

## Southeast Asia

### Actions taken by governments to improve air quality

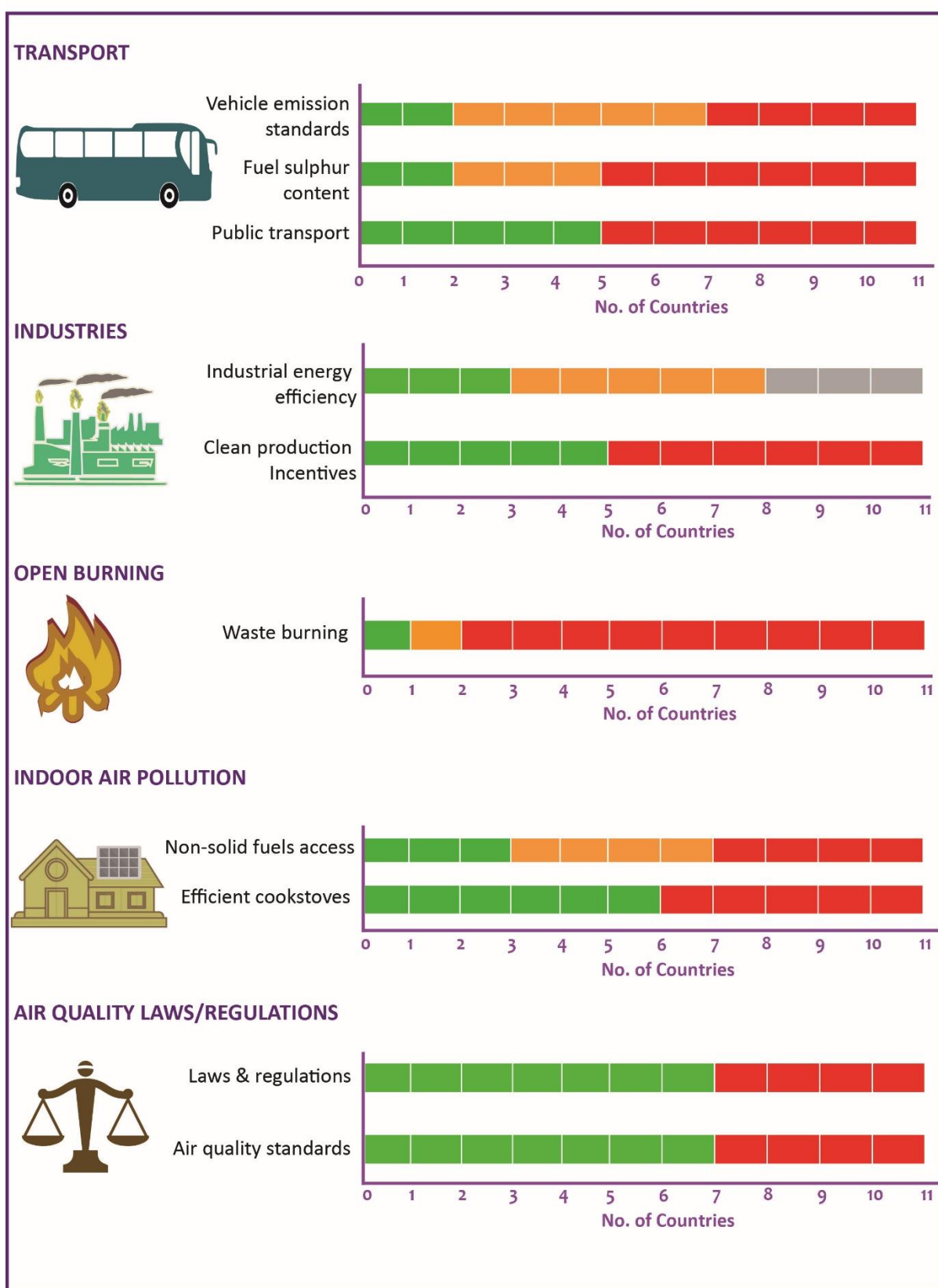
#### 1.0 Introduction

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 paragraphs 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 Southeast Asia 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.

## SOUTHEAST ASIA 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**

Southeast Asia includes Brunei, Cambodia, Indonesia, People's Democratic Republic of Lao, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste and Viet Nam. Air pollution in the sub-region varies widely over space and time: in rural areas, biomass burning is the most dominant source of air pollution followed by vehicle emission, and in urban areas, vehicle and industrial emissions are the most important sources of air pollution.

The impacts of poor air quality are significant with indoor air pollution having the greatest health effect on the local populace. In 2012, the World Health Organisation estimated that indoor air pollution in the sub-region caused more than 376,000 premature deaths; indoor air pollution accounts for more than 75% of the total annual premature deaths. Indoor air pollution is primarily driven by the combustion of low quality fuels for domestic energy provision, mainly for cooking, heating and lighting. In an effort to reduce the overreliance on these fuels, governments have put into place several policies, regulations and actions aimed at reducing the use of these fuels.

In the sub-region, outdoor air pollution is estimated to cause more than 149,000 premature deaths annually; this represents a 130% increase from 2004 levels. The moderate increase in outdoor air pollution impacts compared to the indoor impact can be attributed to actions taken by the governments of Indonesia, Singapore and Thailand in the early 2000s to mitigate against ambient air pollution. Some of this actions included banning the use of leaded fuels, enacting laws to regulate fuel sulphur contents, and adopting vehicle emission standards.

Open burning of municipal and agricultural wastes is banned in most countries, yet it continues. Transboundary transport of air pollutants is also an important source that contributes to deteriorating air quality in the sub-region, the most important being the seasonal forest and/or peat fires from Indonesia. Although policies and regulations exist to combat air pollution from open burning, in reality there is poor implementation and enforcement of the laws.

Vehicular emissions are also an important source of outdoor air pollution. Despite its contribution to urban air pollution, Euro 4 (or equivalent) vehicle emission standards and a

maximum 50ppm sulphur limit in fuels are only found in two countries. Three other countries have plans to improve standards over the next few years. Aggravating the situation is the absence of regulation on second-hand imports in some of the countries, exposing them to “dumping” of older, less efficient and more polluting vehicles.

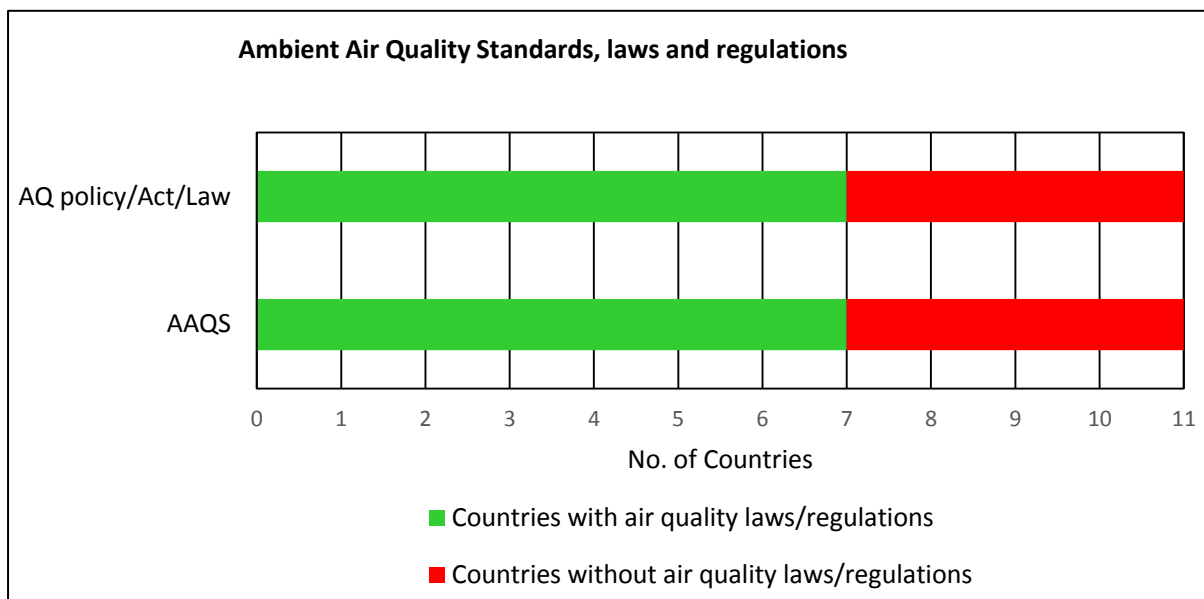
While better fuel and vehicle standards are crucial to improve the cleanliness of the vehicle fleets, air pollution from transport will still increase in the future unless action is taken to tackle the growth in the numbers of vehicles. There is a pressing need to improve and increase public and non-motorised transport options, and to encourage a shift from private to public modes. While public transport is generally left to the city government to manage, a strong national framework and support may be required to ensure that this happens.

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 be 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**

Seven out of the eleven countries have ambient air quality standards, although not all of them meet WHO guidelines. Malaysia and Singapore have established and implemented comprehensive sets of national air quality-related standards and regulations that contribute to improving air quality. Brunei, the Philippines, Viet Nam, Indonesia and Thailand have standards and some regulations; however the implementation and enforcement needs improvement. Figure 2 shows a summary of the number of countries that have enacted some form of national air quality laws and regulations.



**Figure 2:** Number of countries in the sub-region that have enacted some form of air quality laws and regulations, and also the number of countries that have enacted and promulgated Ambient Air Quality Standards (AAQS).

While Singapore does experience seasonal haze from the Sumatra fires, its air quality still compares well with other major cities. The Economist Intelligence Unit called it Asia’s greenest city. There are several factors that contribute to this, including policy, climatic reasons (in the form of favourable winds), and the fact that the country is ranked as one of the least corrupt in the world. The absence of rampant corruption assists with enforcement of regulations.

Malaysia has developed its capacity to manage air quality during its longer history of managing environmental issues. While progress has been achieved within the country, up to 70% of its air pollution comes from outside the country in the form of transboundary haze. Similarly, although Brunei has a Pollutant Standards Index (PSI) below USEPA, EU and WHO guidelines, transboundary haze from agriculturally-related burning in neighbouring countries is a problem during the dry season.

While Indonesia doesn’t have a specific policy on air quality, its regulatory framework covers most of the issues impacting air quality. However, implementation, monitoring and enforcement need improvement. Air pollution remains a significant issue, especially in urban areas, with key sources being transport (increase in number of vehicles, poor fuel and

lack of vehicle emission standards) and open burning of wastes, all of which are aggravated by limited enforcement of regulations.

The Philippines' Environmental Performance Index (EPI) ranks third in the Southeast and North Asian sub-regions, next to Japan and Singapore, and ties with Australia for 8<sup>th</sup> place in the whole Asia-Pacific region. There is an Air Quality Management Fund to finance 'clean up' operations in air pollution cases, and a Clean Air Act with implementing rules and regulations, including national emission standards for industries. There has been some progress made in recent years, such as a 30% decrease in total suspended particulates from 2004 to 2008 nationwide, viewed as resulting from the Clean Air Act. The main challenge is not in the policies so much as in the implementation and enforcement.

In Viet Nam, 98% of the population is exposed to PM<sub>2.5</sub> at levels exceeding WHO guidelines. The country has plans to develop a Law on Clean Air.

In Myanmar, there is no air quality policy or ambient air quality standards. An Environmental Conservation Law has been passed, but the regulations and standards to implement and enforce the law have not been developed.

In Cambodia, a sub-decree on air pollution control was issued in 2000, including air quality standards for ambient air quality and emission limits for stationary and mobile sources. However, there is a need for further development in the legal framework in order to implement the decree. Laos meanwhile has no ambient air quality standards and no specific air pollution control law or legal framework.

### **3.2 Transport Sector**

Transport is a significant and growing contributor to air pollution in all the countries, particularly in urban areas. Given the increased congestion experienced in many urban areas, maintaining and increasing the modal share of public and non-motorised transport is essential for increasing mobility while decreasing transport emissions.

There is a concerted effort in Bangkok to expand mass transit, add more routes to subway and sky train services, and provide flat-rate ticket prices to encourage increased ridership.

There is also a plan to invest in high-speed, inter-city trains. Bangkok plans to amend regulations to allow access to electricity chargers at petrol stations. There is a 10% decrease in excise tax on electric vehicle components, as part of a plan to promote Electric Vehicles in Thailand. Actions to promote non-motorized transport are listed in the National Transport Master Plan.

Transport produces up to 80% of the air pollution in Metro Manila, the Philippines; in recognition of this, there are some actions being taken to promote cycling and walking at the city level. There is also a project to replace 200,000 conventional tricycles with electric versions. Singapore on the other hand has a comprehensive public and non-motorized transport system with a citywide network of walking and biking paths, trains and buses. Currently, Singapore's public transport network includes a Mass Rapid Transit system, a Light Rapid Transit system and buses. The Transport Master Plan will double rail network by 2030 to 360km, increase the number of trains, buses and bus routes, and give buses priority on the road. In addition, the city will build 200km of sheltered walkways, add more integrated transport hubs so people can easily switch between different modes, and expand the cycling path network to over 700km in length.

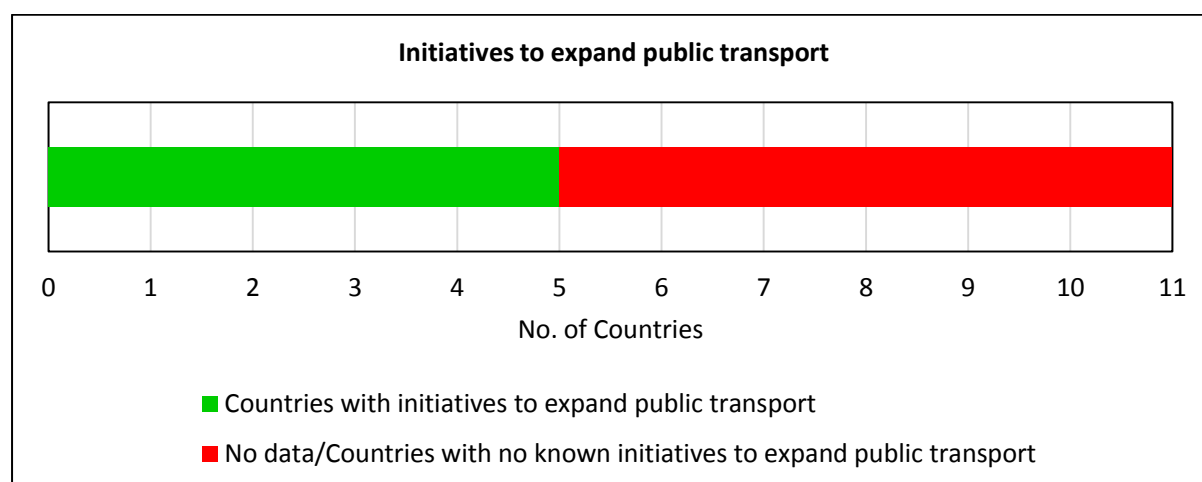
Other countries have plans to upgrade public transport. The Ninth Malaysia Plan recognised the importance of public transport and focused on a modal shift, leading to increased investment in bus rapid transit systems, with one bus rapid transit system being built in Kuala Lumpur. The Land Transport National Master Plan 2006-2025 for Brunei includes plans for a rapid bus transit network, and other improvements to public transport to decrease reliance on private vehicles.

In Viet Nam, traffic is responsible for up to 70% of urban air pollution. The government is directing more investment into public and non-motorised transport systems, including a rapid transit network being built in Ho Chi Minh and a metro rail project in Hanoi. There are also tax exemptions for buses that use clean energy. Bus enterprises receive various tax and fee exemptions if their buses use clean energy.

In Indonesia, there is increasing investment in rail networks for passengers and freight, which will hopefully move some of the road traffic onto rail, and a Bus Rapid Transit system in Jakarta. The Low-Cost Green Car initiative provides a lower tax rate for cleaner cars.

However a higher tax on public transport vehicles (20% for buses versus 10% for private vehicles) helps to discourage replacement of an aging bus fleet.

In Myanmar, the railway system is still a dominant but gradually declining mode for both passenger and freight, as is the waterway system. The aging railway system needs upgrading if it is to retain passengers, some of whom are starting to shift toward road transport, including private vehicles. Figure 3 shows the number of countries in the sub-region that are investing in significantly expanding public 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 created from transport. Singapore and Thailand are the only two countries that currently have Euro 4 vehicle emission standards. Five other countries – Brunei, Indonesia, Malaysia, the Philippines and Viet Nam – have some vehicle emission standard in place. Figure 4 shows the number of countries in the sub-region that have

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