



**REGIONAL EXPERT MEETING FOR THE MIDDLE EAST AND NORTH
AFRICA
ON CLIMATE AND AIR POLLUTION**

***"Cleaning up the air and slowing the pace of warming: opportunities
for early action in the Middle-East and North Africa"***

AMMAN, JORDAN - 22-23 May 2017

Venue: Kempinski Hotel

MEETING REPORT



وشمال أفريقيا بشأن المناخ وتلوث الهواء

"تنظيف الهواء وإبطاء وتيرة الاحترار: الفرص المتاحة للتدخل المبكر في منطقة الشرق الأوسط وشمال أفريقيا"
23-22 مايو 2017 – عمان – المملكة الأردنية الهاشمية

Background

The meeting was organised by the Climate and Clean Air Coalition (CCAC), as part of the Supporting National Action and Planning on short-lived climate pollutants (SNAP) Initiative. UN Environment West Asia Office, the World Health Organisation (WHO), the League of the Arab States (LAS), and the Ministry of the Environment of the Hashemite Kingdom of Jordan co-organised the meeting with the support of the SNAP initiative Lead Partners (the Stockholm Environment Institute (SEI) and the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA)) and the CCAC Secretariat.

The meeting took place in Amman, Jordan, on 22nd and 23 May 2017 and was attended by about 50 government officials from 16 countries across the MENA region, including Jordan, Bahrain, Kuwait, Egypt, Iraq, Morocco, Syria, Palestine, Yemen, Qatar, Oman, Lebanon, Sudan, Saudi Arabia, Libya and UAE. The Meeting Summary and the Background Document, that includes information on SLCP emission for each country in the region can be downloaded below.

Meeting Objectives

The aim of the meeting was to explore opportunities to improve health, air quality, and climate in the Arab countries of the Middle East and North Africa through reducing emissions of Short-Lived Climate Pollutants (SLCP). Among the issues reviewed were:

- The prospects for air pollution and climate change in the region up to 2030 in the absence of action on SLCPs;
- The potential contribution of SLCP mitigation to climate, health and food security, and more generally to economic development;
- Feasible mitigation technologies and strategies and opportunities for their implementation at national scale;
- The relationship of SLCP mitigation to broader regional air pollution and climate strategies and their benefit for the MENA region.

The meeting included invited presentations, contributions and comment by participants, and group discussion.

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Day 1: Monday 22nd May 2017

The first day focused on explaining the scientific case for short-lived climate pollutant (SLCP) reductions, their impacts in the region, some specific challenges and their possible contribution to the sustainable development goals (SDGs) and the 2015 Paris Agreement.

All presentations from the first day can be found at: <http://twk.pm/o5hunc1q1e>

1 SESSION 1: INTRODUCTION AND BACKGROUND

1.1 Opening

Elsa Lefevre, representing the CCAC Secretariat, explained that the meeting was being held to discuss the opportunity for the countries of the Middle East and North Africa – separately and co-operatively - to tackle jointly the issues of air pollution and near-term warming by reducing emissions of short-lived climate pollutants (often called by the acronym SLCPs). She also presented a brief overview of the CCAC, its activities and its achievements over the last 5 years. The Coalition is a unique initiative to support fast action and make a difference on several fronts at once: public health, food and energy security and climate by tackling short-lived climate pollutants. It has grown from 6 to 114 partners since 2012 and is working through 11 initiatives to help its partners achieve reductions of short-lived climate pollutants at scale, from sectors including transport, waste, household energy, refrigeration and air conditioning (HFCs), agriculture, and industry.

Abdul-Majeid Haddad representing UN Environment West Asia office emphasised that this meeting and the efforts exerted for climate and air pollution control will complement the implementation of the Joint Ministerial Declaration on Health and Environment for the Arab Region issued by the first joint ministerial meeting of the Councils of Arab Ministers of Health and Environment, and the Arab Strategy for Health and Environment 2017-2030 and its Action Plan, adopted by them. Nine health and environmental priorities have been adopted, including air pollution, climate change and sustainable development. The strategy emphasized the close relationship between environment and health and the negative impacts of environmental risks on human health.

Basel Al-Yousfi, Director of the World Health Organisation (WHO) Eastern Mediterranean Regional Office highlighted the need for better identification of the sources of both indoor and outdoor air pollution as a prerequisite to any successful air quality management action agenda. He also emphasised that reducing emissions of SLCPs through mitigation measures can have health benefits.

Mohamed Elhossiny representing the League of Arab States (LAS), drew attention to the cooperation between the League and different UN organisations on climate change negotiations, training and support, and to the Arab action plan for the climate change issues.

H.E. Mr. Ahmed Al Qatarneh, Secretary General, Ministry of Environment, Jordan welcomed the distinguished guests and all participants. H.E. presented a summary of the challenges facing Jordan as one of the countries most vulnerable to the impacts of climate change. He reported that a climate change policy 2013-2020 had been launched in 2013 to achieve a proactive risk-resilient country, and that Jordan was working hard to increase the contribution of renewable energy to 10% of electricity generation by 2020.

1.2 Introduction

Richard Mills (International Union of Air Pollution Prevention and Environmental Protection Associations) introduced the meeting with a review of the current position and future prospects for the region in terms of Climate, Air Pollution and Health, and Food Security – the three areas where reduction of SLCP emissions could yield a substantial and direct benefit.

Climate Change is already having a significant impact on the region, with extreme weather events having doubled since 1990; the impact of air pollution on mortality and morbidity across the region is severe, with about 114,000 deaths associated with PM_{2.5} in 2012; and an estimated 200 million tonnes of four staple crops is lost annually to pollution impacts.

He argued that the MENA region is one of the regions most vulnerable to climate change, in terms of average temperatures, extreme events, and potential sea-level rise; that it would be particularly subject to increased morbidity and mortality from air pollution, as a result of factors such as the very rapid population growth in the most vulnerable age-groups, and the region's exceptionally high level of urbanisation; and finally that it is in a particularly challenging position in terms of food security as a heavy net importer of foodstuffs.

However, the region is not at present well-placed to respond to these challenges because of factors such as relatively low economic growth, low oil prices and conflict and security issues. Because of this vulnerability and the scale of current and near-term impacts, MENA more than any other region needs early action that could reduce climate impacts in the near and medium term. Action on SLCPs could represent a realistic way to achieve this. As presentations at the meeting indicated radical reduction of SLCPs is feasible and deliverable through tested, cost-effective and readily-available technologies.

1.3 The Potential Benefits of Action on short-lived climate pollutants (SLCPs)

1.3.1 *Introduction on the science on short-lived climate pollutants and Climate and Clean Air Coalition, Kevin Hicks (SEI) and Elsa Lefevre (CCAC Secretariat)*

Kevin Hicks (SEI) described the science behind SLCPs, the development of the UNEP WMO Integrated Assessment of Black Carbon and Tropospheric Ozone and outlined the latest international scientific knowledge on air pollution and climate change impacts in the MENA region.

He highlighted the relatively short atmospheric lifetimes of the SLCPs in the atmosphere, and showed how the 16 measures to reduce black carbon (BC) and methane (CH₄) emissions identified by the UNEP WMO Integrated Assessment, supplemented by action to reverse the use of HFCs in refrigeration and air conditioning, could curb climate change by more than half a degree Celsius by 2040. Tackling SLCPs could also give significant local air quality and socio-economic benefits linked to human health impacts and reduced crop yields, which makes SLCP mitigation relevant to national development goals.

Action on SLCPs could also help achieve the 2 degree Celsius target and complement and reinforce the action to reduce CO₂ needed to achieve the peak warming and longer term climate goals by the end of the century agreed under the 2015 Paris Agreement of the UN Framework Convention on Climate Change (UNFCCC).

Finally, he showed how international estimates highlight significant impacts of PM_{2.5} on human health and crops yields in the MENA region and how these can show a lot of variation from country to country.

Elsa Lefevre (CCAC Secretariat), presented a brief overview of the Climate and Clean Air Coalition, its activities and its achievements over the last 5 years. She highlighted the objective of the CCAC, to leverage high-level engagement, and catalyze rapid and concrete action to address SLCPs as a global and collective challenge, and stressed the voluntary and non-binding nature of the CCAC and its complementarity to action to reduce CO₂ under the UNFCCC. She showed that, as of April 2017, the 114 partners consist of 52 country governments, 17 international intergovernmental organizations (IGOs) and 45 Non-governmental organizations (NGOs). The 7 sectoral (agriculture, bricks, cookstoves and heat stoves, diesel vehicles, oil and gas, HFCs and waste) and 4 cross-cutting initiatives (assessments, finance, supporting nations planning for action on SLCPs (SNAP) and urban health) were briefly described. Recent CCAC successes with HFCs under the 2016 Kigali Agreement, agreements with companies in the oil and gas sector, progress on heavy duty diesel vehicles and incorporating SLCPs into NDCs were highlighted.

More information on the CCAC can be found in the power point presentation and on the website: <http://www.ccacoalition.org/en>

Related videos: https://www.youtube.com/watch?v=29DJIPSy0_I

The following **discussion** focused on three main areas:

- The role and work of CCAC (membership, NGO and private sector engagement, relevant initiatives, how CCAC can help countries), and the status of SLCPs in the region (including data, policies and knowledge gaps);
- Factors that potentially make the MENA region a special case (e.g. sea salt, wind-blown dust, indoor air pollution, and human factors such as reduction in tree cover and wars and conflicts);
- Technical and modelling issues, such as the need for a model specific to the MENA region; the relevance of global and regional modelling to short-term timescales; the need to develop inventories and registries of data in the region, and questions related to measuring the impact of SLCPs on health.

Finally, there was a general recognition that the data in the Background Paper and presentation, which was drawn from international sources, needed review, and the substitution wherever possible of more reliable data from the countries themselves, a point made particularly by Egypt and Qatar. The WHO representative encouraged countries to share their data with the WHO in order to produce a more accurate picture on the global databases and highlighted the forthcoming WHO study on the link between wind-blown dust and human health.

1.4 Tools for assessing SLCP emissions, their impacts and the potential of mitigation measures at country level

1.4.1 Presentation of the LEAP-IBC tool by Charles Heaps and Kevin Hicks (SEI)

Leading on from the discussion of the need for planning of actions to address short-lived climate pollutants (SLCPs), **Charles Heaps**, from the Stockholm Environment Institute (SEI), introduced LEAP-IBC,

a software tool designed to address this need. LEAP is an Interactive, scenario-based modeling system originally designed for energy planning and climate change mitigation assessment. LEAP has been used in over 190 countries and at least 32 countries used it to help formulate their plans for the recent Paris Climate Conference (INDCs). The Integrated Benefits Calculator (IBC) has recently been added to LEAP to help meet the needs of those developing action plans for SLCP mitigation. This work has been conducted by SEI in cooperation with the Climate and Clean Air Coalition (CCAC).

In addition to outlining the structure and capabilities of LEAP-IBC, Dr. Heaps demonstrated LEAP in action. He showed how it can be used to develop SLCP inventories and forward-looking baseline projections for emissions of pollutants, how to assess a variety of SLCP abatement measures such as clean cook stoves, or reducing emissions from diesel vehicles, and how to combine individual measures into overall comprehensive action plans. Finally, he showed how LEAP-IBC can be used to estimate the avoided impacts of such action plans, showing for example how LEAP-IBC calculates avoided mortality and avoided crop losses.

Following his presentation, meeting participants asked a series of questions such as how the tool could be used to manage data, and how the results calculated in LEAP-IBC could effectively be downscaled to meet the needs of planners at more local scale. Questions were also raised about what level of confidence users could have in the impact calculations in LEAP-IBC. Dr. Heaps responded by giving further details of the concentration-dose-response calculations used in the tool, and noting that they were based on standard approaches used in public health impact assessments.

2 SESSION 2: OPPORTUNITIES FOR ACTION

2.1 Short-lived climate pollutants, Health and the Urban Challenge

2.1.1 Introductory Presentation, Professor Najat A. Saliba (American University of Beirut)

Najat Saliba (American University of Beirut) drew on detailed studies of Beirut to illuminate some of the air pollution and health issues affecting MENA cities.

The main sources of pollution, particularly particulate matter, were road transport, diesel engines, and crustal material enhanced during dust storms, although construction sites, sea salts, road dust resuspension and biomass burning were also important.

The principal conclusions were that Lebanon, like many other areas in the region, exhibited high PM concentrations that exceeded WHO limits by a wide margin; that chemical composition rendered Beirut's PM considerably more toxic gram-for-gram than that found in higher income cities; that a particular problem was the high concentrations of polycyclic aromatic hydrocarbons (PAHs), which are generated from combustion sources such as automobiles, ubiquitous construction sites, and diesel generators found in neighborhoods to provide electricity during daily power outages; and that dust episodes played an important role in pollution in the city. However, while these multiple uncontrolled point sources result in highly variable exposure to ambient PM and PAH levels, they could only be characterized accurately at the local level.

There followed a discussion, which focused in particular on how far ozone levels were lower than expected values for Beirut; on how model results compared to real point source data; and on the fundamental problem of data availability and accessibility.

2.1.2 *The challenge of transport in the urban context, Bert Fabian (UN Environment)*

Introducing discussion of transport emission – the most important source identified by Professor Saliba - **Bert Fabian** (UN Environment) emphasised that this was a challenge facing cities around the world. The proportion of the world's population living in cities would rise from 30% in 1950 to 70% in 2050, and the number of vehicles from 1 billion today to 2.5 billion by 2050, with most of the increase in non-OECD countries like those of MENA. Higher CO₂ emissions and air pollution was the inevitable result, as improvements in emissions technology were swamped by the increase in the number of vehicles.

Solutions have to be found through reducing the need to travel, increasing the role of environmentally friendly transport modes and improving vehicle efficiency. Efforts to reduce SLCP emissions by CCAC and others could play a major role here, for instance through UN Environment's campaign to reduce sulphur in diesel and CCAC's Heavy Duty Diesel Initiative.

Comments and questions were focused around

- How to deal with old cars;
- Integration at country and city level: this is a challenge because of fragmentation within government. It is accepted as an objective but practice remains a challenge. (This was seen as applying generally to other areas also).

2.1.3 *The challenge of waste management in the urban context, Eyad Batarseh (Engicon)*

Eyad Batarseh (Engicon) then introduced discussion of a second major source of emissions identified by Professor Saliba – waste management. He suggested that, in terms of air pollution, waste management posed serious challenges for cities in the region for the following reasons:

- Continuous and dramatic increase in waste quantity and change in waste characteristics;
- Limited funds for proper waste management;
- Regulations do not enforce specific standards for MSW facilities;
- Many players (government and private) creates coordination issues;

He saw this as giving rise to the following issues which needed to be addressed as part of any strategy to reduce SLCP emissions:

- Lack of waste avoidance, recycling, and treatment schemes leads to consumption of available landfill air space;
- Random disposal and uncontrolled waste burning, which leads to **black carbon** emissions, as a result of the low coverage of waste collection;
- No landfill gas capture and burning leads to increase **methane** emissions;
- Interrupted waste collection service could lead to serious health and contamination issues.

During the following **discussion** it was noted that high income countries generate more waste, so some problems could become more severe as MENA countries developed economically; that there was a lack of funds to complete construction of adequate landfill schemes, and this represented the main barrier to

progress; and, finally, that for a full picture it would be necessary to consider the challenge of dealing with special kinds of waste, for instance chemical and medical waste.

2.1.4 Taking action on short-lived climate pollutants at local level & the BreatheLife Campaign (video show)

Concluding the session, **Ms. Elsa Lefevre** introduced the Breathe Life campaign, a campaign launched by WHO, CCAC and UN Environment to raise awareness on air pollution, easily share air pollution data at city and national levels, and scale up action to reduce air pollution, especially short-lived climate pollutants so that cities/countries can achieve WHO Air Quality Guidelines by 2030. More information can be found at <http://breathelife2030.org/>

Links to related videos:

BreatheLife walk home video (Arabic): <https://www.youtube.com/watch?v=3nRIY8LrpQc>

What causes 1 in 9 deaths ? (Arabic):

<https://www.youtube.com/watch?v=vYlqEDeydSY&feature=youtu.be>

2.2 Short-lived climate pollutants and their role helping to meet key development goals

Johan Kuylenstierna (SEI) introduced the historic new sustainable development agenda recently agreed by some 119 countries, explaining how, with 17 goals and 169 targets, it covers diverse intersecting aspects of human & environmental needs and challenges. Achieving them by 2030 would require implementing coordinated and concerted strategies. This could give a key role to SLCPs which are relevant to multiple goals and gave multiple benefits. He then worked through the goals, noting the numerous links with SLCPs.

For instance, in relation to the goal of reducing hunger, ozone reduction avoids crop yield losses and also changes to nutritional status of crops, and banning open-field burning can increase soil fertility

Day 2: Tuesday 23 May 2017

Presentations on Day 1 highlighted the conclusion of the UNEP/WMO assessment of Black Carbon and Tropospheric Ozone that, if fully implemented, some 16 measures to reduce Black Carbon and Methane emissions could deliver significant benefits to human well-being by protecting the environment and public health, promoting food and energy security, and addressing near term climate change.

These measures involve technologies and practices that already exist and in most cases are cost effective. The objective of Session 3 was to explore such measures further, and in particular their relevance to the MENA region, through presentations and case studies. Session 4 focussed on how countries can plan and implement SLCP mitigation strategies and opportunities for regional cooperation.

For further detail readers are referred to the Day 2 presentations, which can be found at:
<http://twk.pm/qy98aaajre>

3 SESSION 3: SECTORAL ACTION: POLICIES, TECHNOLOGIES AND COSTS

3.1 How to reduce short-lived climate pollutants (part 1): measures, policies, good examples

3.1.1 Oil and Gas (e.g. fugitive emissions and flaring)

On behalf of Philip Swanson, coordinator of the Oil and Gas initiative of the CCAC, **Charles Heaps** (SEI) presented the Oil and Gas Methane Partnership and other activities supported by the Coalition.

He explained that the CCAC Oil & Gas Methane Partnership provides companies with a credible mechanism to systematically and responsibly address their methane emissions – and to demonstrate this systematic approach and results to stakeholders. More information available in the power point presentation and on the CCAC website: <http://www.ccacoalition.org/en/content/ccac-oil-gas-methane-partnership>

Mr Hussain Makki (Ministry of Oil, Bahrain) then gave a presentation on efforts by Bahrein to reduce emissions from oil and gas installations in Bahrein

3.1.2 Agriculture (e.g. livestock emissions; rice paddies; open burning)

Kevin Hicks (SEI) introduced the issues and measures related to the agriculture sector. Tropospheric ozone is potentially having significant impacts on agricultural crop production in the MENA region according to estimates presented in the international literature. The emissions of its precursors are related to fossil fuel use and crop residue burning, gas leaks, mining, livestock and biofuels.

Modelling research conducted in Europe has shown that crop losses in the MENA region in 2010 due to tropospheric ozone ranged from <100 to 600 thousand tonnes per year for wheat, maize, rice and soy (although not all those crops are grown in each country). Wheat yield loss is estimated to occur in several countries ranging from about 1% loss of wheat yield in countries like Jordan and Iraq to about 16% in Sudan.

Emissions profiles for each MENA country estimated by IIASA using GAINS model – ECLIPSE V5 (shown in the annex to the background document) show which emissions the agricultural sector is responsible for

in each country e.g. in Jordan the agricultural sector contributes to methane, PM₁₀, PM_{2.5} and ammonia to varying degrees.

The CCAC agriculture initiative has four 'components', or workstreams: 1) livestock & manure management; 2) open agricultural burning; 3) paddy rice cultivation; and 4) enteric fermentation which aim at helping countries reduce emissions of SLCPs from those areas.

Possible next steps for the MENA region could be:

- Determine extent of crops sensitive to ozone pollution in the region;
- Consider the measures that could be applied in the region to reduce impacts;
- Promoting awareness that any action taken to control tropospheric ozone formation in the atmosphere will have benefit for crop yield but also for human health and the climate.

The following **discussion** focused on the types of crops most relevant to the region and the impact of pollutants on them, and on how it was known that ozone rather than some other pollutant or factor was responsible for the crop damage. On the latter point Dr Hicks referred to the evidence from chamber experiments, mainly in Europe and North America.

3.1.3 HFCs and energy efficiency in air conditioning

Khaled Klaly (UN Environment West Asia Office, Ozone action) provided background on the causes and impacts of stratospheric ozone depletion and international treaties to protect the ozone layer and phase out ozone depleting substances (ODSs). Dr Klaly then gave a general overview on the regional efforts to implement the ODSs phase out programs and associated challenges mainly in the key using sectors i.e. the foam and refrigeration and air conditioning due to the very specific climatic conditions in West Asia. Then the presentation shed some light on the recent Kigali amendment to the Montreal Protocol to phase down HFCs and other efforts under the Montreal Protocol to achieve additional climate benefits including energy efficiency related activities with highlights on the current gaps and opportunities.

3.2 How to reduce short-lived climate pollutants (part 2): measures, policies, good examples

3.2.1 Transport (diesel vehicles; heavy duty vehicles)

Bert Fabian (UN Environment) introduced the challenges, measures, policies and good examples linked to short-lived climate pollutants in the transport sector. The transport sector is an important contributor to global greenhouse gas emissions and is also responsible for worsening urban air pollution. Both urbanisation and motorisation are expected to increase over the next decades. Sustainable low emission transport will be key to limit climate change.

Over the near-term, the adoption of measures that can substantially reduce black carbon in the transport sector, such as the adoption of particulate filters for road and off-road vehicles together with cleaner fuels and the elimination of high-emitting vehicles can make a significant contribution on slowing the pace of climate change and reducing air pollution.

The CCAC Heavy Duty Diesel Initiative plays an important role in promoting these changes.

More information can be found in the power point presentation and on the CCAC website: <http://www.ccacoalition.org/en/initiatives/diesel>

Greater Cairo, a case study, Ahmed Dorgamy (CEDARE)

Ahmed Dorgamy from the Centre for Environment and Development for the Arab Region & Europe (CEDARE) presented a case study on sustainable mobility in Greater Cairo, where vehicle emissions represent 32% of the PM₁₀ pollution. Currently the main transport mode is public transport (68%) but car ownership is growing. The national agenda on transport includes the following directions: Expand collective transport services (mainly Metro & Bus), *Tolerate* informal services with the aim of a gradual formalization, pilot intelligent transport system solutions, encourage non-motorised transport (demo cycling lanes); but does not give any direction toward car-use restriction policies/urban planning. More information can be found in the power point presentation.

3.2.2 Waste (municipal solid waste and waste water)

Eyad Batarseh (**Engicon**) described how improved solid waste management can contribute to reducing both methane emissions (from uncontrolled landfill) and black carbon emissions (from uncontrolled burning of waste and the use of old vehicles). He introduced the hierarchy of solid waste management options (see figure). More information can be found in the power point presentation, including on good examples in the region.



3.2.2 Industry (e.g. Coke Ovens, brick production)

Introducing the discussion, **Richard Mills** (IUAPPA) first outlined some of the challenges and opportunities for mitigation in the bricks sector. Artisanal brick production, involving very large numbers of small enterprises, can be a source of serious local pollution with major impacts on the health of employees and local residents. A variety of alternative kiln designs had been identified which could reduce emissions. However, particular brick production technologies are often deeply embedded in local economies and changing practices can involve difficult cultural and financial issues as well as significant practical challenges in terms of encouraging take-up, training and financial support.

Turning then to mitigation across small and medium-sized industry generally, Mr Mills argued that it was important to recognise that industry often welcomed regulation as it could ensure a level playing field. But negotiations may be challenging. In most cases the issue is cost of transitioning and the timeline for transition. Companies will normally accept new emission controls when they are replacing machinery, but are much less willing to scrap or retrofit newer machinery. There are other ways than regulation to encourage small and medium industry to evolve, such as providing incentives and identifying champions to pave the way.

The Arab Initiative for Green Industry, Amir Alruafai (Arab Industrial Development and Mining Organisation)

Amir Alruafai presented the Arab Initiative for Green Industry. Seeing that the international community attributes special attention to green industries as one of the mechanisms of transition towards a green economy, and its key contribution to achieving sustainable industrial development, the Arab initiative for green industries seeks to integrate green industry issues at the heart of industrial policy; facilitate switching from traditional methods in manufacturing processes that have impacts on the environment, health, and that lead to the depletion of natural resources, to modern methods that result in sustainability of the industry; raise awareness on the concept of green industry in Arab countries; and build capacity in the sector.

The brick sector in Iraq, Ali Ibrahim Hatem Al-Obaidi (Ministry of Industry and Minerals, Iraq)

Ali Ibrahim Hatem Al-Obaidi introduced briefly the brick sector in Iraq. This sector is part of the history of the country. Iraq has more than 650 factories and produces 9 billion bricks per year. Changes in burning practices could reduce by 40% energy consumptions and filters for air pollutants emissions are needed. The transport and the working conditions in the sector also need to be improved.

3.2.3 Discussion

A number of detailed and mainly factual points were raised on the presentations, but the main substance of discussion focused on what had been identified as the most critical SLCP area for the MENA region – transport.

There was much interest in possible scrappage programmes for old cars, with loans to facilitate the replacement process; and in programmes for the replacement of old taxis. Good transportation systems, not only within but outside and between cities were seen as critical to the development of liveable cities, and electric vehicles and monorails could play an important role.

Effective integration between different sectors would be essential to achieve progress.

4 SESSION 4: SECURING THE BENEFITS OF SLCP MITIGATION IN THE MENA REGION

4.1 Action planning for short-lived climate pollutants mitigation at the national level

4.1.1 Scaling up action on short-lived climate pollutants in Jordan, Ahmed Noubani, Ministry of Environment, Jordan

Ahmad Noubani, coordinator of the Institutional Strengthening project on short-lived climate pollutants for the Ministry of Environment in Jordan, with support from the Climate and Clean Air Coalition, presented an overview of the national effort to reduce short-lived climate pollutants. The priorities for the country are transport, health, waste and HFC. The Ministry of Environment has established a national unit on short-lived climate pollutants, produced communication brochures and organised trainings. The Nationally Determined Contribution already includes a number of measures that will reduce short-lived climate pollutants (reduction of solid waste disposed in landfills, biogas production, national Bus Rapid Transit system, etc.).

4.1.2 *Implementing SLCP Mitigation Plans and Programmes: some lessons so far, Richard Mills (IUAPPA)*

Richard Mills drew on experience in the CCAC SNAP programme so far to highlight two key requirements for effective implementation of SLCP mitigation:

- Assessing policy implementation pathways:

The variety of SLCP emission sectors and sources is very wide, involving very different implementation processes, with distinctive requirements and challenges.

There is a need to take account of the distinctive processes involved in, for example: Infrastructure (public sector contracting procedures but with the advantage of known pipelines of schemes which can potentially be quickly adjusted); Industry and Transport (usually quicker decision-making involving fewer interests); and domestic and artisanal activities (very large numbers of individual actors and sometimes profound cultural and economic changes – hence normally a long implementation time-scale).

- Ease of implementation

Policy options then need to be assessed not just in terms of their *potential* mitigation effect, but in terms of the feasibility of implementation.

Critical considerations will include implementation time; time to benefits; reduction certainty; straightforwardness of implementation; tentative costs; and co-benefits:

Key Tests are likely to be *how reliable/predictable are the emission reductions?* and *how quickly can they be delivered?*

4.1.3 *Illustration of ongoing efforts from civil society and private sector*

Two presentations from participants illustrated that solutions exist or are currently tested and that there is already a lot ongoing in the region.

Karim Tarraf, business manager of the company Hawa Dawa introduced its bottom-up air quality monitoring technique that provides remote, real-time and in-situ air quality data anywhere and anytime (www.hawadawa.com).

Salman Zafar, from the NGO Eco Mena, introduced the work of the NGO, whose primary mission is to raise awareness on renewable energy, sustainability, waste management, environment protection, energy efficiency and resource conservation in the Middle East and North Africa region (www.ecomena.org).

5 Session 5: Group discussion & Closing: opportunities for the region and regional cooperation

5.1 Breakout Group reporting back

Participants were divided to 5 groups, they were asked to answer 5 questions. Compiled answers are as follows:

1. What could be the principal benefits of mitigation action on SLCPs for the region?

- Improved air quality and sustainability of cities (short-term benefit as well as long-term)
- Contribute to the reduction of global warming and climate change
- Reduce negative impacts on public health
- Economic benefits, including increases in agricultural productivity and food security

2. Of the various sectors where mitigation of short-lived climate pollutants is feasible, which offer the highest potential benefits for the region?

- Transport sector
- Waste (Solid waste & wastewater management)
- Energy sector (Oil and gas)
- Agriculture
- Industry

3. What is needed for effective national action planning and regional cooperation?

- Risk assessment to identify the key pollutants
- SLCP inventories
- Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to identify priorities
- Submit the report with the recommendations to decision makers
- Top political will/support should be sought
- Financing will be critical
- Capacity building
- Supportive laws and regulations and enforcement
- Monitoring Reporting and Verification (MRV)

4. What are the practical barriers to implementation of mitigation measures?

- Lack of finance
- Lack of public awareness
- Lack of technical know-how / local expertise
- National (political) problems for some countries in the region

5. What are your main take away messages from the workshop?

- It is important to address other gases in tandem
- SLCPs are not only important for addressing climate change but are also affecting health, local environment (crops, etc.) and the economy.
- Focus on priority sectors will result in high impacts (low-cost / quick-wins / synergies).
- Sharing information and coordination between sectors will be important
- Push for cleaner energy
- Need for an integrated initiative for the countries in MENA region under one umbrella to facilitate communication with decision makers and implementation of the recommended actions

5.2 Closing

Building on the reporting back of the previous session, **Elsa Lefevre** (CCAC Secretariat), **Abdul-Majeid Haddad** (UN Environment Regional Office), **Kevin Hicks** (SEI) and **Richard Mills** (IUAPPA) concluded the workshop with a few remarks on the main take-away (as summarised below).

IMPLICATIONS FOR FUTURE SLCP WORK IN THE REGION

While a wide range of divergent views were expressed, a number of significant themes and lessons for the future did emerge relevant to future SLCP strategy and work by the Coalition in the region, including in particular the following:

- The participants were mainly relatively senior members of environment departments, but outside the three CCAC partner countries (Jordan, Kenya and Morocco) there appeared little familiarity either with SLCP arguments or with CCAC.
- MENA is a region with much to gain from early action on SLCPs. There was no dissent from the underlying proposition in the Background Paper and the opening presentations that MENA was one of the regions most at risk in terms of the impact of climate change, pollution and food security, and it has clearly been sensitized by recent extreme events.
- While the region's greenhouse gas emissions are relatively low and responsibility for addressing climate change is seen to lie elsewhere, there was no disagreement that the region should address its own emissions. More important, the health effects of air pollution – largely SLCPs - has recently become an issue of salience and priority cross the region. SLCP arguments therefore fall on fertile ground.
- There also appeared little disagreement that slow economic growth, low oil prices and widespread international conflicts meant that the region is currently not well equipped to tackle the challenges. Indeed participants emphasised more strongly than did the background paper the constraints imposed by current conflicts. This could cut two ways: on the one hand it makes activity and investment by the Coalition more risky, but on the other it increases the potential reward.
- A distinctive regional approach for MENA is clearly needed. There was a concern that special characteristics of the region, which distinguished it from other regions, needed to be highlighted and more fully explored, for example wind-blown dust and sea salt.
- Some of the important prerequisites for effective work on SLCPs are already in place. Participants readily grasped the nature of and requirements for SLCP planning, in particular the importance of an integrated and co-ordinated approach across government. However, while this was thought to be widely recognised there were doubts whether it could be delivered. Further, the fact that participants themselves raised the usefulness of tools such as SWOT analysis and risk assessment suggested that officials were well attuned to the sorts of thought process that integrated SLCP planning requires.
- Participants also found little difficulty identifying regional SLCP priorities, with a broad consensus that these were transport, waste and oil and gas. The need to deal with old, high-emitting vehicles was seen as particularly important
- At the technical level there was substantial interest in the LEAP-IBC tool and its usefulness for work in the region, although some concern also to develop a more home-grown, region-specific model. In the case of LEAP-IBC it was thought particularly relevant that the model did not require comprehensive data.

- A more fundamental concern was the limited availability and quality of data despite illustrations that good numbers of countries have good air quality monitoring networks. Communicating such data to WHO and other international organisation is not regular nor consistent. The messages were however ambiguous. On the one hand a number of countries were concerned that the data from international sources used for the background paper was not reliable and indicated that they held better data. Against that there was a general concern that monitoring and inventories were inadequate across the region. More region-wide co-operation was needed in this area.
- Although little mentioned in the meeting, a major issue must be the availability of funds to finance major mitigation programmes, which will be an issue even for those measures which are cost effective. The region displays extremes of wealth and poverty between states. This may have two implications: on the one hand some countries will be well resourced to undertake mitigation programmes; on the other the region may be well-placed for some measure of burden-sharing in those mitigation programmes that need to be coordinated at regional scale.
- A final area for consideration is the scope for regional cooperation. The meeting had the support of the League of Arab States and other regional organisations and it would be appropriate to report the outcome to them as a basis for exploring further regional action on SLCPs. As for areas of cooperation, SLCP data, monitoring and assessment were most prominently suggested but they might need to be part of some wider initiatives and there might be a question as to how these relate to data systems under UN Environment and other international bodies. A more fruitful area may be those programmes that require cross-boundary cooperation, such as ozone mitigation and movement of heavy-duty diesel vehicles.