

**Subject: PSF/TAIEX Workshop on Air Pollution, Industrial Emissions, Sand and Dust Storms (21-22 November 2017, Tehran, Iran)**

**From:** Sara Basart

**To:** BSC-ES

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**Introduction**

- Objective: Member of the EU expert team on Air Quality
- Funding: European Commission
- Attendants: Sara Basart
- Agenda:

**Day 1: Tuesday 21 November 2017**

Chair: -

08:30	Participant registration
09:15	Welcome and introduction
<b>Session 1: INTRODUCTORY SESSION</b>	
09:40	Purpose, contents and structure of the meeting Speaker: Dr. Marta Moren-Abat , Dr. Parvin Farshchi, Dr. Masoud Tajrishi
10:00	Coffee break
10:30	Air pollution in the Islamic Republic of Iran: current situation, trends, emission inventories, control strategies and needs Speakers: Mr. Masoud Zandi
11:30	Joint discussion and summary of conclusions
12:00	Lunch
<b>Session 2: ANTHROPOGENIC EMISSIONS AND ABATEMENT STRATEGY</b>	
13:30	The elaboration of emission inventories Speaker: Dr. Zig Klimont
14:10	Using Integrated Assessment Modelling to evaluate the efficiency of policy actions on air quality, with special focus on industrial and vehicle emissions Speaker: Dr. Zig Klimont
14:50	Best available technologies for abating industrial emissions for both channelled and fugitive pollutants Speaker: Prof. Eliseo Monfort
15:30	Coffee break
16:00	Modelling air quality at local, regional and global scales Speaker: Dr. Hilde Fagerli
16:40	Clean public transport systems Speaker: Dr. Josep Maria Armengol
17:20	Joint discussion and summary of conclusions
18:00	End of the first day

## Day 2: Wednesday 22 November 2017

Chair: -

08:30	Participant registration
09:00	Reducing emissions from mobile sources in Iran Speaker: Dr. Yousef Rashidi
09:40	Real world driving emissions of atmospheric pollutants from vehicles Speaker: Prof. Magin Lapuerta
10:20	Urban mobility and Air Quality. Effectiveness of urban measures in Europe Speaker: Prof. Xavier Querol
10:50	Coffee break
11:20	Mixture of measures found elsewhere to improve urban air quality and to reduce human exposure to air pollution Speaker: Dr. John Murlis
12:00	Joint discussion and summary of conclusions
12:40	Lunch
<b>Session 3: AIR QUALITY and DESERT DUST</b>	
14:00	Modelling of the impact of dust on air quality and climate Speaker: Dr. Sara Basat
14:40	Dust and desertification in Iran: challenges and approaches Speaker: Dr. Zieaoddin Shoaei
15:20	Quantification of desert dust contributions over Europe and methodology available and accepted by the European Commission (DG ENV) Speaker: Prof. Xavier Querol
15:40	Coffee break
16:10	Health effects of air quality impairment Speaker: Dr. Payam Davvand
16:40	Health effects of desert dust Speaker: Dr. Massimo Stafoggia
17:20	Joint discussion and summary of conclusions
18:00	Closing and final remarks
18:15	End of the workshop.

09:00. It is probable that Dr Rahidi will join our meeting in the afternoon. If this is the case we can have lunch earlier and have his talk just after lunch.

## Results

The objective of the workshop was to define a roadmap of Iran-EC cooperation on measures to improve air quality with reliable measures. Environmental benefits will be for Iran and EU, environmental benefits will also affect transboundary regions. We have to build a communication strategy for the next five year. Also we have to discuss on how involving society. It is important to define well what type of collaborative project, programs, targets,....

The minutes of the meeting and the presentations of the meeting will be shared with the participants in the next days.

The participants of the meeting were the following:

### Experts from the Islamic Republic of Iran

- Dr. Parvin Farshchi, Deputy for Marine Environment, Department of Environment, Tehran, Iran

- Dr. Zieaoddin Shoaiei, Head of National Centre for Combatting Dust Storms, Department of Environment, Tehran, Iran
- Dr. Masoud Tajrishi, Deputy of Human Source, Department of Environment, Tehran, Iran
- Mr. Masoud Zandi, Head of National Centre for Air and Climate, Department of Environment, Tehran, Iran
- Dr. Yousef Rashidi, Environmental Sciences Research Institute, Shahid Beheshti University, Tehran, Iran

### Experts from Europe

- Dr. Josep María Armengol, Eco-efficiency of public transport, Head of the Engineering Department, Metropolitan Transport of Barcelona (TMB), Barcelona, Spain
- Dr. Sara Basart, Air Quality and Desert Dust Modelling, Barcelona Supercomputer Centre, Barcelona, Spain
- Dr. Payam Dadvand, Health effects of air pollution, Barcelona Institute for Global Health (IS-GLOBAL), Barcelona, Spain
- Dr. Hilde Fagerli, Air pollution modelling, Norwegian Meteorological Institute, Oslo, Norway
- Dr. Zig Klimont, Integrated Assessment Modelling, IIASA International Institute for Applied System Analysis, Vienna, Austria
- Prof. Magín Lapuerta, Vehicle Emissions, Department of Applied Mechanics, University of Castilla-La Mancha, Spain
- Prof. Eliseo Monfort, Industrial Emissions, Institute of Ceramic Technology, Castellón, Spain
- Dr. Marta Moren-Abat, Directorate General Environment, European Commission, Brussels
- Prof. Xavier Querol, Air quality and Measures, Institute of Environmental Assessment and Water Research (IDAEA-CSIC), Barcelona, Spain
- Dr. Massimo Stafoggia, Air Pollution Epidemiology, Epidemiology Department, Lazio Region, Roma, Italy

At the end, the meeting was focusing on Tehran and mainly in observations. Few references were done for the rest of the country or modelling studies. The Tehran municipality has a dense network of AQ stations in the city but no regional sites and they are doing particular focus on PM<sub>2.5</sub> levels in which traffic is the main contributor. The contribution of desert dust is approximately 25% of the total PM<sub>2.5</sub>. The Air Quality Control Company is on the charge of the monitoring and forecasting of the AQ in Tehran. Their forecasting system provides a 24h forecast based on WRF, CAMx & CMAQ models over Tehran. The model outputs include a self-learning treatment, and they are validated with the monitoring data (<http://apfs.tehran.ir>). The system does not consider desert dust contributions. About emissions, they have a detailed emission inventory of the traffic emissions over Tehran. The data is not available, but the methodology (emission factors) are published in scientific journals (check the studies of Dr. Vahid Hosseini). For modelling, it can be some opportunities for BSC. They are not experts on modelling. They put many efforts on the emission inventory, but they need support for the operational forecasting implementation and model developments over the city.

After the 2-days workshop these are the most important results were the following:

#### Lessons learnt

- High-level political involvement is needed because the problem is large and complex.
- Governmental decisions need to incorporate sci&tech knowledge.

- The approach needs to be at local, regional, national and transnational/regional scales. Explore possibilities to support Iran in its regional and international initiatives on ENV-related issues.
- The problem has to be tackled with short, mid and long-term actions.
- There are needs to advance in knowledge but also important available results that are ready to be used.
- Awareness of stakeholders and society is essential to a) create legislation, b) to implement it with acceptance.
- We mostly discussed on preventive and corrective measures (technological measures, non-technological measures) are vital (changing social behaviour is more difficult than implementing technology).
- Need for the cross-sectorial approach. Example water policy and dust.

### Gaps

- AQ monitoring and source apportionment
  - Maintenance of air quality stations is problematic
  - Lack of national wide driven source apportionment (a 5 cities study for example)
  - The issue of PM10 is underestimated
  - VOCs need source apportionment
  - O3 impact around metropolitan Tehran
  - Lack of regional stations to evaluate transboundary pollution
  - Need for improving emission inventories
  - Need for improving modelling system
  - Use of satellite data for air quality
  - The effort is concentrated on Tehran, a wider focus is also needed
  - Scarce of health impact studies, as well as cost-benefit analysis
  - Origin of re-suspended dust, SOA, VOCs among others
  - Need for a better control of industrial and powergen emissions
  - Better control of fuel quality is needed
  - Problems on implementing regulations
  - Inefficiency of incentives systems
  - Need for a better vehicle technical inspection system
  - Better evaluations of the impact of desert dust on air quality, health effects and possible solutions
  - Need for international agreements for transboundary (natural and anthropogenic)
- Need for a more coordinated approach of stakeholders/bodies and these with science

### European Union- I.R. Iran Actions

#### Premises

- Practical and executable activities are the target

- Activities and results should take place/produce simultaneously at three scales: short, mid and long-term
- There are available results that can be used already for policy. Thus use them while new investigations are carried out. Do not wait to have final results.

### Tools

- Elaboration of a roadmap for air quality to be jointly elaborated, signed and sent to the highest policy level, by the Executive Committee
- Training & exchanging staff program
- Use of EU labs
- Specific projects to be defined and executed to fill the identified gaps
- EC support for helping to cleaner EU vehicle supply to Iran by manufacturers
- EC help for transferring technology for abatement
- EC-DG ENV support for devising new regulations
- Supplying access to EU tools

### Networking

**Dr Hilde Fargeli (MetNo):** MetNo is leading the CAMS on model developments (CAMS-61). MetNO will contact us to discuss on the participation of BSC in some tasks focusing on to explore the uncertainties in modelling PM in Europe (as local dust sources, resuspension from agriculture, ...).

**Dr Massimo Stofaggia (Air Pollution Epidemiology):** He supported the DustClim proposal, and now, he will participate in the discussions on the design of the new user-oriented services.

**Dr Zieaoddin Shoaie (Iranian National Center for Combating Dust Storms):** With the support of the Japanese MetOffice JAXA they are operating ceilometers. They are also elaborated a map identifying dust source areas in each region, but it is not mapped. It is based on satellite identification and back-trajectories.