2 includes classrooms with a ventilation rate per person >10 L s^{-1} $student^{-1}$ and up to 14 L s^{-1} $student^{-1}$, which could represent a health-based ventilation to protect from airborne transmission.
With respect to the classrooms with no mechanical ventilation, the two sub-cohorts with MVSs had reduced relative risk of infection: about 0.3 for sub-cohort 1 and about 0.2 for sub-cohort 2.
The agreement between the results obtained from the retrospective cohort study and values calculated through the predictive represents a validation of the approach through a retrospective study.
Such validations confirm the possibility of extending the use of the approach, once the scenario has been defined, to any indoor environment of interest in addition to school classrooms and providing predictive estimates of the effectiveness of the ventilation for different exposure scenarios and variants of concern.
The study represents a Halley's comet because there were simultaneous (i) waves of infections (Delta and Omicron); (ii) different levels of ventilation in school classrooms; and (iii) monitoring of infections.
On 6-7 May 2025, Gaeta Castle, there will be the 6th Workplace & Indoor Aerosols Conference.

Panel discussion:
Zhang, Rice, Morawska, Bonanno, Shi Xiaoming (deputy DG, China CC)
WHO AGG, China standards. National Academies, Consensus Study report, Why indoor chemistry matters: top down vs bottom up approach; bioassays. No country has mandated indoor air quality standards.
Decide what can be realistically measured indoors according to the different ambients. Both HVAC and air purifiers are efficient.
China experience on indoor control. Healthy China 2030 -> preventing indoor pollution. Standards for IAQ vs construction and decoration. Physical, chemical, biological, radiative indicators.
Improvement in IAQ and health gains.

16:00 – 16:30 BREAK

16:30 – 18:00 Global insights on household air pollution: Exposure, health impacts and solutions.
16:30 – 18:00 Sand and dust storms: Impact on health and early warning systems

16:30 – 18:00 Clean air for a healthy future: Protecting children from air pollution
Moderator Gerry Eijkemans, Director of the Social and Environmental Determinants for Health Equity (DHE) Department, Pan American Health Organization (PAHO)
Maria Neira, WHO;
Jonathan Grigg,UK
Sebastien Denys, France (DG EH Sante' Publique)

Mafoko Phomane, South Africa
It has been reminded that 2.7 billion children under 15 years are exposed to unsafe levels of air pollution, which, according to the State of Global Air Report 2024, has become the second leading risk factor for death in both the general population and children under 5 years.
Details on global child mortality are contained in "IGME WHO/UNICEF/World bank/UN Levels and trends in child mortality – Report 2023".
It has also been reported that a considerable number of asthma cases could be prevented by reducing air pollution exposures, with relevant economic benefits.
It has been quoted the article of Lim S et al "Characterizing sources of $PM_{2.5}$ exposure for schoolchildren with asthma: a personal exposure study across six cities in sub-Saharan Africa", Lancet Child Adolesc Health 2023
The #CancelCoal campaign is a youth-led campaign by the African Climate Alliance, Vukani Environmental Movement, and groundwork: it is both an administrative and constitutional challenge.
Another important document is the 2021 UNICEF Report "The climate crisis is a child rights crisis – Introducing the Children's Climate Risk Index".
Air pollution and children's health – Priority actions for the health sector:
- Strengthen advocacy and policy development;
- Support health care facilities and service delivery;
- Build robust data collection and monitoring;
- Strengthen public awareness and education;
- Cross-sectoral collaboration.

Panel discussion
Maria Sonabel Anarna, Supervising Health Program Officer, Department of Health, Philippines
Americo Jose, Head of National Health Observatory, National Institute of Health, Mozambique
Julian Alfredo Fernandez Nino, Deputy Secretary Health, Secretaria Distrital de Salud de Bogotà, Colombia
Rosamund Adoo-Kissi-Debrah, Global Health specialist, Ella Roberta Foundation.

National Environmental Health Action Plans have been presented and discussed.
Conclusions
Anna Azaryeva Valente, Deputy Representative UNICEF, Colombia

18:30 – 19:30 Superpollutants and air pollutants: Tackling the invisible threats (see slides)
The Climate & Clean Air Coalition is formed by philanthropies, 72+ NGOs, 24 UN entities, 91 country partners.
According to the Climate & Clean Air Coalition, Short-Lived Climate Pollutants (SLCPs) stay in the atmosphere for weeks to decades, but are far more potent than CO_2 in warming the planet:
- methane: 12 years of atmospheric lifetime; 86x more warming than CO_2 over 20 years;
- hydrofluorocarbons: 15 years of atmospheric lifetime; up to 3,790x more warming than CO_2 over 20 years;
- black carbon: 4-12 days of atmospheric lifetime; up to 1,500x more warming than CO_2;
- tropospheric ozone: days-weeks of atmospheric lifetime; responsible for 0.23°C of present-day warming;
- nitrous oxide: 120 years of atmospheric lifetime; 273x more warming than CO_2 over 100 years.
In the graph "Avoided global warming by 2050", it is shown that acting on SLCPs and CO_2 might contain the increase of temperature within 1.8°C. Reducing SLCPs has a much stronger near-term benefit, while CO_2 reduction benefits materialize over longer time-frames.

Panel discussion

Adalberto Maluf, National Secretary for Urban Environment, Water Resources and Environmental Quality, Ministry of Environment and CC, Brazil
Jean Burston, CEO, Clean Air Fund
Leonard Tedd, Department Head – Human Development, FCDO, UK
Gerry Eijkemans, Director of the Social and Environmental Determinants for Health Equity (DHE) Department, Pan American Health Organization (PAHO)
Oscar Vázquez, General Coordinator of Dissemination, Monitoring and Evaluation of Public Policies for Climate Change, INECC, Mexico
Sandeep Kohli, Senior Energy Specialist, World Bank
Discussion on the afternoon themes on air pollution and health

19:30 Opening Explanada & Cocktail

19:45 – 22:00 Movie screening & panel discussion

20:30 – 22:30 Our Common Air Commissioners (*by invitation only*)

March 26 (Day 2)

09:00-09:30 Recap from Day 1

09:30-11:00 "Improving air quality and accelerating clean energy to save lives – Health sector leadership & multisectoral cooperation at local, national and regional levels"

City story – Santiago de Chile
Patricia Pasten, Head Department of Environmental Biodiversity Climate Action, Santiago de Chile

Panel Discussion: Tackling air pollution for climate change and SDGs
Adalberto Maluf, National Secretary for Urban Environment, Water Resources and Environmental Quality, Ministry of Environment and Climate Change, Brazil
Sebastien Denys, Healthy Environment Occupational Director, Sante' Publique, France
Ashwin Vasan, Physician, Harvard fellow and Former Health Commissioner of New York
Natalia Linou, Deputy Director, HIV&Health, UNDP

Testimony
Dimitris Kontopidis, Chair, European Lung Foundation (ELF)
Architect, CF patient, improved lung health after abandoning heavy polluted Athens and living now in a Greek island.

Country story: Colombia
Mauricio Andrés Palma Orozco, Deputy Director Hydrocarbons, Mining and Energy Planning Unit, Colombia
National Policy of firewood substituting in Colombia

Panel Discussion: Accelerating clean energy to improve air quality and save lives
Marina Romanello, Executive Director Lancet Countdown, University College, London, UK
Charles Okehaiam, Chair of International Board, Amref Health Africa
Xiaoming Shi, Deputy Director, Chinese Center for Disease Control and Prevention, China
Arunhaba Ghosh, Founder – CEO, Council of Energy, Environment and Water (CEEW), India

11:00 – 11:30 BREAK

11:30-13:00 Healthy transport: sustainable transit system, walking and cycling for health

Moderator: David Rojas, Colorado State University, USA
Haneen Khreis, University of Cambridge & Texas A&M
Joe Spadaro, SERC, USA
Sergio Sanchez (Environment Defense Fund)
Soraya Smaoun, UNEP Air Quality Coordinator
Julian Alfredo Fernandez Nino, Secretaria Distrital de Salud de Bogotá, Colombia

Changing burden of transportation in US (e.g. E-scooter in Atlanta, Portland); benefits from scenarios with reduction of cars and increase of bicycles (reduction of deaths, annual economic savings); needed policies involving Urban design, Behavior, Pathways, Disease, Mortality.
The transport section is a major source of CO, NO_2, volatile organic compounds (VOCs), black carbon, PM, and ultrafine particles, particularly in urban areas – NOx emissions in Megatons across

the world under current policies in 2025 (projected to increase in 2040) (Source: World Energy Outlook, 2018): 55.1 (share 54%) vs 25.4 industry, 12.9 power, 4.9 buildings, 2.8 agriculture.
Globally, 25% of urban air pollution from $PM_{2.5}$ is contributed by traffic (Source: Karagulian et al, 2015).
According to the Health Effect Institute (HEI) Special Report 23 (2022), traffic is the main source of air pollution in many cities – Breathing traffic-related pollution increases your risk of getting sick and dying early.
About 300,000 deaths/year from transport $PM_{2.5}$ globally (Source: McDuffie et al, 2021, via Global Burden of Disease – Major Air Pollution Sources (GBD Maps)).
Glazener A et al, "Fourteen pathways between urban transportation and health: A conceptual model and literature review", Journal of Transport and Health 2021; 21: 101070: it covers issues of equity, relationship of transportation and health (detrimental vs beneficial), morbidity and premature mortality.
Integrated Transport and Health Impact Modelling Tool (ITHIM) – Global Application: based on Road collisions, Air pollution, Physical activity, CO_2 -> Chronic disease and Injury burden. Applied so far in 20 cities in Central and Latin America.
Khreis H et al, Description, Development and Application of the Integrated Transport and Health Impact Modelling Tool for Global Cities (ITHIM-Global), medRxiv preprint doi: https://doi.org/10.1101/2024.12.11.24318676; this version posted December 12, 2024.
Policy packages work best:
- Development of packages of policy measures, in which each measure can be expected to support the others by making it more effective or easier to implement;
- Multiple policies improve multiple pathways, with impacts comparable to – or larger than – air pollution e.g. physical inactivity, motor vehicle crashes, and noise;
- Land-use and behavioural policies are very promising (Barcelona Superblocks and London low Traffic neighborhoods).
More can be found in the book "Traffic-related air pollution" edited by di Haneen Khreis, Mark Nieuwenhuijsen, Josias Zietsman, Tara Ramani, published in 2020, ISBN-13 978-0128181225

The WHO is using the iSThAT Software for an Integrated Sustainable Transportation, health Assessment Tool:
- iSThAT is an excel-based tool developed for WHO that aims to assess the health, environmental and economic benefits of sustainable urban mobility plans;
- Alternative futures (visions) are compared against a business as usual (BAU) pathway (up to 2050);
- In addition, to forecasting trends of transport activity, energy demand, and emissions, the tool calculates the preventable health burdens, averted carbon emissions, and benefits of physical mobility achieved by intervention measures.
Example of application: Accra (Ghana) (WHO Urban health Initiative, 2020).
The WHO is also using HEAT Software for Health Economic Assessment Tool:
- HEAT answers the question: if x people walk/cycle an amount of y on most days, what is the economic value of the health benefits that occur as a result of the reduction in mortality due to their physical activity?
- Designed for transport planners, non-health experts;
- Online tool: www.heatwalkingcycling.org
Application: Encourage active travel in Kaunas, Lithuania: -19% premature deaths, -34% greenhouse gases (GHG) emissions.
Application: Impacts of a modal shift from driving car to cycling in Paris (Adapted from Rabi A, de Nazelle A: Assessment of Health Costs and Benefits for Active Transport, ISEE Conference Abstracts, Volume 2011, Issue 1, https://doi.org/10.1289/isee.2011.01496.

Importance of reducing black carbon & $PM_{2.5}$ from Heavy-Duty Vehicles (HDVs):

- HDVs are a major source of Black Carbon (BC, soot) and $PM_{2.5}$, especially in urban areas and freight hubs;
- BC is a short-lived climate pollutant and a major health hazard;
- Vulnerable communities bear a disproportionate burden of HDV emissions;
- Solutions exist: electrification, emissions standards, logistics optimization, & urban planning;
- Stronger global regulations are needed to stop the transfer of pollution from the Global North to the Global South.

Recommendations:
- Smart driving practices;
- Emission inspection and maintenance;
- Accelerate electrification & cleaner fuels;
- Expand Low Emission Zones (LEZ) & enforce emissions standard;
- Enhance monitoring & urban planning
- Engage policymakers and communities for clean freight action.

The UN Environment Programme promotes sustainable low-emission transport and works to reduce sector's contribution to air pollution and climate change.
The Share the Road Programme supports policy and investments in walking and cycling, mostly in cities. The objectives are to develop and adopt policies, strategies, action plans or other measures to upscale active mobility investment. The expected results are:
- Environmental benefits: focused on reducing emissions and pollution by shifting trips away from private motorized transport and allocating appropriate value, investment and space to those already walking and cycling;
- Increased accessibility: investing in walking and cycling enhances accessibility by ensuring that all people, regardless of income, age, or ability, can reach essential services and opportunities;
- Road safety: aims to improve road safety by designing streets that prioritize people by reducing vehicle speeds, minimizing conflicts, and fostering inclusive, people-centered mobility.

Positive examples of implementation of the Programme: Addis Ababa, Ethiopia; Rwanda; Pan African Action Plan for Active Mobility; in Bogotá (Colombia), 51% of residents live near protected bikeways (10% increase since 2021).

The last part of the session has been devoted to describe the current situation of urban planning, mobility, air quality and health in Colombia. The strategic plan for 2030 is based on expanding bike transportation, low emission vehicles, new means of transportation (e.g. cableway) and urban greenness.

11:30-13:00 Transitioning away from fossil fuels and the role of clean and efficient energy to protect health
11:30-13:00 Air quality management for multi-sectoral action

13:00 – 14:00 LUNCH

13:00 – 14:15 Lunch event: Reducing air pollution and health impacts from agriculture
13:00 – 14:15 Lunch event: Air quality alerts and indexes: What do we know and how useful they are to protect health
13:00 – 14:15 Lunch event: Clean air for all: addressing pollution in South Asia for a healthier future

14:30 - 16:00 Health and air quality benefits from land-use and green spaces planning

Moderator Pierpaolo Mudu (WHO)
David Rojas, Colorado State University, USA
Margarita Castillo Ramirez, Establecimiento Público Ambiental Barranquilla verde
Steve Yim, Nanyang Technological University, Singapore

Melissa Catalina Cordoba Asprilla, Vital strategies
Sergio Zirath Hernández Villaseñor, Secretaría de Medio Ambiente y Recursos Naturales, Mexico

With regard to air pollution, land use and health, it has been reported that a 0.1 $\mu g/m^3$ increment of BC of 7 years ago is associated with a 12% (CI: 9-16%) increase in Lung Adenocarcinoma (LADC) incidence globally; the association is more prominent in females (Yim & Sung et al, Raise and fall of lung cancers in relation to tobacco smoking and air pollution: a global trend analysis from 1990 to 2012, Atmospheric Environment 2022; 269: 118835).
The increasing urbanization (1990-2010) in the Pearl River Delta of China was associated with an increase of ozone concentration (also because of the increase in biogenic VOC emissions) up to 7ppb, with an increase up to 39.6% in O_3-induced premature mortality (Yim SHL et al, Journal of Geophysical Research: Atmospheres 2019; 124: 11568): the strong interactions between land use, urban climate and air quality policies, suggest the need of co-beneficial strategies through the concept of "*precision environmental management*". Further, advanced models are needed to provide high-resolution maps for supporting urban planning to mitigate Hot-and-Polluted Episodes (HPEs).

POLICIES:
- URBAN DESIGN: Density; Mixed land use; Destination accessibility; Connectivity; Transport infrastructure; Walkability; Bikeability; Green spaces.
- BEHAVIOUR Indoor-Outdoor: Walking; Cycling; Driving; Pubic transport.
- PATHWAYS: Air pollution; Noise; Temperature; UV radiation; Stress; Social contacts; Physical activity.
- DISEASE: Cancer; Respiratory diseases; Mental disorders; Endocrine disorders.
- MORTALITY: Premature mortality.

Interactions of Vegetation: Temperature; Ultraviolet radiation; Air pollution; Noise; Physical activity; Social interaction; Calming environments; Gentrification; Jobs; Floods/Droughts; Food; Biodiversity.
Different Pathways:
- Green spaces -> Biodiversity -> Environmental microbiome -> Human microbiome -> Immune system -> Health.
- Lack of green spaces -> Heat island -> Respiratory or cardiovascular disorders -> Heath stroke -> Death.

Frequent health outcomes associated with green spaces: Cardiovascular; Respiratory; Metabolic; Mental health; Cancer; Birth outcomes; Mortality.

The model of Barcelona superblocks: increase of greenspaces without vehicle traffic -> reduction of NO_2 concentration, road noise and temperature -> 667 annual preventable deaths.
Other examples of increasing vegetation in the USA:
- Philadelphia: 265 (1.9%) annual preventable deaths and 2543 economic value (in million USD);
- Denver: 186 annual preventable deaths and 1800 economic value (in million USD);
- Phoenix: 590 annual preventable deaths and 5700 economic value (in million USD).

A global analysis on health impacts of urban density & green spaces (15,917 cities) reported a total of 702,956 premature deaths annually, which are preventable.

The WHO Regional Office for Europe/IRIS (Institutional Repository for Information Sharing) has published "Urban green spaces: a brief for action" (https://iris.who.int/iris/handle/10665/344116), which aims to support urban policy-makers and practitioners by translating the key findings of a review of research evidence and practical case studies on urban green space interventions into implications for practice. It presents lessons learned and highlights aspects to consider when designing urban green spaces to maximize social and health benefits. The brief provides information about urban green spaces and their benefits (section 4); general considerations on planning (section

5) and design (section 6), involving the community and stakeholders (section 7) and promoting use (section 8); and lessons learned on monitoring and evaluation (section 9). Section 10 describes potential risks and challenges to be considered and avoided, and a set of key messages is provided in section 11, followed by a short list of references, further reading and helpful tools.
In conclusion, urban green spaces and health is a matter close to people, with equity lens, involving local biodiversity and climate considerations.

Another presentation, by Antony Delavois (Atmospheric Applications Scientist, European Space Agency – ESA), has been devoted to "Earth observation insights on air quality and health". The ESA's earth observation missions, through 82 satellites, are based on world-class earth observation systems developed with European and global partners to address scientific & societal challenges: Science (ESA); COPERNICUS (European Union); Meteorology (EUMETSAT).
Information are available on concentrations of: NO_2, O_3, CO, SO_2, Formaldehyde, Methane.
Green transition information factory (https://gtif.esa.int/):
- Existing green roofs & potential roofs suitable for greening;
- Land surface temperature.
Webinars and urban service catalogue: (https://esa-sef.eu/webinar-series-on-eo-for-cities/).
Earth Observation for Health User Forum, 22-25 September 2025, WOAH HQ, Paris, France.

Another presentation, by Melissa Cordoba Asprilla (Deputy Director, Latin America Region: Partnership for Healthy Cities), has dealt with "Designing healthier cities with data: The intersection of planning, air quality, and public health.
Urban and territorial planning: A key factor for public health: Well-designed cities reduce pollution, enhance mobility, and promote access to green spaces, improving overall well-being and reducing health risks.
Planning decisions shape the future: Urban planning choices have lasting effects, influencing air quality, disease prevalence, and residents' quality of life for generations.
The link between urban planning and health:
- Urban planning: A foundation for public health
  . Effective planning reduces pollution, ensures access to essential services, and creates healthier living environments.
- Infrastructure decisions and health equity
  . Poor planning can lead to health disparities, with marginalized communities facing higher exposure to pollution and limited access to health care, green spaces, and active transport.
- Green spaces and mobility for well-being
  . Parks, walkable neighborhoods, and cycling infrastructures encourage physical activity, reduce stress, and improve air quality, leading to better overall health outcomes.
The importance of health appraisals in planning:
- Health appraisals: Measuring impact better outcomes
  . Health appraisals evaluate the potential health effects of policies and projects, ensuring decisions prioritize public well-being.
- The importance of continuous assessment
  . Iterative evaluations throughout the planning process help identify risks, adapt strategies, and improve long-term health outcomes.
- Tools and methodologies for health impact assessment
  . Techniques such as environmental modeling, stakeholder engagement, and epidemiological studies provide data-driven insights for informed decision-making.
Partnership for Healthy cities – Air quality surveillance: Dhaka, Fortaleza, Toronto, Bogotà, Jakarta, Tokyo, Katmandu, Bucharest, Kigali, Kampala.

Another presentation by Margarita Castillo Ramirez (Establecimiento Público Ambiental Barranquilla verde) has been devoted to "Green space management: A key to enhancing health and air quality in Barranquilla.

The last presentation has been delivered by Sergio Zirath Hernández Villaseñor (Secretaría de Medio Ambiente y Recursos Naturales, Mexico) on "Impacto en calidad de l'aire del Bosque de Chapultepec (SEDEMA).

14:30 – 16:00 Health care facilities: Accelerating electricity access for universal health coverage
14:30 - 16:00 Bridging air pollution, health and climate: Tackling black carbon and ultrafine particles

16:00 – 16:30 BREAK

16:30 -18:00 Advancing clean household energy: Health-centered strategies for development and climate goals

The main presentation has been delivered by Heather Adair-Rohani (Department of Environment, Climate change, and Health, Air quality, Energy and Health, WHO) on "Supporting the scaling-up of clean household energy for health".

WHO response to household air pollution (causing 3.2 million deaths annually), clean household energy and health:
- Country support & capacity building
  . WHO provides technical assistance, consultations, and workshops to help countries transition to cleaner household fuels and technologies.
- Guidelines & monitoring
  . WHO develops health-based guidelines on indoor air quality and household fuel combustion, maintains the global household energy database, and monitors SDG indicator 7.1.2.
- Tools & resources
  . WHO offers the Clean Household Energy Solutions Toolkit (CHEST) and other resources to support policy design, implementation, and monitoring for cleaner household energy.
- Health & economic assessments
  . WHO assists governments in estimating the costs and health, climate, and gender benefits of household energy interventions and supports disease burden assessments.
- Global collaboration & advocacy
  . WHO leads initiatives like the Health and Energy Platform of Action (HEPA) and works with countries to harmonize data collection and integrate clean energy into health policies.

WHO Guidelines for indoor air quality: household fuel combustion:
Practical recommendations for achieving WHO air quality guidelines (https://www.who.int/publications/i/item/9789241548885):
- Emission rate targets for $PM_{2.5}$ and CO that determine whether fuel and technology combinations are "clean" for health;
- Policy in transition calls for transitional fuels and technologies that are as clean as possible;
- Specific fuels should be avoided: kerosene and unprocessed coal;
- Policies should incorporate synergies between climate, health, and clean energy.

Clean Household Energy Solutions Toolkit (CHEST) (https://www.who.int/tools/clean-household-energy-solutions-toolkit):
- Module 1: Stakeholder mapping and situational assessment
- Module 2: Identification of technological and policy interventions

- Module 3: Guidance on standards and testing
- Module 4: Monitoring and evaluation
- Module 5: Engaging the health community
- Module 6: Communication and Awareness Raising.

Household Energy Assessment Rapid Tool (HEART) (https://www.who.int/tools/household-energy-assessment-rapid-tool-templates):
- Template guides users through evaluating:
  . the national-level household energy context
  . existing policies and programs
  . key energy and health stakeholders.
- The report can be used to guide the development of strategies for promoting cleaner household energy that addresses national energy and health needs, drawing on existing programs, policies, infrastructure, and stakeholders.
- HEART assessments have been conducted in 15 countries, including Kenya, India, Nepal, Ghana, Ethiopia, etc.

WHO Global Health Observatory: Household Air Pollution Data Portal (https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/household-air-pollution):
contains data on the number and proportion of the population relying on clean and polluting fuels for cooking (SDG indicator 7.1.2); also includes information on the disease burden (i.e. mortality and DALYs) attributable to household air pollution, broken down by sex and causes (SDG indicator 3.9.1.).

WHO Household Energy Database (https://www.who.int/data/gho/data/themes/air-pollution/who-household-energy-db): monitors household energy use. The database contains nationally representative data from surveys and censuses on cooking, heating and lighting fuels. A proportion of the available surveys also include questions on stove type, time spent collecting fuel, and incidence of acute lower respiratory infection. The database is used to calculate national, rural and urban estimates for use of clean fuels and technologies (as well as the population affected), which WHO reports for Sustainable Development Goal Indicator 7.1.2. Similarly, the database is used as input for estimating the percent of the population who use polluting fuels and stoves (as well as the number of people), such as those that burn wood, charcoal, animal dung, coal and kerosene – this serves a proxy for exposure to household air pollution. It also forms the basis for further assessment of the burden of disease attributable to household air pollution, which is associated with increased mortality and morbidity from acute lower respiratory infections among children, as well as from cardiovascular disease, chronic obstructive pulmonary disease and lung cancer among adults.

WHO Global database of household air pollution measurements
(https://www.who.int/data/gho/data/themes/air-pollution/hap-measurement-db#:)

The Global database of household air pollution measurements, commissioned by WHO, provides an overview of methods and results from studies reporting household air pollution measurements. This database currently contains measurements from 196 studies from 43 countries. This database is useful for understanding the range of household and outdoor air pollution measurements that have been taken in a country or region. Users can query the Microsoft Excel database directly or export files into a statistical programme for more in-depth analysis.

The WHO Benefits of Action to Reduce Household Air Pollution (BAR-HAP) tool
(https://www.who.int/tools/benefits-of-action-to-reduce-household-air-pollution-tool#:)

is a planning tool for assessing the costs and benefits of different interventions that aim to reduce cooking-related household air pollution. BAR-HAP is a resource in WHO's Clean Household Energy Solutions Toolkit (CHEST).

The WHO Household Multiple Emissions Sources (HOMES) model
(https://www.who.int/tools/household-multiple-emission-source-homes-model)
predicts indoor concentrations and personal exposures of air pollutants associated with combusting fuels for cooking, lighting, heating and other household energy needs. This is one of the resources in WHO's Clean Household Energy Solutions Toolkit (CHEST).

The Technical Report "ISO/TR 19867-3:2018 Clean cookstoves and clean cooking solutions – Harmonized laboratory test protocols. Part 3: Voluntary performance targets for cookstoves based on laboratory testing" is a useful document
(https://www.iso.org/standard/73935.html).

The WHO Performance Target model (PT model)
(https://worldhealthorg.shinyapps.io/who_pt/)
derives emissions targets for indoor combustion technologies used for cooking, lighting, heating and other household energy needs. The PT model calculates the emission performance for different geographies or contexts based on the observed room air change rates and volumes; the fraction of emissions from the sources that enter the room (can be important for chimney stoves); and the times the devices are used. The model is designed for application with $PM_{2.5}$ and CO, as these two pollutants are both commonly emitted by indoor combustion sources and have well-established air quality guidelines (WHO 2006, 2010, 2014).

WHO Guidance on Setting national voluntary performance targets for cookstoves
(https://www.who.int/publications/i/item/9789240023987):
this document was prepared to support countries in setting voluntary performance targets (VPTs) for cookstoves and clean cooking solutions, such as those developed by the International Organization for Standardization (ISO) published in 2018.

WHO Core questions on household energy use
(https://www.who.int/tools/core-questions-for-household-energy-use):
a set of Core Questions on Household Energy Use related to cooking, heating, and lighting in close cooperation with the World Bank and consultation with a wide range of partners and stakeholders. The Core Questions are part of WHO's Clean Household Energy Solutions Toolkit (CHEST), which serves to support countries and programmes to develop policy action plans for expanding clean household energy access and use.

WHO Measuring Energy Access: A Guide to Collecting Data Using 'The Core Questions on Household Energy Use'
(https://www.who.int/publications/i/item/WHO-HEP-ECH-AQH-2021.9)
The questions improve upon previous surveys by not only establishing whether a household has electricity access and what the main cooking fuel is, but also assessing the type of electricity access; the quality of access; impediments to access; the type of fuels *and devices* used for cooking, heating *and* lighting; and important safety and livelihood impacts of household energy use. It provides step-by-step instructions on how to incorporate the Core Questions into existing household surveys, administer the questions, and use the data collected to calculate key indicators related to household energy use.

WHO Air pollution and Health Training Toolkit for health workers

(https://www.who.int/tools/air-pollution-and-health-training-toolkit-for-health-workers).
contains an online course to boost knowledge and skills; training modules (adaptable), training manual (train-the-trainer approach); advocacy, communication and outreach materials.

WHO Video series on air pollution and health
(https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/videos/mosaic):
contains key definitions and observations fundamental to understanding air pollution issues and useful for policymakers, researchers, scientists, health workers, students, and citizen scientists.

BreatheLife campaign
(https://breathelife2030.org)
contains resources for the public and health professionals on the health impact of air pollution.

WHO Health and Energy Platform of Action (HEPA)
(https://www.who.int/initiatives/health-and-energy-platform-of-action#:):
is a platform for strengthening cooperation between health and energy sectors.
The global Health and Energy Platform of Action (HEPA) aims to ensure universal access to clean and sustainable energy to protect health. With an initial focus on clean cooking and health-care facility electrification, the Platform aims to catalyse the scale of results required to achieve SDG 3 on health and SDG 7 on energy.

Roundtable:
Moderator: Malcolm Bricknell, Modern Energy Cooking Services (MECS)
Participants: Kalpana Balakrishnan (Dean (Research), Faculty of Public Health, Sri Ramachandra Institute of Higher Education and research, India), Munkhbayar Ulziibayar (Senior Specialist in Environmental Pollution Policy Planning, Ministry of Environment and Climate Change, Mongolia), Darby Jack (Professor of Environmental Health sciences, Mallman School of Public Health, Columbia University), Luc Severi (Energy Assess Lead, SEforALL), Sandeep Kholi (Senior Energy Specialist, Energy Sector, Management Assistance Program, The World Bank).

The last presentations were delivered by Kalpana Balakrishnan on "India: LPG and electric cooking initiatives", Munkhbayar Ulziibayar on "Mongolia: Clean household energy transition", Darby Jack on "US: gas to electric cooking", Luc Severi on "Europe: Clean cooking and residential heating", and Sandeep Kholi on "Global: Field implementation of clean cooking".

16:30 -18:00 Transboundary cooperation for our shared air – leveraging the health voice
16:30 -18:00 Solid waste management: Stop waste burning policies and healthy solutions
16:30 -18:00 Empowering the public health workforce for clean air: From practice to community engagement and climate goals (Moderator Francesco Forastiere: has proposed mandatory environment and health curriculum)

18:00 – 20:15 Dinner & networking

20:15 – 22:30 Concert (3xGrammy Award Winner Ricky Key)

March 27 (Day 3)

08:00-09:00 Press conference

09:00-09:30 High-level Opening
Doctor's story
Sunkaru Touray, Permian Health Lung Institute, Gambia

Country perspective – Norway
Nils Martin Gunneng, Norway's Ambassador to Colombia

Cafe style conversation – Tackling air pollution for climate change and SDGs
Aakash Shrivastava, Director, National Centre for Disease Control, Ministry of Health and Family Welfare, India
Gloria Balboa, Under-secretary of health, Department of Health, Philippines
Ulpiano Suarez, Mayor of Mendoza City, Argentina
Maria Neira, Director, Environment, Climate Change & Health department, WHO: "*every participant leaving the conference should become a pollution terminator"*

Patient's story
Alejandro …… (asthma patient): in Colombia a person dies for air pollution every 15 minutes)

Country perspective: Cuba
Carilda Pena Garcia, Vice-Minister of Health, Cuba

Youth statements for clean air
Two students from Latin America, one from Kenia:
IFMSA –International Federation of Medical Students' Association: Emerging Leaders for Clean Air Forum (ELCAF) Cartagena Declaration:
Una Llamada a la Acción Unificada por el Aire Limpio
Nosotros, los participantes del Foro de Líderes Emergentes por un Aire Limpio, un colectivo de investigadores en etapa inicial, jóvenes defensores, profesionales de la salud, activistas climáticos y educadores de todas las regiones, nos unimos con un propósito común: afrontar la contaminación de l'aire como un'emergencia de salud pública, una cuestión de justicia y un obstáculo para el desarrollo sostenible.

Poem for Ella Roberta.

09:30-11:00 "Committing to triple win actions with health benefits – Reducing air pollution exposure in countries & cities"

Café-style-conversation – how to achieve the triple wins?
Javier Padilla, Secretary State for Health, Spain
Sumi Meta, Vice President, Vital strategies
Hari Prasad Mainali, Secretary Ministry of health and population, Nepal
Javi Lopez, VicePresident, European Parliament

Note: Isabella Annesi-Maesano and Giovanni Viegi talk with Javi Lopez (proposal to organize in each country a common event of MEP and national parliamentarians with ERS/ELF, scientific societies and patients'organizations for implementing the new EU Directive on AQG).

11:00 – 11:30 BREAK

11:30 – 13:00 "Leveraging health arguments to finance solutions and economic opportunities"
Femi Oke, Master of ceremonies, Presenter & journalist

Keynote speech
Jane Burston, CEO Clean Air Fund:
Jakarta is one of the most polluted city; International development aid 2018-2022: 1% outdoor air quality projects; 6% air quality co-benefit projects; closure of UsAid -> one third reduction of international funds 2025 (9% air quality co-benefit projects); to treat clean air projects as an investment which increases productivity; governments should give stable funds to climate change & air pollution projects; stop incentives to fossil fuels; to halve pollution and health effects by 2040, as for WHO.

Cafe style conversation
Alejandra Acuna Navarro, Executive Secretary, SE-COMISCA
Leonard Tedd, Head of Climate, Environment and Health, UK
Priya Shankar, Director, Climate and environment Program, Bloomberg Philanthropies

Keynote speech
Benoit Bosquet, Regional Director for sustainable development for the Latin America Region, World Bank
Today, well over 3.3 billion people globally are exposed to $PM_{2.5}$ levels exceeding 25µg/m^3, but relative exposure is higher in specific regions (e.g. South Asia, North East Asia, Sub-Saharan Africa). New report, from today online.
The toll of air pollution by 2040: implementing stated policies would marginally reduce air pollution by 2040; however, population growth and the uneven concentration of $PM_{2.5}$ emissions across regions mean that the human and economic toll of air pollution will remain high – 6% reduction in global $PM_{2.5}$ emissions; 21% more people exposed to $PM_{2.5}$ levels exceeding 25µg/m^3; 15% more people exposed to $PM_{2.5}$ levels exceeding 35µg/m^3; global mortality attributable to ambient air pollution will increase from 5.7 million deaths in 2020 to 6.3 million deaths in 2040; most of the growth in exposure and mortality will take place in Sub-Saharan Africa, Northern Africa, Central Asia, South-East Asia, and the Middle East.
45% of global population will be exposed to more than 25µg/m^3 in 2040 without additional efforts to reduce pollution.
Integrated policies could cut attributable mortality by up to 35% against the stated policies scenario.
4-6% mortality reduction achievable with integrated policies, with monetary benefits 0.8 – 2.9% GDP.
An integrated policy package that combines conventional air pollution control measures with decarbonization policies could reduce black carbon emissions by almost two-thirds.
Priorities for accelerating access to clean air:
- Strengthen institutions for AQM governance:
  . Place clean air at the center of the government's economic and welfare agenda
  . Empower an airshed approach
- Leverage information to prioritize investments
  . Invest in collecting, assessing, and leveraging air-quality data
  . Engage citizens in clean air action
  . Disclose information
- Catalyze investments
  . Invest in clean air
  . Create clean-air markets

. Establish attractive environments for private sector financing
. Remove environmentally harmful subsidies and policies.

Reducing air pollution exposure will require policy instruments tailored to the specificities of sectors and regions.

Significant additional financing is needed to achieve air quality target – Additional cumulative investment need to halve the number of people exposed to levels above 25µg/m^3 (WHO Interim Target 2) by 2040: USD 3.2 trillion:

- To enable public and private investments in clean air:
  . Strengthen monitoring and results measurement
  . Link financial incentives to results achievement
  . Appropriately blend finance to achieve payback periods of clean technologies that allow for rapid market penetration.

Motto: "Accelerating access to clean air for a livable planet"

Success stories

Anwar Jahangir, Secretary, Environment Protection & Climate Change Department, Punjab, Pakistan
Mete Coban, Deputy Mayor for Environment and Energy, London, UK, "Impact of Mayor of London's air quality policies"
Now, 97% of vehicles are low emitting and result in a decreasing trend in NO_2 concentration, with major health benefits expected by 2040.

Panel Discussion

Mauricio ….., substitute of Lena Yanina Estrada, Minister of Environment, Colombia
Christian Peter, Practice Manager, Environment, Natural Resources and Blue Economy, World Bank
Bjarne Pedersen, Executive Director, Clean Air Asia
Shweta Naryan, Campaign Lead, Global Climate and Health Alliance

High level session

Gustavo Petro Urrego, President Republic of Colombia:
thanks the representatives of over 70 countries participating; Colombia is reforming its health system focusing on prevention (Conference of Alma Ata, 1972) to contrast air pollution and climate change health effects; the world is facing a crisis of multilateralism, which can affect the attempts of WHO to build a common agenda on environment and health; there are dangerous trends of anti-scientific and anti-rationalistic ideas; Latin America, where a large proportion of population is poor, was heavily affected by COVID in terms of mortality rates; the world shouldn't forget the COVID lesson and invest largely in prevention.
Tedros Adhanom Ghebreyesus (Dir Gen WHO, video): to reduce 50% air pollution related mortality by 2040
Maria Neira: over 60 countries represented here, to increase finances for clean air
Angie Rodriguez Fajardo, Director Administration Department, Presidency of Republic, Colombia)
Gini Tambini, Representative, WHO/PAHO, Colombia
Guillermo Alfonso Jaramillo, Minister of Health and Social Protection, Republic of Colombia
Javier Padilla Bernandez, Secretary of State for Health, Spain
Rosamund Adoo Kissi-Debrah, BreatheLife Voice, Ella Roberta Foundation

It is possible to send questions and to make commitments to WHO mail addresses.

13:00 – 14:00 LUNCH

13:00 – 14:15 Lunch event: United for Clean Air: Collaborative efforts among UN Agencies to protect health from air pollution
13:00 – 14:15 Lunch event: BreatheLife High-Level luncheon
14:30 – 16:00 Legislation – planning and enforcing standards for health protection

14:30 – 16:00 Clean air as a part of the human right to a healthy environment human right: Tackling inequities to protect the health of the most vulnerable
Panel discussion
Sounkaru Touray, Founder, Permian Health Lung Institute, Gambia
Vanessa López, President HEAL
Luiz Mandalho, General Coordinator of Environmental Quality, Ministry of Environment and Climate Change, Brazil
Hari Prasad Mainali, Secretary Ministry of Health and Population, Nepal
Elvis Ndikum Achiri, Co-Founder & President, Global Youth Strategy on Air Pollution and Climate Health, Cameroon
Bahvreen Kandhari, Co-founder Warrior Moms, India,

14:30 – 16:00 Strategic communication and outreach on health impacts from air pollution

16:00 – 16:30 BREAK

16:30 – 18:00 "Opening of high-level commitments – clean air for all: Time to commit & act"

Many organization representatives have gone to the podium of the Auditorium Getsemaní and have pronounced their pledges "to commit to take action towards a 50% reduction in health impacts from air pollution by 2040". Among them:
Pippa Powell, ELF:
"Inspired by the stories we have heard this week, especially from mothers, parents and grandparents, the European Lung Foundation commits to continue informing and amplifying the voices of the 2.73 billion people globally living with chronic lung diseases and their families to empower them to advocate for clean air policies that will directly benefit their health and the health of all our children and to prevent future lung disease. We will urge politicians not only to listen to these stories but also to act. We commit to support WHO accessing and harnessing this patient voice and support for clean air ensuring that their vital work can be supported through story telling and passionate activism. We will continue to deliver our global awareness campaign "Healthy Lungs for Life" making sure as many people as possible across the world understand that air pollution is a health issue that affects us all. We will engage with other disease areas to make the campaign more wide reaching and ensure that is being delivered in cities, Parliaments and communities - wherever it is most needed."
Brian Woods, ERS:
"The European Respiratory Society wants to thank the World Health Organization for this impactful, motivating and inspiring Conference. We want to renew our commitment to air pollution by empowering our 35,000 healthcare professional members to advocate for cleaner air. We heard all through the Conference that we have difficult times, we face challenging political times. One institution that still maintains its respect is medical profession, i.e. doctors: we should utilize this to fight for cleaner air. We will continue to support education and research on air pollution and climate change, and we will persist in our efforts to engage policymakers and the public on the urgent need to improve our air quality".

Global Conference on Air Pollution and Health
#CleanAir4Health #RespiraVida
18:00 – 19:30 Cities forum: Champions Mayors for clean air (*by invitation only*)
19:30 – 21:30 Cities forum: High-Level reception (*by invitation only*)

March 28 (Post-Conference Day)

09:00 – 12:30 2nd International Symposium: Integrated solutions for climate change, air quality, and public health
09:00 – 13:00 Emerging leaders for clean air forum
09:00 – 10:30 AQMx workshop
09:00 – 10:30 Keeping the momentum on air quality: Ensuring action on air pollution at the UN High-Level Meeting on NCDs
09:00 – 12:00 Clean Energy = Clean Air: Why cooperation to phase out fossil fuels is essential for public health
11:00 – 12:30 Differential impacts of air pollution on human rights

11:00 – 13:00 "Strengthening collaboration among WHO Collaborating Centres: Advancing the global response to air pollution and health (*by invitation only*)"

Sophie Gumy, WHO
- Definition of WHO Collaborating Centre: an institution designed by the Director-general of WHO to form part of an international collaborative network set up by WHO in support of its programme at the country, intercountry, regional, interregional and global levels. In line with the WHO policy and strategy of technical cooperation, a WHO collaborating centre also participate in the strengthening of country resources, in terms of information, services, research and training in support of national health development.
- There are over 800 institutions in over 80 countries supporting WHO programmes.

- Eligibility of WHO Collaborating Centre:
Types of institutions: universities, research institutes, hospitals, academies or parts of governments: normally, a specific department, division or unit.
Following criteria should be:
. At least 2 years of successful collaboration with WHO carrying out jointly planned activities;
. Clear technical and geographical relevance of both the institution and its activities by the WHO's programme;
. High scientific and technical standing at national and international levels;
. Prominent place in the country's health, scientific or educational structures;
. Stability in terms of personnel, activity and funding.

Giovanni Viegi has asked whether a scientific society might become a WHO Collaborating Centre. Sophie Gumy has answered that so far it has not happened, but if a scientific society has an academy, it might apply.

- Designation of WHO Collaborating Centre: is made with the agreement of the head of the establishment to which the institution is attached or with that of the director of the institution, if it is independent, and after consultation with the national government. An institution is designated initially for a term of four years; the designation may be renewed for the same or a shorter period.
WHO side:
. One responsible officer (either in the HQ or in the WHO regional office);
. One technical counterpart (either in the HQ or in the WHO regional office).

- Type of functions of WHO Collaborating Centre
. Collection, collation and dissemination of information;

. Standardization of terminology, technology, methods and procedures;
. Development of evidence-based technical guidance tools and resource materials on various topics;
. Participation in collaborative research developed under WHO's leadership, including the planning, conducting, monitoring and evaluation of research; evaluation of WHO intervention in countries; and promotion of the application of the results of research;
. Training, including research training;
. Coordination of activities carried out by several institutions on a given subject;
. Capacity-building work at country level.

Resources of WHO Collaborating Centre:
Guide for WHO collaborating centres
(https://cdn.who.int/media/docs/default-source/about-us/guide-for-who-collaborating-centres-2018final.pdf?sfvrsn=9120347_6)

WHO Collaborating Centres working on Air quality and Health:
. UNK-286: WHO Collaborating Centre on Health in Impact Assessments, University of Liverpool, Since 2017
. UNK-312: WHO Collaborating Centre on Climate Change, Health and Sustainable Development, LSHTM, Since 2021
. DEU-72: WHO Collaborating Centre for Air Quality Management & Air Pollution Control, German Environment Agency, Since 1986
. CAN-115: WHO Collaborating Centre on Environmental Health, Health Canada, Since 2021
. MEX-18: PAO-WHO Collaborating Centre for Research and Training in Environmental Epidemiology, Dirección de Salud Ambiental, Instituto Nacional de Salud Pública (INSP), Since 1997
. IND-93: WHO Collaborating Centre for Research and Training in Occupational and Environmental Health, Sri Ramachandra Medical College and Research Institute, Since 2007
. AUS-101: WHO Collaborating Centre on Air Quality and Health, Queensland University of Technology, Since 2011
. AUS-111: WHO Collaborating Centre for Children's Health and the Environment, The University of Queensland, Since 2013

Presentations of activities by some WHO Collaborating Centre:
- WHO Collaborating Centre on Law and Noncommunicable Disease, McCabe Centre for Law and Cancer, Melbourne, Australia, by Suzanne Zhou, Manager – Prevention, www.mccabecentre.org, Suzanne.zhou@ mccabecentre.org
- PAO-WHO Collaborating Centre for Research and Training in Environmental Epidemiology, Dirección de Salud Ambiental, Instituto Nacional de Salud Pública (INSP), Ciudad de Mexico, Mexico
- WHO Collaborating Centre for Climate Change and Health Impact Assessment, Curtin University, Perth, Western Australia.

11:00 – 13:00 Maximizing impact of air quality projects through funders adopting "open-ready" policies

13:00 – 14:00 LUNCH

14:00 – 17:00 Health and environmental integration: Transformative success driving regional progress in Latin America and the Caribbean
14:00 – 18:00 Leveraging global pollution data tools for city planning and emergency response