Middle East & North Africa

Actions taken by governments to improve air quality

1.0 Introduction

In June 2014 the United Nations Environment Assembly (UNEA) adopted resolution 1/7 *Strengthening the Role of the United Nations Environment Programme in Promoting Air Quality*. As requested in paragraph 4 and 7 of the resolution, which requested UNEP to develop a report detailing actions taken by governments to promote air quality, this report details some of the major actions being undertaken by governments in the Middle East and North Africa to improve air quality.

This report summarises ten actions being undertaken in the sub-region to improve air quality. In selecting these ten actions, consideration was given to their replicability, global appropriateness to address particular air pollution challenges and potential impact. For more details, please refer to the methodology document.

These actions are: *For Industrial activities:* 1) establishing incentives that promote investments in renewable energy, pollution control technologies, energy efficiency and clean production mechanism; and 2) increasing industrial energy efficiency. *For road transport:* 3) reducing sulphur content in diesel and petrol; 4) tightening vehicle emission standards to at least Euro 4/IV-equivalent; and 5) increasing investments in public and non-motorized transport infrastructure and systems. *For open waste burning:* 6) reducing open burning of both agricultural and municipal waste through provision of legislation, monitoring, enforcement and municipal waste management systems. *For Indoor air pollution:* 7) improving access to cleaner cooking and heating fuels; and 8) improving access to cleaner, more efficient cook/space heating stoves. *For general legislative efforts:* 9) establishing and continuously tightening ambient air quality standards to meet WHO recommendations; and 10) establishing laws and regulations to support efforts to meet ambient air quality standards, and strengthen monitoring and enforcement. Figure 1 provides a summary of these actions for the sub-region.

NORTH AFRICA & MIDDLE EAST POLICIES AND ACTIONS TO IMPROVE AIR QUALITY



Figure 1: A summary of actions, programmes, policies, laws and regulations undertaken by governments in the sub-region to improve air quality (green = progressing to best practice; red = action still required).

2.0 Regional Overview

The Middle East and North Africa sub-region consist of eighteen countries: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates (UAE) and Yemen. This sub-region faces considerable air quality challenges especially from natural sources. The World Health Organisation (WHO) estimates that air pollution is responsible for approximately 133,000 premature deaths annually, with natural sources of air pollution, mainly windblown desert dust, being the most important cause of premature deaths estimated at more than 60,000.

Although natural sources of air pollution, such as windblown dust, are the most important sources of air pollutants in the sub-region, several anthropogenic emission sources also play a major role in driving air quality. Industrial emissions are the most important anthropogenic source of air pollution which results from the high number of petroleum refineries and fossil fuel powered power plants in the sub-region.

Vehicular emissions are also an important driver of air pollution in the sub-region. The lack of vehicle emission standards and fuel quality are some of the reasons cited for the high emissions rate from this sector. Low investment in public transport also contributes to emissions as the preferred mode of transport is usually private vehicles. Emissions from fuels used to meet household energy demand contribute to air pollutants emissions.

Open burning of waste is another major source of air pollution in the sub-region, with at least fifteen out of the seventeen countries still practicing open burning of agricultural and / or municipal waste. None of the countries in the sub-region have effectively managed to reduce open waste burning of both agricultural and municipal waste.

Progress has been made in different areas in different countries, and there are several positive case studies to be found across the sub-region. There are however specific areas in each country that can be improved, while standards need to established and continuously tightened, public transport expanded, the use of best practice increased etc. In addition, for policies and legislation to lower air pollution, countries must also improve implementation and enforcement, without which actions to improve air quality will not achieve their potential impact.

3.0 Actions Taken to Improve Air Quality

3.1 National air quality standards & regulations

Eleven out of eighteen countries in the sub-region have established ambient air quality standards, although not all meet WHO guidelines or interim targets, and none of the countries have PM_{2.5} standards. Two countries – Iran and Israel – have established some legislation, law, policy or act specifically for air quality (see figure 2 below). All the other countries do not have specific legislations on air quality, although issues relating to air quality are captured in other sector specific legislations.



Figure 2: Number of countries in the sub-region that have enacted ambient air quality standards (AAQS), and air quality laws and regulations.

Some countries in the sub-region have also developed air pollution prevention programmes that aim at addressing the air quality challenge comprehensively. In Israel, a National Air Pollution Reduction and Prevention Program was adopted in 2013. This programme focuses on reducing emissions from transportation, industry, energy and households. It includes components such as; encouraging carpooling and public transportation, promoting a program to use natural gas for public transportation, incentivizing plants to use less polluting fuels, switching to a "smart electric network," among others.

3.2 Transport

The rapid growth in the number of vehicles in major cities within this sub-region has put substantial pressure on urban transport systems, increasing traffic congestion and emissions. Actions and policies being implemented in the sub-region to reduce vehicular emission include the expansion of public and non-motorised transport. Given the increased congestion experienced in many urban areas, maintaining and increasing the modal share of public transport is essential to increase mobility while decreasing transport emissions.

Expansion of public transport is a major area of interest that a few governments in the subregion are focusing on to minimise emissions from the transport sector while decreasing congestion and improving mobility. Israel for instance has developed an inter-urban rail system that has experienced a 35% increase in the number of passengers since 2010. A fast lane to Tel Aviv from other urban areas is reserved for public transport, carpooling and paying customers. Iran also plans to expand Tehran Metro from its current 152km to 430km by 2028. Figure 3 below shows the number of countries in the sub-region that have initiatives to significantly expand public and non-motorised transport.



Figure 3: Number of countries in the sub-region that have initiated programmes and initiatives to significantly expand public transport.

Improved fuel quality and implementation of vehicle emission standards are also required to minimise emissions from the transport sector. In the sub-region, Iran and Israel have established vehicle emission standards equivalent to Euro 4. Four other countries have vehicle emissions standards below Euro 4 while the rest do not regulate vehicle emission standards. Figure 4 below show a summary of vehicle emission standards as established in the sub-region.



Figure 4: The number of countries in the sub-region that regulate vehicle emission to Euro 4 (or equivalent) standards.

Fuels and vehicles work as a system; in order to benefit from improved vehicle standards, low sulphur fuels are needed as these allow the advanced pollution control devices to work optimally. With respect to fuel quality, three countries in the sub-region - Morocco, Israel and Tunisia - have established a maximum fuel sulphur standard of 50ppm. Israel is the only country in the sub-region to have implemented both vehicle emission and fuel quality standards. In United Arab Emirates and Kuwait, diesel sulphur content is regulated at 5000ppm, but in reality most of the fuel in the market has a sulphur content of 500ppm or less. Israel regulates diesel and gasoline sulphur content at 10ppm. Bahrain sulphur content for diesel is regulated at 500ppm, but the country produces diesel at 10ppm for export. Figure 5 below shows how fuel quality is regulated in the sub-region.



Figure 5: Number of countries in the sub-region that regulate fuel quality using Sulphur content as a proxy for fuel quality

3.3 Open burning of waste

Open burning of municipal waste is a common practice in at least seven out of the eighteen countries in the sub-region. Municipal waste generation has been on the rise due to changing consumption patterns and urbanisation, however, waste management systems have not kept pace in many cities, making waste disposal a major challenge. Figure 6 below shows number of countries in the sub-region that regulate waste burning for both agricultural and municipal waste.



Figure 6: Number of countries where laws, regulations and actions have been implemented to prevent open burning of agriculture and municipal waste.

Several countries in the sub-region have established legal framework under which both municipal and agricultural waste is managed. One such country is Oman, which is among the few countries that have a legal framework specifically banning the burning of organic or agricultural waste in the open. Israel's Abatement of Nuisances Regulations (Prevention of Unreasonable Air and Odour Pollution from Waste Disposal Sites) prohibits emissions of smoke, gas, fumes and dust that are released from waste burning in waste disposal sites. In Morocco, Law 28-00 on waste management and disposal governs and provides the general framework for the sector. Egypt has started implementing the national strategy for Integrated Solid Waste Management at the governorate level.

Other efforts carried out by governments within the sub-region to reduce waste burning,

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