UNEP/APEnvForum(2)/INF/1
Distr.: General
6 September 2017

English Only

United Nations Environment Programme Asia and the Pacific Office

Second Forum of Ministers and Environment Authorities of Asia Pacific
Bangkok, 5-8 September 2017

Discussion Document for Agenda Item 8 (a) Theme: "Towards a pollution-free planet"
Regional input to outcomes of the third session of the United Nations Environment Assembly (2017)

Towards a pollution-free Asia Pacific

Discussion Document -- Not for quotation or citation. The purpose of this document is to facilitate discussions during the Second Forum of Ministers and Environment Authorities of Asia Pacific, 5 – 8 September 2017, Bangkok. Comments are welcome and should be sent to uneproap@un.org.

I. Introduction

1. The Asia and the Pacific region has witnessed rapid economic growth, urbanization and lifestyle changes over the past decades. The sixth Global Environment Outlook Regional Assessment for Asia and the Pacific highlights that the current approach to development in the region inflicts a significant cost on health and the environment. A review of environmental trends emerging in the past years shows that the Asia-Pacific region's unprecedented rate of economic growth continues to exert environmental pressure and the evident impact could be seen in the contamination of water, air and soil. Pollution is the real threat to human health and ecosystems in Asia and the Pacific. The paper covers the global mandates related to pollution, highlights the status and trends of spectrum of pollutions, and the solution landscape including options for actions.

2. The UN Environment Assembly of the UN Environment Programme (UN Environment) has adopted many resolutions to address pollution and health related issues. The 1st Session of the UN Environment Assembly in June 2014 adopted resolutions on marine plastic debris and micro-plastics, air quality, global environment monitoring system, and other issues related to pollution. The 2nd Session of the UN Environment Assembly in 2016 adopted 25 resolutions, including pollution-related resolutions, namely marine plastic litter and micro-plastics, sand and dust storms, chemicals and waste, and food waste. The 3rd Session of the UN Environment Assembly (UNEA-3) scheduled in December 2017 will focus the international attention on the opportunities for achieving a pollution-free planet. The 3rd Session is expected to adopt an international action agenda involving political leaders, citizens, private sectors, and UN organizations and treaties to address some of the most pervasive forms of pollution.

3. The 1st Forum of Ministers and Environment Authorities of Asia Pacific held in 2015 in Bangkok, expressed concern over deteriorating environmental quality and health and rising costs from air, water, and soil pollution due to emissions, effluents from industry, transport and agriculture. The forum identified regional priorities, which included: climate change and enhance resilience, resource efficiency and pollution, biodiversity and ecosystem services, chemicals and waste, integrated environment and health to address air pollution, and science-policy linkages.

4. At the 4th Regional Forum on Environment and Health in Southeast and East Asian countries held in October 2016 in Manila, Philippines, High level Ministers and officials from 14 countries signed the Manila Declaration on Health and Environment, and commit to take action to address environment and health in the context of the Sustainable Development Goals. The Declaration commits countries to meeting specific sustainable development goals and targets that can significantly address the regions' environment and health challenges including: antimicrobial resistance; transboundary air pollution; illegal transnational shipment of waste; destruction of coral reefs and marine pollution; and promotion of environment and health impact assessment. UN Environment and the World Health Organization host the Secretariat for the Regional Ministerial Forum on Environment and Health.

II. Critical Trends

A. Air Pollution

5. Air pollution is a major threat to human health and well-being in Asia and the Pacific. Globally, air pollution, as the world's biggest environmental health risk, costs the lives

of seven million people every year[1]. Regionally, low- and middle-income countries in Southeast Asia and Western Pacific had the largest air pollution-related burden in 2012, with a total of 3.3 million deaths linked to indoor air pollution and 2.6 million deaths related to outdoor air pollution[2]. The impact of air pollution on human health is of great significance in Asia and the Pacific resulting in heart and chronic respiratory illness, cancer, increased morbidity, and premature death. In addition, indoor air pollution has been found to have gendered impacts leading to high lung cancer rates for women[3]. Children are uniquely vulnerable to air pollution – due both to their physiology as well as to the type and degree of their exposure[4].

6. A new World Health Organization air quality model confirms that 92 per cent of the world's population lives in places where air quality levels exceed WHO limits[5]. Air pollution is rising in many of the world's poorest cities. Between 2008 and 2013, the highest urban air pollution levels were experienced in low-and middle-income countries in Southeast Asia, with annual mean levels often exceeding 5-10 times the WHO limits, followed by low-income cities in Western Pacific. In some cities in Asia, air pollution levels have exceeded 20 times the WHO guidelines[6]. Asia has 25 of the world's 30 "most polluted cities" in terms of Particulate Matter 2.5 measurement[7].

7. Energy production and use, mostly from unregulated, poorly regulated or inefficient fuel combustion, are the single most important man-made sources of air pollutant emissions[8]. The combustion of fossil fuels, mostly for transport and electricity generation, is the principal source of outdoor air pollution in urban areas. Emissions of air pollutant particulate matter are expected to continue to grow, with energy demand in Asia and the Pacific forecast to increase by 60 per cent from 2010 to 2035[9].

8. The burning of coal and biomass for household cooking, heating and lighting is a major cause of indoor air pollution in rural communities and some urban areas. Rural populations in many countries still do not have access to basic energy services[10]. These health risks are strongly correlated with poverty. Most of the premature deaths from household air pollution occur in the "hotspots" of Southeast Asia (1.69 million) and Western Pacific (1.62 million)[11]. Indoor air pollution has been found to have gendered impacts leading to high lung cancer rates for women[12]. More than 60 per cent of all premature deaths from household air pollution in 2012 were among women and children[13].

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1 WHO (2014) 7 million premature deaths annually linked to air pollution

2 WHO (2014) 7 million premature deaths annually linked to air pollution

3 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 46

4 UNICEF (2016) Clear the Air for Children, Page 8

5 http://www.who.int/mediacentre/news/releases/2016/air-pollution-estimates/en/

6 https://www.theguardian.com/global-development/2016/nov/22/cloud-filth-envelope-asian-cities-urban-smog-air-pollution-india-china

UNICEF (2016) Clear the Air for Children, Page 16

7 WHO Global Urban Ambient Air Pollution Database (update 2016)

8 WHO (2016) Household air pollution is a gender issue

9 UNESCAP (2016) 2016 Regional Trends Report on Energy for Sustainable Development

10 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 14

11 WHO (2016) Burning Opportunity: Clean Household Energy for Health, Sustainable Development, and Wellbeing of Women and Children, Page 17

12 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 46

13 WHO (2016) Household air pollution is a gender issue

9. Besides its health impacts, air pollution also poses a threat to the region's economy, in terms of the lost labor income and welfare losses. In 2013, exposure to ambient and household air pollution cost the world's economy some USD 5.11 trillion in welfare losses. In terms of magnitude, welfare losses in South Asia and East Asia and the Pacific were the equivalent of 7.4 per cent and 7.5 per cent of the regional gross domestic product, respectively. Household air pollution from cooking with solid fuels was the biggest cause of losses in South Asia. Labor income losses, while expectedly lower than welfare losses, were nonetheless substantial in regions with younger populations. Lost income for countries in South Asia totaled more than USD 66 billion in 2013, the equivalent of nearly one per cent of GDP[14].

10. Transboundary smoke and haze is a leading regional air quality issue in South and Southeast Asia. In 2015, the El Niño weather phenomenon led to drought in many places and rendered forests and peatlands to tinderboxes, and fires out of control. The fires threaten some of the world's most unique biodiversity as they burn across protected areas. The smog from the fires raging in Indonesia led to closed schools, disabled airports and the country's state of emergency declaration in six provinces. The smog not only spread across Indonesia, but also to neighboring Malaysia, Singapore, Thailand and the Philippines.

11. Dust storms are a recurring phenomenon in Northeast (Northern China, Korea, and Mongolia) and West Asia (Iran). Such storms are a particular problem in the eastern provinces of Iran, which are most affected by water shortages and frequent droughts[15]. Northeast Asian dust events normally occur in spring (March through May). In northern China alone, sand and dust storm caused economic losses of nearly USD 1 billion between 2010 and 2013[16]. Most particles of Asian dust are in the respirable range of particulate matter, up to 10 micrometres in size (Particulate Matter 10), and consist of soil or mineral particles coming mainly from severe dust storms in arid and semi-arid regions[17].

B. Marine and costal pollution

12. Each year, more than 8 million tonnes of plastic ends up in the oceans, wreaking havoc on marine wildlife, fisheries and tourism, and costing at least USD 8 billion in damage to marine ecosystems[18]. The majority (80 per cent) of marine litter is linked to land-based sources. The top five land-based sources of ocean's plastic waste in Asia are (in order) China, Indonesia, Viet Nam, the Philippines, and Sri Lanka[19]. Up to 80 per cent of all litter in our oceans is made of plastic[20]. The ocean is expected to contain one tonne of plastic for every three tonnes of fish by 2025, and by 2050, more plastics than fish (by weight)[21]. A previous study by the Asia-Pacific Economic Cooperation estimated that marine pollution cost member economies USD 1.26 billion annually[22]. Moreover, 95 per cent of the value of plastic packaging material, worth USD 80-120 billion annually, is lost to the global economy[23]. Plastic debris, that fragments into small pieces but does not biodegrade in the marine environment, is found in all the world's oceans

14 World Bank (2016) The Cost of Air Pollution, Page xiii

15 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 47

16 UN Environment (2017) UN Environment 2016 Annual Report, Page 10

17 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 47

18 http://web.unep.org/newscentre/un-declares-war-ocean-plastic

19 UN Environment and GRID-Arendal (2016) Marine Litter Vital Graphics, Page 94

20 http://web.unep.org/newscentre/un-declares-war-ocean-plastic

21 World Economic Forum (2016) The New Plastics Economy, Rethinking the Future of Plastics, Page 7

22 http://www.apec.org/Press/News-Releases/2016/0510_OFWG.aspx

23 http://www.thejakartapost.com/academia/2016/11/02/combatting-marine-plastic-debris.html

http://www.thejakartapost.com/news/2017/02/18/indonesia-to-declare-battle-against-marine-plastic-debris.html

and seas, even in remote areas such as deep trenches and uninhabited islands in the Pacific Ocean, far from human contact.

13. Microplastics, of less than 5 millimeter in size, are now present in all marine habitats, from the seabed to ocean surface. Research on the physical and toxicological effects of microplastics provides evidence of trophic transfer in planktonic food chains as well as the direct uptake of microplastics by marine invertebrates[24]. Ingestion of microplastics by fish has been shown to cause physiological stress, liver cancer, and endocrine dysfunction, affecting female fertility and the growth of reproductive tissue in male fish. These effects are thought to be caused by the plastic itself (physical components and chemical ingredients) as well as from chemical pollutants that absorb onto the plastic from the surrounding seawater[25]. Under laboratory conditions, nanosize microplastics have been shown to cross cell membranes, resulting in tissue damage.

14. Litter in the marine environment causes a wide range of negative impacts on marine biodiversity. Cases of negative impacts are reported for 663 species, the most affected species are birds, marine mammals and fish. Among these impacts are: loss of marine life through ingestion of and entanglement by marine debris; poisoning, contamination or reduction of reproductive capacities of marine species; ecosystem deterioration or destruction, e.g. damage of coral reefs by fishing gear; transfer and movement of invasive species: floating debris can function as a type of "raft", carrying invasive species from one location to another.

15. The economic activities directly affected by marine plastic debris and microplastics include shipping, fishing, aquaculture, tourism and recreation[26]. In the shipping sector, marine litter can damage vessels by fouling ship propulsion equipment or cooling systems to the point of causing breakdowns and delays. There are direct costs linked to repairs, rescue efforts, and loss of life or injury, but there are also indirect costs related to loss of productivity and disrupted supply chains, leading to revenue losses. In the tourism sector, losses are related to the pollution of beaches and coasts which can discourage visitors. The reduction in visitor numbers leads to loss of revenue, jobs and livelihoods. Another indirect economic impact consists in the loss of fishing opportunities and thus presents important impacts on livelihoods[27].

16. Alongside the economic costs, there are social costs. These include reduced opportunities for recreational activities, health risks to coastal visitors (cuts from sharp items on the beach or in the water), and loss of the physical and psychological benefits of access to coastal environments (such as a reduction in tension and stress due to experiencing nature and/or physical activity). In areas with poor waste management, the costs can be unfairly borne by coastal communities or remote regions, such as Small Island Developing States, that are especially affected by the concentrated accumulation of litter drifting on ocean currents[28].

24 Wright, S.L., Thompson, R.C., and Galloway T.S (2013), The physical impacts of microplastics on marine organisms: a review. Environ. Pollut., 178 (2013), pp. 483-492, Secretariat of the Convention on Biological Diversity (2016). Marine Debris: Understanding, Preventing and Mitigating the Significant Adverse Impacts on Marine and Coastal Biodiversity. Technical Series No.83. Montreal. https://www.cbd.int/doc/publications/ cbd-ts-83-en.pdf

25 GESAMP (2015). Sources, fate and effects of microplastics in the marine environment: a global assessment" (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p.

26 UN Environment and GRID-Arendal (2016) Marine Litter Vital Graphics, Page 18

27 GIZ (2015), Marine Litter: Causes, impacts and potential solutions, Page 2

28 UN Environment and GRID-Arendal (2016) Marine Litter Vital Graphics, Page 19

C. Fresh water pollution

17. The Asia-Pacific region has failed to control pollution of its rivers, more than 80 per cent of which are considered to be in poor health. The common pollutants in the region are organics, nutrients (nitrogen and phosphorous), dissolved salts, heavy metals, pesticides and chemicals from industrial activities. The sources are untreated or partially treated sewage, agricultural runoff, industrial wastewater and landfill leachate, and nutrient and sediments washed from degraded land by heavy rainfall. Several river basins – the Ganges, Haihe, Huaihe, Indus and Yellow river basins, and some river stretches in southern India – have high organic pollution. This can be further aggravated by other pollution such as increased salinity as seen in the Ganges and Indus river basins[29].

18. A major cause of water pollution is poor sanitation, including defecation in the open, leading to contamination of surface and groundwater sources by organics, nutrients and bacterial coliform. In Asia and the Pacific, 1.7 billion people lack access to basic sanitation, and almost 80 per cent of wastewater being discharged in water bodies (rivers, lakes, and the sea) with little or no primary treatment. The water quality-related health risks are immense. Untreated sewage emanating from sewer leaks leads to high nitrate levels in urban groundwater, as observed in Bangkok, Jakarta and Metro Manila. Microbial pollution from human and livestock sewage, in addition to being localized, also spreads to rivers and coastal areas as observed in bays of Pacific islands, and the Java Sea coastal areas; it has also affected aquaculture in the Bay of Bengal and South China Sea.

19. Metals tend to accumulate in river-bed sediments, and river water analysis has shown high levels of aluminum and zinc in West Java, lead in Erdenet (Mongolia), and manganese, iron, and chromium in the rivers of Dhaka, Bangladesh and Japan. The sources of heavy metals are untreated industrial discharge from tanneries, metal finishing units and highway runoff. Heavy metals are the main contaminants in up to 80 per cent of urban rivers in China, along with varying amounts of nitrogen, phosphorous and organic compounds.

20. Poor water quality, low availability and poor sanitation cause waterborne diseases. An estimated 1.8 million deaths occur annually in Asia and the Pacific due to water-related diseases including diarrhoea and cholera. Salt intrusion and higher turbidity from stronger, frequent storms and erosion from deforestation provides favourable growth conditions in tropical estuaries for bacteria such as Vibrio that causes cholera. Other diseases related to water, sanitation and hygiene include intestinal nematode infections, protein-energy malnutrition, trachoma, schistosomiasis, lymphatic filariasis, malaria and dengue. Disability-adjusted life years lost due to unsafe water, sanitation and hygiene in the region totals 24.78 million per year.

21. Another factor affecting human health from water pollution is the accumulation of heavy metal in plants that are then consumed as food. Many studies have looked at accumulations of arsenic, cadmium, copper, lead and mercury in vegetables, rice and other edible plants. The extent of bioaccumulation depends on irrigation methods, much less arsenic accumulation has been observed in rice grown by sprinkler irrigation compared to that grown using continuous flooding irrigation.

29 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 84

22. Water pollution affects mammals and birds using inland water sources: globally 24 per cent of mammals and 12 per cent of birds are estimated to be threatened by it. Freshwater fish and amphibians also face the risk of extinction. Changes in river flows due to infrastructure developments, which can reduce the transport of nutrients downstream, also impact ecosystems. Freshwater ecosystems provide more than USD 75 billion in goods and services that can be threatened by water quality problems. Fragmentation of rivers by dams has an adverse effect on the ecosystems besides impacting humans due to loss of flood plain fisheries and flood recession agriculture.

D. Land and soil pollution

23. Soil pollution, erosion and salinization need urgent attention. Erosion is prevalent in parts of India and in the north of China. Significant areas in North and Central Asia (211.7 million hectares), South (84.1 million hectares) and Southeast Asia (20 million hectares) are salt-affected, because of the expansion of area under irrigation and the use of brackish water, and 10 million hectares are affected by soil compaction. In India, 11 million hectares are estimated to be affected by wind erosion, 6.98 million hectares by soil acidity and 6.7 million hectares are salt affected. Nearly 20 million hectares are affected by heavy metal contamination in China alone and the area of contaminated soil could rise due to increasing economic activity in the region. Heavy use of ammonia-based fertilizers is known to cause soil acidity in Northeast and South Asia. The combined pressures of climate change, land degradation and soil quality changes have mixed impacts on the agricultural suitability of land[30].

24. Nearly 12 per cent of the population lives in degraded areas of Asia and the Pacific, and this proportion may increase in years to come with significant social impacts. Direct impacts of large-scale land-use changes include displacement of indigenous people, loss of biodiversity and a reduction in important forest products. Land degradation has had severe impacts on human development in the region.

25. It is important to recognize the links between land-use change and degradation and its impact on associated biodiversity and ecosystem services. Land-use and related pressures have caused severe damage to local species' richness in Asia and the Pacific. Rangelands of Northeast Asia provide valuable ecological services and support the livelihoods of local herders on the Qinghai-Tibetan Plateau, but they are being degraded by overgrazing, policy changes and climate change. Several species on peninsular Malaysia and insular Southeast Asia are at high risk of extinction by 2050 as a result of projected impacts of land-use changes such as conversion to forest plantations and natural forest logging.

26. Of the two billion hectares of drylands in Asia, more than half are affected by desertification[31]. The increasing dust storms are attributed to wind-related desertification processes, resulting from human impacts in arid, semiarid and subhumid regions of northern China. The *Land Degradation Assessment in Drylands* project revealed persistently declining land productivity throughout 1981–2003 for 24 per cent of global land, mainly south of the equator, in Southeast Asia and South China, and Northcentral Australia. Countries in the Asia and the Pacific region rank among the highest globally, with the most affected being China (457 million hectares), followed by India (177 million hectares), Indonesia (86 million 68 hectares) and Bangladesh (72 million hectares). Sand and dust storms are common in subtropical latitudes

30 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 66

31 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 67

and dry savannahs, and in the mid-latitude drylands. There is a significant relationship between drylands, dust storms and anthropogenic land disturbance. Major storms occur when prolonged drought causes the soil surface to lose moisture and there are strong winds.

E. Chemicals and Waste

27. The Asia-Pacific region produces more chemicals and waste than any other regions in the world. Over the period of 2012-2020, the regional chemical production is expected to grow by 46 per cent. Major industrial incidents can happen during the processing, storage or transport of potentially hazardous chemicals. Following industrial disasters such as Bhopal, public concern over pollution has resulted in the identification of top ten chemicals of greatest concern. The impacts of chemicals on people and other living organisms vary from cell-mutagenesis to neurological damage, pulmonary inflammation and the emergence of antibiotic resistant bacteria.

28. Waste generation in Asia and the Pacific is rising and new and complex waste streams are emerging. Total global waste is around 7–10 billion tonnes per year, of which total municipal solid waste is around two billion tonnes[32]. With an average generation rate of 1.4 kilograms per person per day, the annual total municipal solid waste for Asia and the Pacific was estimated at around 870 million tonnes in 2014, accounting for 43 per cent of the world's total.

29. The quantity of generated municipal solid waste has a strong correlation with a country's income level, with higher income countries producing more per person than lower income countries. The Northeast and Southeast Asia and Pacific municipal solid waste generation rate of about 1.4 kilograms per person per day in 2010 was one of the highest in the world, but still much lower than in the Organization for Economic Cooperation and Development countries (~2.4 kilograms per person per day). The municipal solid waste generation in Asia and the Pacific is projected to increase until 2030, when it could be 1.6 kilograms per person per day or around 1.4 billion tonnes a year.

30. Alongside the increase in municipal solid waste generation, Asia and the Pacific is now facing complex waste streams, including e-waste, food waste, construction and demolition waste, disaster waste and marine litter. The region is one of the largest generators of e-waste owing to the presence of China, Japan and India, three of the top five e-waste-generating countries in the world, with absolute volumes of six million tonnes, 2.2 million tonnes and 1.7 million tonnes respectively in 2014[33]. Open burning is a common treatment of e-waste in many countries, practiced mainly by informal recyclers when they segregate organic and inorganic compounds (e.g. burning cables to recover copper), with adverse acute and chronic effects on human health and the environment. Open burning and acid bath recycling in the informal sector have serious negative impacts on processers' occupational health[34].

31. Urban areas in the region generate about 1.21 million tonnes of municipal solid waste a day. By 2025, this amount will be more than double, to 2.65 million tones daily[35]. The challenges of waste disposal have been felt deeply in Asia's megacities. For example, Mumbai, with 12 million people, regularly runs out of landfill sites, while Jakarta, with 10.3 million residents, struggles with garbage in its rivers[36]. Garbage dumps caused by poor waste

32 UN Environment and ISWA (2015) Global Waste Management Outlook

33 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 101

34 United Nations University (2016) Regional E-waste Monitor: East and Southeast Asia, Page 69

35 UNESCAP (2015) Valuing Waste, Transforming Cities

36 UNESCAP (2017) Eradicating Poverty and Promoting Prosperity in a Changing Asia-Pacific, Page 20

management are becoming a real threat to people's daily lives. In April 2017, a garbage dump collapsed which killed 19 people, and destroyed 145 homes in Colombo, Sri Lanka. By then, around 23 million tonnes of garbage had been dumped at the site. About 800 tonnes of solid waste is added per day to the open dump[37].

32. Inadequate treatment of waste can cause pollution and environmental and ecosystem degradation[38]. If not properly collected, waste can decay and cause air pollution, unpleasant odours and degradation of soil, surface and groundwater, and ecosystems. Birds and marine species have been harmed or killed by entanglement or ingestion of plastic waste in the ocean. The natural capital cost of the impact of plastics on marine ecosystems is at least USD 13 billion per year[39]. Informal recycling using primitive and obsolete technologies can cause air, water and soil pollution. Dumpsites on land can pollute both surface and groundwater, especially if they are located alongside rivers or the sea. Former dumpsites, particularly those that contain hazardous waste, are a major category of contaminated sites. Waste incineration can cause air pollution, especially when hazardous and nylon wastes are burned in uncontrolled furnaces.

III. Solutions Landscape: Options for Action

A. Support countries develop and implement policies and programmes to decouple economic activities from current levels of pollution

33. Most sources of outdoor air pollution demand action by cities, as well as national and international policymakers in sectors such as transport, energy waste management, buildings and agriculture. There are many examples of successful policies in transport, urban planning, power generation and industry that reduce air pollution in the region[40]. The replacement of burning of coal and biomass with cleaner fuels that do not pollute the atmosphere would also slow climate change and thus benefit health in other ways – such win-wins are often called co-benefits[41].

34. The development and implementation of integrated air quality strategies either at the national or sub-national levels to achieve air quality objectives will include many measures targeting relevant sectors. For example, China Air Pollution Prevention and Control Action: significant policy advances were seen in many areas, including coal control, volatile organic compound control, control of emissions from ports and vessels, and regional collaboration[42]; and Singapore 2020 Air Quality Targets and a roadmap with a set of abatement measures achieve sustainable growth and development while maintaining public health and economic competitiveness[43]. Republic of Korea: the first Basic Plans for Metropolitan Area Air Quality Control (2005-2014), introduces 49 detailed measures across four sectors including automobiles management and targets Seoul, Incheon, Gyeongi (total 24 cities), and the second Basic Plans

37 http://www.straitstimes.com/asia/south-asia/sri-lanka-garbage-mountain-death-toll-rises-to-10-after-4-children-died-in-hospital
https://www.nytimes.com/2017/04/15/world/asia/sri-lanka-garbage-dump-collapse.html?_r=0

38 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 106

39 UN Environment and ISWA (2015) 2015 Global Waste Management Outlook, Page 103

40 http://www.who.int/mediacentre/factsheets/fs313/en/

41 UN Environment (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 36

42 Clean Air Asia (2016) China Air 2016: Air Pollution Prevention and Control Progress in Chinese Cities, Page 14

43 http://www.nea.gov.sg/anti-pollution-radiation-protection/air-pollution-control/air-quality-and-targets

for Metropolitan Area Air Quality Control (2015-2024), introduces 62 emission reduction measures across four sectors and targets in all the metropolitan areas[44].

35. There are some good practices in Asia in terms of source-specific or sector-specific actions taken to reduce air pollution[45]. Kathmandu rebuilt cleaner and safer brick kilns after the 2015 earthquake in Nepal. Seoul replaced diesel buses and trucks with compressed natural gas buses. Singapore tightened Industrial Emission Standards to achieve 2020 Air Quality target. Thailand strengthened fuel quality and vehicle emission standards and adopted Euro 4. Ahmedabad established a bus rapid transit system to promote shift in public transport and help curb air pollution in India. Japan's sound practices include volatile organic compound emissions control with target setting, mix of regulatory control and voluntary efforts.

36. Pricing resources properly through fiscal policies not only reduces environmental damage but can also generate substantial domestic public revenues. In late 2014 and early 2015, the Indonesian Government initiated a range of reforms to gasoline and diesel subsidies. A new social assistance scheme was introduced alongside the reforms to compensate for the impact of the higher energy prices. The fuel subsidy reforms resulted in savings of IDR 211.3 trillion[46] which has allowed an increase in investments in social welfare and basic infrastructure (e.g. food security, connectivity, maritime, public transport infrastructure in Jakarta) through increased budgets for ministries, state-owned enterprises and transfers to regions and villages. These fossil fuel subsidy reforms are expected to result in a decline in energy consumption and fuel switching which is estimated to reduce CO_2 emissions by over nine per cent relative to the baseline in 2030[47]. If higher prices cause a reduction in the growth of vehicle ownership and an increase in the supply of higher-quality fuels, local air pollution is also expected to decline which could have major health impacts given worsening urban air quality[48].

37. For transport: shifting to clean modes of power generation; prioritizing rapid urban transit, walking and cycling networks in cities as well as rail interurban freight and passenger travel; shifting to cleaner heavy duty diesel vehicles and low-emissions vehicles and fuels, including fuels with reduced sulfur content. To address the urban air quality concerns, China has strong commitment in the adoption of fully-electric solution for urban bus network. Taking Shenzhen as an example, the city aims to have 100 per cent of its buses powered by electricity by the end of 2017, which equates to more than 16,000 pure electric buses in operation[49].

38. For urban planning: improving the energy efficiency of buildings and making cities more compact, and thus energy efficient. The Global District Energy in Cities Initiative was launched as a multi-stakeholder partnership at the Climate Summit in September 2014. UN Environment provides detailed guidance on the policy and planning approaches, technology

44 http://eng.me.go.kr/eng/web/index.do?menuId=235

45 Clean Air Asia, Good practices in Asia

46 Iskandarsyah, N. (2016). Fiscal Reform on Energy Subsidy Policy in Indonesia. Special sessions at 17th Global Conference on Environmental Taxation: Political Dynamics and Implementation of Socially Inclusive Green Fiscal Reform. Groningen, Netherlands, 22 and 23 September 2016. http://www.greenfiscalpolicy.org/wp-content/uploads/2016/09/Noor-Iskandarsyah_Indonesia.pdf

47 Asian Development Bank (2015). Fossil Fuel Subsidies in Indonesia: Trends, Impacts, and Reforms. https://www.adb.org/sites/default/files/publication/175444/fossil-fuel-subsidies-indonesia.pdf

48 Global Subsidies Initiative and International Institute for Sustainable Development (2012). Energy Subsidies in Indonesia. [http:// www.iisd.org/gsi/energy-subsidies-indonesia

49 Shenzhen Municipal Government (2017) The Shenzhen Municipal Government Plan for Air Quality Improvement (2017-2020) Shenfu[2017]No.1 http://www.sz.gov.cn/zfgb/2017/gb995/201702/t20170227_6015649.htm
http://zeeus.eu/events/electric-bus-training-study-tour-in-china

options and business models, that local authorities and national governments can utilize to address barriers, costs and risks, catalyze investment and develop energy-efficient, climate-resilient and affordable district energy approaches. The Initiative is now building on the publication and the methodology developed through its conception to develop pilot projects focused on capacity building and local coordination to accelerate district energy in specific cities[50].

39. For power generation: increased use of low-emission fuels and renewable combustion-free power sources (like solar, wind or hydropower); co-generation of heat and power; and distributed energy generation (e.g. mini-grids and rooftop solar power generation). China is canceling plans to build more than 100 coal-fired power plants, seeking to rein in runaway, wasteful investment in the sector while moving the country away from one of the dirtiest forms of electricity generation, the government announced in a directive made public in January 2017[51].

40. Adopting the outcome document of the Third International Conference on Small Island Developing States, entitled "Small Island Developing States Accelerated Modalities of Action" — Samoa Pathway — the Heads of State and other high-level representatives strongly support actions to address marine pollution by developing effective partnerships, including through the development and implementation of relevant arrangements, such as the UN Environment Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, and, as appropriate, instruments on marine debris and on nutrient, wastewater and other marine pollution, and through the sharing and implementation of best practices.

41. In May 2015, the Government of India approved of the flagship "Namami Gange" program, which integrates the efforts to clean and protect the Ganga River in a comprehensive manner. The program has a budget outlay of INR 200 billion (more than USD 3 billion) for the next five years which incorporates the remaining budget from the Ganga Action Plan, a previous scheme to clean the river and the budget (USD 1 billion) allocated to the World Bank National Ganga River Basin Project.

42. The Yangtze River Economic Belt involves nine provinces and two municipalities that cover roughly one-fifth of China's land, accommodates a population of 600 million and generates more than 40 per cent of the country's gross domestic product. China has made environmental protection and restoration a top priority in its development plan for the Yangtze River economic belt. China aims to markedly improve the environment of the economic belt by 2020, with over 75 per cent of the region's water meeting Grade III standard or above and forest coverage reaching 43 per cent.

B. Science and open data and information to better guide evidence-based decision making and system-oriented actions

43. Pollution issues and their links to economic activities are complex, so scientific knowledge of this relationship is fundamental to making effective policies at the national and regional levels. National platforms and other mechanisms are necessary to facilitate science-policy discussions on national environmental issues among the government, business and

50 http://drustage.unep.org/energy/projects/global-district-energy-cities-initiative http://www.districtenergyinitiative.org/

51 http://news.bjx.com.cn/html/20170116/803648.shtml

scientific/research community. A high national priority is to strengthen or establish a mechanism for regular reporting on environment to national parliamentary and planning processes. Better monitoring and data management systems combined with continuous building of analytical capacity are necessary to support the assessment and research that underpins policy-making. Better systems for data generation and monitoring of pollution in Asia and the Pacific need to be established. The research community will provide monitoring, assessment and methodology support to inform decision-making and evaluate progress made.

44. The Acid Deposition Monitoring Network in East Asia is an intergovernmental network of 13 East Asian Countries aiming at creation of common understanding on the state of acid deposition problems in the region. The network is also working to contribute in providing useful inputs to policy makers at various levels in regards to air pollution problem and enhance intergovernmental cooperation as well as partnership in the region on the issue related to acid deposition. The network was established in 2001 and it continuously works to contribute in providing science based solution for the countries. In addition, in 2016, UN Environment started to play a crucial role as Secretariat for the network.

45. At the global level, UN Environment Live provides a platform for exchanging and sharing latest data, information, assessments and knowledge amongst member countries, research networks, communities of practice, indigenous peoples and society, in order to keep the environment and emerging issues under review. UN Environment works with countries and partners to establish mechanism for them to publish their latest environmental data, information and other knowledge products on UN Environment Live platform. In addition, UN Environment offers technical assistance to countries for improving their capacity to address environmental reporting needs related to national policy-making and planning; compliance reporting under Multilateral Environmental Agreements; and reporting on the environmental dimension of Sustainable Development Goals. In Asia and the Pacific region, such assistance is currently being delivered to Bangladesh, Bhutan, Maldives, Mongolia, Nepal and Samoa.

C. Strengthen environmental institutions and governance for providing skill development, enforcement of environment laws, scientific assessment and integrated environmental sustainability policy responses

46. Environmental institutions and governance are still inadequate in many countries of the region, which leads to inadequate policy responses, weak enforcement of laws and regulations, and poor compliance with Multilateral Environmental Agreements (MEAs). Countries in the region are parties to many MEAs at the global and regional levels, but implementation at the national level has been insufficient as many countries lack implementation capacity. An urgent need is to strengthen capacity to effectively implement the obligations under these MEAs, including the development and enforcement of national legislation and regulations.

47. Several multilateral environmental agreements are related to different types of pollution. The implementation of the Paris Agreement on Climate Change will be a major step forward in tackling air pollution as the root causes of climate change and air pollution largely overlap. Addressing Short-Lived Climate Pollutants could avoid as much as 0.5°C of warming, and prevent 2.4 million premature deaths from air pollution.

48. The Convention on Biodiversity, through the Aichi Biodiversity Targets, calls for a decrease in pollution, as one of the direct pressures on biodiversity, asking for specific actions

on excess nutrients. Most of the other environmental agreements at the regional or global level have an indirect impact on various pollution areas.

49. In response to the global threat of mercury, the Minamata Convention on Mercury was adopted in 2013 to protect human health and the environment from the adverse effects of mercury. The major highlights of the Minamata Convention include a ban on mercury-containing products and new mercury mines, the phase-out of existing mines, control measures on air emissions, and the international regulation of the informal sector for artisanal and small-scale gold mining[52]. The first meeting of the Conference of the Parties to the Minamata Convention on Mercury is scheduled to take place from 24 to 29 September 2017 at the International Conference Centre in Geneva, Switzerland. Some countries have signed the Minamata Convention on Mercury; China, Japan, Mongolia, and Samoa have ratified the Convention. Ratifying the Minamata Convention comes with legal obligations to, among other things, ban the manufacture, import or export of mercury-added products by 2020 and formalize or regulate the artisanal and small-scale gold mining sector.

50. All ten member States of the Association of South East Asian Nations have ratified the Association of South East Asian Nations Agreement on Transboundary Haze Pollution since 2015. The Agreement recognizes that transboundary haze pollution which result from land and/or forest fires should be mitigated through concerted national efforts and international cooperation. The current challenge is implementation as many countries lack implementation capacity. In that regard, national implementation of the Agreement on Transboundary Haze Pollution is a priority.

51. Enhance the role of courts in air quality management. In February 2017, the Supreme Court of Nepal instructed the government and authorities concerned to take effective measures to control dust and smoke pollution in the Kathmandu Valley[53]. India's National Green Tribunal was set up with the specific mandate of handling environmental disputes, particularly multi-stakeholder scenarios. In 2016, India's National Green Tribunal supported the phased deregistration of 15-year-old diesel vehicles in Delhi, placed strict rules on incineration plants, constituted a committee to inspect gas stations, and pioneered a ban on disposable plastics, in effect from January 2017[54]. In December 2016, India's National Green Tribunal imposed a complete ban on burning of waste in open places across the country and announced a fine of Rs 25,000 on each incident of bulk waste burning. In December 2016, Chinese lawmakers adopted a new law to tax polluters, particularly heavy industry. The environment tax law should enter force on 1 January 2018.

D. Create public awareness and greater understanding of the costs of pollution and benefits of lifestyle changes and consumer choices (active citizen engagement and increased role of non-state actors)

52. Decision makers in governments and the private sector need to be aware of pollution's effects on human health and ecosystems. Awareness-raising among the public, utilizing channels such as formal education and the media, is essential. UN Environment has launched two campaigns against air pollution and marine pollution. One is Breathe Life and another is Clean Seas.

52 http://www.mercuryconvention.org/Convention

53 http://www.myrepublica.com/news/14174/

54 http://thediplomat.com/2017/01/how-indias-national-green-tribunal-upheld-environmental-protections-in-2016/

53. In October 2016, World Health Organization in partnership with the Climate and Clean Air Coalition and the Government of Norway launched a global awareness campaign on the dangers of air pollution – especially 'invisible killers' such as black carbon, ground-level ozone and methane – for the health of individuals and the planet. Titled "Breathe Life", the campaign aims to mobilize cities and their inhabitants on issues of health and protecting the planet from the effects of air pollution. The campaign seeks to cut in half the number of deaths from air pollution by 2030.

54. In February 2017, UN Environment launched a global marine litter campaign at the Economist World Ocean Summit 2017 in Bali, Indonesia. The campaign, entitled "Clean Seas", is urging governments to pass plastic reduction policies targeting industry to minimize plastic packaging and redesign products; and calling on consumers to change their throwaway habits – before irreversible damage is done to our seas. Ten countries have already joined the campaign with far-reaching pledges to turn the plastic tide. Indonesia has committed to slash its marine litter by a massive 70 per cent by 2025.

55. The Think.Eat.Save campaign of the Save Food Initiative is a partnership between UN Environment, Food and Agriculture Organization and Messe Düsseldorf, and in support of the UN Secretary-General's Zero Hunger Challenge, which seeks to add its authority and voice to these efforts in order to galvanize widespread global, regional and national actions, catalyze more sectors of society to be aware and to act, including through exchange of inspiring ideas and projects between those players already involved and new ones that are likely to come on board.

56. Green Fins is improving sustainability in the marine tourism sector. The new 'Green Fins Toolbox' was launched at the 2016 Asia Dive Expo to promote its use within the three main target audiences of Green Fins (marine tourism industry, site and national level marine resource managers), to better communicate the messages and philosophy of Green Fins and start initiating a campaign to develop Green Fins as a lovemark to the target audiences. The 90 new Green Fins outreach and learning materials developed through UN Environment support was released at the diving exhibition through social media and with teaser statements to provide guidance on their purpose.

57. In January 2016, Iran's Department of Environment endorsed the "Car-Free Tuesday" campaign, which encourages Iranians to forego using private vehicles[55]. The department has pledged to promote the campaign far and wide.

E. Improve regional environmental cooperation and information sharing for responding to transboundary issues

58. Transboundary issues such as resource sharing, air pollution and water management need adequate attention from the countries in the Asia Pacific region. A global survey has found that integrated water resource management, which is considered vital for the successful management of both national and transboundary water resources, is fully implemented in only 15 per cent of the countries in the region. Other than the 1995 Mekong River Agreement, there are no transboundary agreements in the region through which countries sharing boundaries carry out joint planning, monitoring and evaluation exercises. Air

55 https://financialtribune.com/articles/people-environment/34630/doe-endorses-car-free-day

pollution, once a local phenomenon, is rapidly going beyond the boundaries of cities, countries and sub-regions. Residual biomass burning in many Southeast Asian countries during the harvest season is causing worsening, persistent haze over the entire region for many weeks each year, leading to major health problems. Forest fires in Indonesia in 2015 had multiple impacts on air quality, human health, climate and biodiversity. Regional cooperation for addressing transboundary issues, especially air pollution, marine pollution and e-waste, are priorities.

59. Under the Association of Southeast Asian Nations' Agreement on Transboundary Haze Pollution, the Coordinating Centre for Transboundary Haze Pollution Control was established for the purposes of facilitating co-operation and co-ordination among the Parties in managing the impact of land and/or forest fires, particularly haze pollution arising from such fires. A Standard Operating Procedure for Monitoring, Assessment and Joint Emergency Response was developed to outline the procedure for regular communication of data between the Association of Southeast Asian Nations Coordinating Centre for Transboundary Haze Pollution Control and National Monitoring Centres/ National Focal Points, and for coordination of requests and offers of assistance and reporting of joint mobilization of resources. The Specialised Meteorological Centre based in Singapore performs monitoring and assessment of land and forest fires and the resulting smoke haze[56].

60. The West Asia Regional Master Plan to Combat Sand and Dust Storms was drawn up because of several consultations and meetings of affected countries in the region, coordinated by UN Environment and World Meteorological Organization Regional Offices for West Asia, with the help of a task force from UN Environment, World Meteorological Organization and the Islamic Republic of Iran. The Plan includes Bahrain, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Syria, Turkey, and the United Arab Emirates. The goal of the programme is to protect people, the environment, and the development agenda of the West Asia Region from the transboundary threats and impacts of sand and dust storms through well-informed and coordinated practical actions[57].

61. Regional Seas Conventions and Action Plans play a critical role in encouraging cooperation and coordination among countries sharing a common resource. In the Asia-Pacific region, there are four Regional Seas Conventions and Action Plans: East Asian Seas, South Asian Seas, North-West Pacific, and Pacific[58]. The Regional Seas Conventions and Action Plans are instrumental in supporting the implementation of UN Environment Global Programme of Action for the Protection of the Marine Environment from Land-based Activities at regional levels and have developed, or are in the process of developing, regional sea action plans on marine litter. In the Pacific, the Secretariat of the Pacific Regional Environment Programme has identified marine debris as a priority area in the broader Pacific Regional Waste and Pollution Management Strategy 2015–2016 (Cleaner Pacific 2025)[59]. The Northwest Pacific Action Plan hosts the Northwest Pacific Region Environmental Cooperation Centre in Toyama, Japan. The center has developed public awareness materials including "Monitoring Guidelines for Marine Litter on the Beaches and Shorelines" and held workshops to explore effective countermeasures against marine litter in the Northwest Pacific[60].

56 http://haze.asean.org/asean-agreement-on-transboundary-haze-pollution-2/

57 UN Environment, WMO, UNCCD (2016). Global Assessment of Sand and Dust Storms, Page 74

58 UN Environment and GRID-Arendal (2016) Marine Litter Vital Graphics, Page 45

59 SPREP (2016) Cleaner Pacific 2025: Pacific Regional Waste and Pollution Management Strategy 2016–2025

60 http://cearac.nowpap.org/about/index.html

62. The Tripartite Environment Ministers Meeting among China, Japan and Republic of Korea has been held on annual basis since 1999. The 18th Tripartite Environment Ministers Meeting was held in April 2016. The meeting reviewed progress on Tripartite Joint Action Plan on Environmental Cooperation (2015-2019) and committed to continue environmental cooperation in priority areas, such as Air Quality Improvement, Chemical Management and Environmental Emergency Response, Circulative Management of Resources/3R/Transboundary Movement of E-Waste, and others. During the meeting, the three Environment Ministries approved the Five-Year Work Plan of Air Policy Dialogue Working Group for joint response to fine dust, one of the key environmental challenges in the region. Under the plan, the three countries will foster cooperation in air pollutant control through monitoring Particulate Matter 2.5 and O_3 and sharing policies and technology for volatile organic compounds control by 2019, which will help improve China's capacity to control air quality[61].

63. Japan launched its 3R initiative in 2004 and, together with the United Nations Centre for Regional Development, established the Regional 3R Forum in Asia and the Pacific in 2009. The 4th Regional 3R Forum – held in Ha Noi, Viet Nam, in March 2013 – adopted the Ha Noi 3R Declaration - Sustainable 3R Goals for Asia and the Pacific for 2013-2023, which aims to provide a basic framework for Asia-Pacific countries to develop measures and programs to promote 3Rs including a set of 3R indicators for monitoring specific progress.

64. In the Ise-Shima Leaders' Declaration of the G7 Summit 2016, leaders reaffirm their commitment to address marine litter, recognizing that their efforts on resource efficiency and the 3Rs also contribute to the prevention and reduction of marine litter, particularly plastic, from land-based sources. Furthermore, they support scientific work to enhance global ocean observation and assessment for the science-based management, conservation and sustainable use of marine resources[62].

F. Responsible private sector, including finance sector

65. Sustainability in business and finance is an emerging issue in Asia and the Pacific. Governments and the business community are taking advantage of opportunities for private sector investment, greening the finance sector and creating jobs and markets with clean and green technologies.

66. Indonesia's Tropical Landscapes Finance Facility is a good example of innovative financing for green technological solutions and innovation to mitigate pollution. In October 2016, the Indonesian Government and key partners launched an initiative to provide access to long-term finance for projects and companies that stimulate green growth and improve rural livelihoods. The Tropical Landscapes Finance Facility will leverage public funding to provide access to long-term finance at affordable rates to support smallholder producers and other land users' investment in sustainable Indonesian landscapes. The Facility aims to provide a mix of loans and grants to drive renewable energy production, reduce deforestation and forest degradation, and restore degraded lands[63].

61 Ministry of Environment, Republic of Korea, News Letter, April 2016, Korea, China, and Japan set to discuss environmental challenges at TEMM

62 http://www.mofa.go.jp/files/000160266.pdf

63 International Institute for Sustainable Development (2016). UN Environment, Indonesia and Partners Launch Tropical Landscapes Finance Facility 1 November http://sdg.iisd.org/news/un-environment-indonesia-and-partners-launch-tropical-landscapes-finance-facility/

67. The Elion Group was founded in 1988 in Kubiqi, one of China's deserts. Elion is committed to ecological environment protection and green finance. In Kubuqi Desert, Elion has reclaimed 6,253 km^2 of desert land within a total project area of 11,000 km^2, and turned the project into a successful ecological restoration and business venture, while undergoing a transformation from a salt factory to a highly successful ecological restoration enterprise. The Elion's initiative proves that an effective private-public–people and international community partnership yields multiple returns, including financial and natural capital returns as well as social returns, and preserves spiritual and inspirational values.

68. The Asian Development Bank has been active in helping developing member countries going green. In July 2016, the bank approved the project entitled "Green Financing Platform for Accelerated Air Quality Improvement in the Greater Beijing-Tianjin-Hebei Region". This project will establish a dedicated green financing platform to overcome three barriers: limited commercial bank financing, lack of incentive structures, and the lack of strategy for pollution control. The proposed Green Financing Platform will introduce innovative financial instruments, recommended in the recently issued Green Financing Guidelines by China Banking Regulatory Commission and the National Development and Reform Commission to mobilize private and social capital for green investments.

69. Arig Bank, the second oldest commercial bank of Mongolia, is cooperating with Mongolian young and up-and-coming designers Michelle & Amazonka in creating eco- friendly bags to eliminate the use of plastic bag, to protect the environment[64]. Arig came out with the reusable and durable "eco-friendly" bag idea as they want to protect the environment while saving money at the same time. The bank is selling it at manufacturing cost.

70. In early March 2017 Tesco Lotus joined hands with the Department of Environmental Quality, Protect Phi Phi Group and local authorities to tackle the root of the problem by launching their "Lending a Bag" in Thailand. The campaign encourages locals and tourists to borrow Tesco Lotus' cloth bag, available in select supermarkets and convenience stores. By end of March, Tesco Lotus has provided 1,000 cloth bags to the Phi Phi island.

G. Strategic partnerships and networks

71. Strategic partnerships and networks can be the key to achieving systemic change and work towards ambitious and measurable targets. Strategic partnerships and networks are innovative partnerships, voluntary agreements, and platforms to scale up actions and induce change, and integrated networks of state and non-state actors (corporate, public, civil society) to prevent and address pollution.

72. UN Environment works to eliminate the use of lead in paint. Lead is toxic to humans, especially young children and pregnant women. Lead paint has been cut off the market since decades ago in developed countries including Japan, but it is still available in many developing countries. UN Environment organizes a Global Alliance to Eliminate Lead Paint with the World Health Organization and around 60 partners, including governments, international organizations, industry and non-governmental organizations. The Alliance aims at introducing a ban on lead paint in all countries by 202065. Collaboration between environment and health authorities in countries such as Australia, Nepal, Philippines and Sri Lanka has led to the

64 AGRI Cares: Society and Environment, Page2

65 http://www.env.go.jp/en/focus/jeq/issue/vol16/vol16l.pdf http://web.unep.org/chemicalsandwaste/what-we-do/technology-and-metals/lead/global-alliance-eliminate-lead-paint

establishment of national standards for lead in paint that consistent with international best practices.

73. The Asia Pacific Clean Air Partnership is an initiative launched by UN Environment Asia and the Pacific Office with initial financial support by Japan's Ministry of the Environment. This partnership aims to establish a mechanism to coordinate and collaborate among governments and various clean air programs in Asia-Pacific and provide a platform for generating and sharing knowledge on air pollution and its impacts as well as air pollution science, policies and technologies in Asia-Pacific.

74. The Partnership for Clean Fuels and Vehicles is the leading global public-private initiative promoting cleaner fuels and vehicles in developing and transition countries. Established at the World Summit on Sustainable Development in September 2002 in Johannesburg, the Partnership brings together 73 organizations representing developed and developing countries, the fuel and vehicle industries, civil society, and leading world experts on cleaner fuels and vehicles. Partners combine their resources and efforts to achieve cleaner air and lower greenhouse gas emissions from road transport by applying fuel quality improvements and proven vehicle technologies used in leading global auto markets.

75. The Global Soil Partnership was established in December 2012 as a mechanism to develop a strong interactive partnership and enhanced collaboration and synergy of efforts between all stakeholders. From land users through to policy makers, one of the key objectives of the Partnership is to improve governance and promote sustainable management of soils. Among those outputs are the establishment of the Intergovernmental Technical Panel on Soils, submission of the proposal for a UN World Soil Day (5 December) and the International Year of Soils 2015, preparation of the revised World Soil Charter, and production of the Status of the World's Soil Resources report.