EFCA Newsletter

European Federation of Clean Air and Environmental Protection Associations

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Editorial

The Air Ambassadors world-wide needed

by Andrzej Jagusiewicz, president of EFCA

The last Executive Body, thirty eight in a series, held in Geneva in December 2018, was a very special one. It included « A Global event on Clean Air » organized as an informal segment of the session. Beside the Parties to the Air Convention, the event gathered representatives of countries from other UN regions, governmental organizations in first instance UNEP and WHO, non-governmental organizations, including EFCA and IUPPA and various networks active in this area.

EFCA, IUAPPA Representation

The objective of the event was to share experience in reducing air pollution in different regions with a focus on common challenges, policy instruments and best practices for further enhancing broader geographic, let's say interregional, cooperation. Needless to add that possible options were based on existing national and regional activities, with a predominant role of the UNECE Air Convention, seen as a model for cooperation in a wider context. Specifically, the technical infrastructure on emissions inventories, modelling and monitoring

and tools for risk assessment allowing for evaluation of improvements on environmental protection and effectiveness of air pollution policies could be used globally.

UNEP highlighted at the event efforts undertaken to address air pollution globally through the implementation of the United Nations Environment Assembly (UNEA) resolution 3/8 aimed inter alia on the establishment of a Global Air Quality Program while the WHO reflected on the outcomes of the First WHO Conference on Air Pollution and Health, which clearly showed the need for reducing air pollution to prevent health impacts.

It seems quite evident that the idea of enhanced global cooperation on transboundary pollution has been born and that guidelines of the Air Convention served as a reference for developing mechanisms and tools in other UN regions like the Latin America or the South Asia. In this context, the effort undertaken so far by the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA) was recognized and the idea of a global framework convention discussed.

But participants of the event also agreed that comprehensive mitigation strategies were necessary, which need to include coordinated actions to reduce greenhouse gases and air pollutants. Therefore the United Nations Framework Convention on Climate Change (UNFCCC) may need a mirror sister dealing with global air pollution. Let's call it « A Global Framework Convention on Clean Air »

When summing up the discussion, the rapporteur from the United States suggested to create a forum for collaboration on air pollution initiated and led by the Air Convention and composed of countries, sub-national governments and organizations. The forum could begin with information-sharing on both scientific/technical and policy activities and link with the UNEP's Global Air Quality Program. In that respect a homepage house possibly within the UNECE can be created and Air Ambassadors to share relevant experience nominated.

The Executive Body agreed to establish a forum for collaboration on reducing air pollution and requested its Bureau to further elaborate this proposal for discussion at its subsidiary organs, including the Working Group on Strategies and Review with a view to making a recommendation for the consideration of the Executive Body at its next session.

During the recent COP 24 side-event organized by EFCA and PIGE with IUPPA participation it has been demonstrated that climate and air pollution policies are closely linked through common sources and pollutants but unfortunately the two domains although slowly converging still remain separate.

Pollutants in question are primarily ultrafine particles (UFPs) and so-called Non CO_2 Greenhouse Gases (NCGG), which so far are underestimated by climate community while of vital interest and covered by clean air organizations, EFCA included, just to mention EFCA/Karlsruhe Institute of Technology (KIT) Symposia on UFPs, which have provided evidence of their impacts on health and climate, identification of sources and on effective control techniques.

As air protection policy-responses, EFCA and IUPPA representatives (A. Jagusiewicz and Richard Mills) advocated further « One Atmosphere » approach, where cleaner air and climate protection legislation may integrate and concluded that the legal framework for the protection of atmosphere is incomplete and needs a geographical extension and more stringent, although UN region specific solutions.

These conclusions from our COP 24 participation sound very familiar compared to the outcome of « the Global event on Clean Air » held one week later in Geneva. That's why EFCA's President, present at the last session of the Executive Body proudly reported about the side-event and stressed that the UNECE Air Convention should become a global treaty while other UN regions could have freedom to elaborate their specific control instruments. He ended calling informally the EFCA and IUAPPA representatives as the first two Air Ambassadors in light of their performance at COP 24 as they perfectly matched the needs for

communication and outreach activities related to the globality of the air pollution problem.

Who will be the next?

News from EFCA

EFCA helps the European Health Parliament

by Andrzej Jagusiewicz, EFCA

On 9th of January 2019, EFCA's President Andrzej Jagusiewicz gave a quite extended interview to Mrs. Amaia Bujan representing the Committee on Environment & Human Health of the European Health Parliament. In the interview via skype he covered air protection policy challenges and dilemmas and suggested several policy responses mainly related to diesel exhaust emissions and residential heating by solid fuels (wood and coal).

The Committee interviewed several managers and leaders of international organizations in order to prepare a rapport « Letting Europe Breathe » considered as a vision for improving air quality in Europe. The most important in the report were policy recommendations where EFCA largely contributed.

One of them is not surprisingly calling for a worldwide Framework Convention on Air Quality in analogy with the Framework Convention on Tobacco Control.

The report concluded that « Air pollution remains a global pandemic, with low-income individuals suffering the highest risk of the associated consequences in terms of health. The Environmental and Human Health Committee has developed policy recommendations focusing on regulatory policies, transportation and urban planning, heating and renewables, and economic incentives.

Air quality is by definition a pan-European cross-border issue. Air pollution knows no borders; an improvement of air quality in one city or Member State is often neutralized by an industrial zone outside of the city or across the border. By respecting the principle of subsidiarity, any European strategy aiming at ameliorating the situation throughout the Union as a whole has to be ultimately implemented in close collaboration with national governments, regions, municipalities, the private and public sectors, and individual citizens.

In order for these recommendations to be successful, a series of joint actions must be implemented in Europe at cross-border level, supported by the right regulatory framework. The EU has always had a cultural model which allows approaching this issue with the right level of political and social commitment. It is time to act in order to let « Europe breathe again ».

Further information:
environment@healthparliament.eu

Democracy in measuring air quality- MicroSensors are coming

by Andrzej Jagusiewicz, EFCA

It is needless to write that the citizens of the European Union are well aware of the impact of polluted air on their health and various ecosystems which keep all of us alive. More than 400.000 deaths annually provide enough evidence. Therefore, the general public becomes more and more sensitive and would like to self-monitor the air quality during different activities taking place in both indoor and outdoor environment.
So far the monitoring of air quality consisting of measurements of concentrations of atmospheric pollutants is traditionally carried out by the relevant authorities in charge of environmental protection. However, this monopoly can be broken quite soon. Particularly, that new generation, almost inseparable from their connected objects e.g. smartphones would like to know instantly what air they breathe and relay on their own data rather than on official one. Then, the continuous measurement of air pollution will be no longer restricted to "mandated institutions" nor fixed places with the monitoring system.

What is needed in first instance are inexpensive, individual and miniaturized sensors, supported by ever more powerful algorithms and capable of managing and exploiting the enormous databases generated by these measurements carried out by us, the citizens. The key problem is their reliability in relation to official measurement and modelling, their stability over a long period of time and societal and economic consequences.

So what would be the scientific or political implications if a majority of citizens was equipped with individual air pollutant sensors and if they agree to wear these instruments will go hand in hand with public and government awareness? And could we establish today a state-of-the-art of this innovative and dynamic development, which democratize the air quality monitoring?

To find the responses and the way forward the Association for the Prevention of Atmospheric Pollution (APPA) organized in partnership with EFCA and the Physico-Chemistry of Combustion Processes and Atmosphere Laboratory (PC2A) on the occasion of its 60th birthday a two-day international symposium entitled Individual Air Pollution Sensors: Innovation or Revolution? It took place on 29-30 November 2018 in Villeneuve d'Ascq (France), gathered 200 participants from Europe and Africa, who enjoyed 20 presentation, panel discussion and summaries of the event by two Presidents of APPA and EFCA.

The presentations focused inter alia on applying low cost sensors for personal PM and noise exposure assessment, micro-sensors: innovative, high-performance, low-cost tools for measuring air quality in the urban area of Agadir, use of microsensor data for urban-scale air quality modelling and mapping, role of high resolution modelling for rational exploitation of connected micro-sensors, perception of individual data on air pollution and changes in the behaviour of a population equipped with micro-sensors: a survey of residents of the Lille metropole, online calibration of a mobile sensor network by matrix factorization and links between individual air quality data, behaviour change and implementation of air quality practices, including contribution by micro-sensors.

Of course the Symposium hasn't solved all technological and metrological problems nor has it found the solution related to the ownership and management of the data generated. It also left economic and strategic aspects of microsensors use in monitoring air quality and implementation of emission reduction actions, for the future. However, it did provide the first feedback on actual state-of-the-art of microsensors and their actual use by citizens and familiarized the audience with several on-going projects.

When concluding the Symposium, the President of EFCA underlined that the Symposium has evidenced a great step forward in democratizing the air quality monitoring and demonstrated an important progress in using the microsensors by the citizens. For sure, it's not yet a revolution, but innovative evolution. He was convinced that microsensors could measure microparticles (ultrafine particles), which were the focus of EFCA and called the two organizations to collaborate and innovate on this way together.

At the end, he congratulated the APPA the initiative to organize the Symposium, praised its holding, thanked for hosting the EFCA Assembly and wished "Happy Birthday" to the French Association on the occasion of its 60th anniversary.

KIT Karlsruher Institut für Technologie

EFCA

Upcoming International Symposium "Ultrafine Particles – Air Quality and Climate"

by Thomas Leisner; Chairman

Ultrafine particles (UFP), the nano fraction of airborne particulate matter, are considered to be causing serious health problems and environmental effects. Combustion is a major source, also by producing volatile organic pollutants which are

converted in the atmosphere through photochemical reactions.

Increasing applications of man-made nanomaterials add to the problem, e.g. after incineration at the end of their lifetime. A further interest in UFPs results from their specific role in atmospheric processes such as cloud formation and precipitation and, in fact, in climate.

The relation between UFP and human health and that of UFP and climate are both areas of active research and cross-links between these fields are found nowadays.

The subtitle of the conference series: “air quality and climate” reflects this development.

Present policies to decrease exposure to particulate matter make use of the mass-based metrics PM10/PM2.5, which do not properly represent all risks for human health.

EFCA is, therefore, in favour of the development of a fraction-by-fraction approach on particulate matter, both with respect to size and chemical composition. It already recommended European policymakers the introduction of Black Carbon Particles as additional metric in the Air Quality Directive. The organizers trust that EFCA’s 7th Ultra- fine Particles Symposium 2019 will again feature the most recent scientific progress in the field and so contribute to policy-relevant developments which improve the dialogue with policymakers in Europe. The Symposium has gained visibility by permanently moving to Brussels and attracts an effective mix of EU representatives and scientists. EFCA and KIT, together with GUS and CEEES are pleased to organize this event again. We cordially invite all experts to contribute actively and hope to see you again at the State representation of Baden-Württemberg in Brussels in May 2019. Final program and registration: http://ufp.efca.net/

News from EFCA Members

Karlsruher Institut für Technologie

Particulate Matter Pollutes the Air Above Africa

by Sarah Werner (KIT)

Explosive population growth, urbanization and a growing economy – the air over West Africa is exposed to a lot of stress.

Traffic, waste combustion and dust from the Sahara pollute the air over African cities – with significant health implications (photo: Sébastien Chastanet)

The World Health Organization (WHO) estimates that each year, around seven million people die from the effects of polluted air. "In West African cities, the concentrations of small particles often cross the borders of the WHO," says Professor Peter Knippertz of the Institute of Meteorology and Climate Research of KIT (IMK). On the one hand, the particles have their origin in human actions: charcoal fires, waste combustion in cities or savanna fires emit fine particles into the air. On the other hand, there are particles of natural origin: "Winds from the north carry sand from the Sahara to the western parts of the region," says Knippertz. The climate researcher coordinated the DACCIWA project (Dynamics-aerosol-chemistry-cloud interactions in West Africa), which examined the entire chain of natural as well as human-made emissions for the first time, from formation and distribution to the effects. For closing the project, the consortium published a policy brief that presents the most important results, campaigns and outlooks and provides concrete recommendations for action.

Collecting comprehensive data was the biggest challenge. "There was no adequate air quality monitoring system in South West Africa," says Knippertz. "Previous computer models could not reliably map the complex atmospheric dynamics and chemistry in West Africa." Therefore, scientists had to gather up-to-date data on the composition of the atmosphere, clouds and air, as well as information on health risks and diseases. The results show that air pollution has already reached a health-damaging level: During the dry season, the concentration of fine particles in the atmosphere is highest, as desert dust from the Sahara and smoke from fires in savannah are mixed in the air in addition to the fine dust that originates in cities.

In flight and field surveys, the scientists examined the development and distribution of particulate matter over West Africa (photo: Sébastien Chastanet)

During the summer monsoon season, particulate matter from Central Africa, which can be transported thousands of kilometers by the prevailing south wind, appear additionally to local emissions. "In our field surveys, we were able to detect 20 to 40 percent of the particles already above the ocean," says Knippertz. Due to the high humidity during the monsoon, the particles can absorb more water. This tarnishes the atmosphere significantly so that less sunlight reaches the ground. "This influences air circulation, cloud formation and precipitation probability," explains Knippertz. "In the long run, this could affect food production, water and electricity."

Using meteorological balloons and the atmospheric observation system „KITcube“, the climate researchers collected a variety of relevant meteorological data (photo: Sébastien Chastanet)

Computer simulations by the DACCIWA project team indicate that temperatures in West Africa are expected to increase by one to three degrees Celsius by 2050, depending on geographic location. In addition, the increased particle concentration in Southwest African cities can entail significant risks to the public health and increase respiratory, cardiovascular and skin diseases: "For the first time, we have shown that the number of hospital visits due to these health problems is closely related to the concentration of particulate matter in the air," says Knippertz. "Especially during the rainy season, the number of known cases of illness increased, which may suggest that humidity amplifies the effects of air pollution on humans."

With the new data and analyses, scientists can provide more accurate climate, weather and health forecasts, not only for West Africa, but also for regions further away: "For example, we know that the West African monsoon can affect European weather and is an important factor for Atlantic hurricanes," explains Knippertz. DACCIWA thus lays the foundations for more precise climate, weather and air quality models, which enable a more sustainable development policy.

More about the project DACCIWA:
For five years, scientists collected and evaluated data in West Africa by coordinated measuring flights with three research aircrafts of the German Aerospace Center (DLR), the French research institutions CNRS, Météo-France and CNES, and the

British Antarctic Survey. On board, the different aircrafts had similar measuring instruments to collect a maximum of reference data. To capture urban emissions, scientists set up four measurement sites in Abidjan and Cotonou and evaluated health data. In addition, climate researchers of the IMK under guidance of Dr. Norbert Kalthoff recorded a multitude of relevant meteorological parameters with the atmospheric observation system "KITcube" in the Beninese Savé. At the same time, the research group of Professor Andreas Fink, KIT's expert on the African climate, coordinated a large-scale meteorological balloon campaign in four West African countries.
At the end of DACCIWA, the consortium held policy brief meetings inTogo, Ghana and Côte d'Ivoire and explained and discussed their findings and recommended possible actions. The scientists also presented their project results at the European Commission in Brussels. The EU has funded the project with around 8.75 million euros. DACCIWA is a cooperation project of 16 scientific institutions in Europe and Africa (www.dacciwa.eu).
(Press contact: sarah werner@kit edu)

Calendar

EFCA

Ultrafine Particles –Air Quality and Climate
15 – 16 May, 2019
Ultrafine Particles and Air pollution are currently a hot topic not only in whole Europe. To intensify the dialogue between rule makers, politicians and scientists four important European organizations are arranging the UFP symposium in Brussels since more than a decade.
Brussels, Belgium
http://ufp.efca.net/

UNECE

Working Group on Strategies and Review, Fifty-seventh session; UNECE Air Convention
21 - 24 May 2019
Geneva, Switzerland
http://www.unece.org/info/events/meetings-and-events.html#/

CITEPA

Citepa's annual conference "Interactions and benefits of climate, air quality and energy action"
12 June 2019
Chambres d'Agriculture France – Auditorium ; Hôtel de Ganay
https://www.citepa.org/en/annual-conference

8th International Symposium on Non-CO_2 Greenhouse Gases (NCGG8)
The conference aims at bridging the gap between science and applications within the policy and decision making arenas.
12 - 14 June 2019; Amsterdam, Netherlands
www.ncgg.info

NOSA Nordic Society for Aerosol Research **EUROPEAN AEROSOL CONFERENCE - EAC 2019**
Join colleagues from all areas of aerosol science at EAC2019. EAC2019 will feature five main themes corresponding to the EAA working groups, in addition to selected special topics
25 - 30 August 2019; Gothenburg, Sweden
https://www.nosa-aerosol.org/

18th IUAPPA World Clean Air Congress
23 - 27 September 2019; Istanbul, Turkey
www.wcac2019.org

CAPPA
Eleventh Croatian Scientific and Professional Conference with international participation "Air Protection 2019", 15-19 October 2019, Bol, Croatia
www.huzz.hr

VDI
VDI/DIN-Kommission Reinhaltung der Luft (KRdL)-Veranstaltungen 2019 zur Reinhaltung der Luft
https://www.vdi.de/technik/fachthemen/reinhaltung-der-luft/expertenforen-und-tagungen/

EFCA

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Newsletter

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