Chair's Summary

Eighth Regional 3R Forum in Asia and the Pacific
(Achieving Clean Water, Clean Land and Clean Air through 3R and Resource Efficiency- A 21st Century Vision for Asia-Pacific Communities)

9-12 April 2018
Venue: Brilliant Convention Centre, Indore, Madhya Pradesh, India

Forum Chair
Minister of State (I/C), Ministry of Housing and Urban Affairs, Government of India

I. Introduction

1. Being the most populous (with approximately 60% of the world population), the fastest-growing and the most dynamic production hub among all the regions in the world, the Asia-Pacific region faces a number of socio-economic and environmental challenges. They are due to rapid urbanization, growing volume and diversification of waste streams with presence of new emerging waste streams (plastics, e-waste, chemicals, toxic and hazardous wastes), and inadequate provision of infrastructure and basic services, among others. Many of such challenges are deep-rooted in resource and waste management. The deteriorating biological, chemical and physical characteristics of water, land and air in the region are in many ways attributed to unsustainable resource and waste management, including open dumping and burning. Though the developing countries of the region have potential for resource-efficiency gains, green growth and circular economic development, they are constrained with a number of policy, institutional and technological gaps.

2. The Eighth Regional 3R Forum in Asia and the Pacific was organized from 9 to 12 April 2018 in Indore city, Madhya Pradesh, India, with an overall theme of "*Achieving Clean Water, Clean Land and Clean Air through 3R and Resource Efficiency – A 21st Century Vision for Asia-Pacific Communities*". The Forum aimed – a) to address how 3R and resource efficiency measures could provide many complementary benefits in making cities and countries clean, smart, liveable and resilient; b) to gain policy, institutional and technological insights towards effective implementation of 3R and resource efficiency to foster circular economic development, sustainable change in current use of natural resources and ultimately achieve a zero waste society; and b) to discuss how public and private sector to explore various partnership opportunities in areas of 3R and waste management for moving towards a zero waste society. The Forum further provided an opportunity to explore insightful linkages between the principles of 3R and resource efficiency and the goal of achieving the Swachh Bharat Mission (Clean India Mission).

3. The Forum was attended by more than 700 participants comprising high-level government representatives (both national and local), international experts and resource persons, representatives from various United Nations and international organizations, scientific and research organizations, non-governmental organizations (NGOs), and the private and business sectors, and other stakeholders from forty countries including Afghanistan, Australia, Austria, Bangladesh, Belgium, Bhutan, Cambodia, PR. China, France, Germany, Greece, India, Indonesia, Japan, Kazakhstan, Kiribati, Republic of Korea, Kyrgyz Republic, Lao PDR, Malaysia, Maldives, Mauritius, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Palau, The Philippines, Russian Federation, Samoa, Singapore, Sri Lanka, Switzerland, Thailand, Tonga, Tunisia, Tuvalu, USA and Viet Nam.

II. Opening Ceremony

4. The host dignitaries welcomed more than 700 participants from 45 countries across the Asia Pacific region and beyond on behalf of the Indian Government. As the hosts of the Forum, the Indian dignitaries acknowledged and thanked the delegates to strengthen their resolve to adopt and implement 3R practices and related technologies, so as to enable collective progress in the region towards preservation and restoration of the natural environment. The hosts also collectively expressed confidence in Indian initiatives in the 3Rs – reduce, reuse and recycle – and, more broadly, in achieving the Swachh Bharat Mission (Clean India Mission). The foreign dignitaries addressed the Forum participants and expressed deep appreciation to the Government of India, the Government of Madhya Pradesh, and the Cleanest City – Indore for hosting the 8th 3R Asia Pacific Forum.

5. Welcoming the participants, Mr. Durga Shanker Mishra, Secretary, Ministry of Housing and Urban Affairs (MoHUA), acknowledged that 3R is part of the Indian culture, is part of heritage, and is part of her people's respect for nature. He echoed the principles of 6R, observed by Hon. Prime Minister Shri Narendra Modi ji in his speech on 11th Feb in Muscat, Oman, i.e. Reduce, Reuse, Recycle, Recover, Redesign and Remanufacture, and how it could help ensure no human conflict with nature, rather the path of co-existence. Hon. Prime Minister stated that the adoption of 6R leads to the 7th R, i.e. REJOICE, which is *PARAMANAND*, complete blissfulness. The multi-stakeholder cooperation, including political will and wholehearted citizen involvement, is the key to the urban clean program success as stated by Mr. Hardeep S. Puri, Minister of State (I/C), Ministry of Housing and Urban Affairs (MoHUA). He urged the Forum participants to look into socio-technological factors including behavioural changes in consumption pattern, scientific waste management technologies, and knowhow transfer during the course of the 3-day Forum. Ms. Maya Singh, Minister for Urban Development, Government of Madhya Pradesh reiterated that the Indian national flagship program Swachh Bharat Mission (Clean India Mission) is based on the premise of 3R; and at provincial level, programs such as "waste to energy", Bhopal's "Kabad Se Jugaad" (Wealth from Waste) campaign, waste to compost, and many others address spirit of Indian Prime Minister's "Sabka Saath Sabka Vikas" (Development to All Sections of the Society), and aim to create a market for the products made out of the recycled waste, as aimed in the 'Make in India.'

6. Mr. Tadahiko Ito, State Minister of Ministry of the Environment, Japan, recognized the leadership of both the Government of India and the City of Indore, and further recognizing the Indian teaching "PRATITYA SAMUTPADA", he shared the comparative culture in Japan on "mottainai" featuring "the world-famous

character 'Mottainai Grandma' who teaches children about environment-friendly lifestyle and the importance of lessening the wastage of various possessions". There are many challenges ahead to achieve a truly 3R society and to meet the Sustainable Development Goals (SDGs). He congratulated the Indore City on receiving the first prize of being India's cleanest city for their good efforts on waste management. He also emphasized on real actions on the ground over plans in changing the world.

7. Expressing her deep appreciation to the Government of India for hosting the Forum and to the Government of Japan for its continuous support, Ms. Birgitte Bryld, Senior Economic Affairs Officer, Division for Sustainable Development, United Nations Department of Economic and Social Affairs (UN DESA), highlighted that it is time for collective action by the government, the private sector, the civil society and citizens altogether to achieve the 2030 Agenda for Sustainable Development. She recognized the Regional 3R Forum provides excellent platform for multi-stakeholders, including local government units and national government authorities to work together to promote 3R and resource efficiency in the context of Sustainable Development Goals (SDGs). The outcome of Indore 3R Forum can provide valuable input to the 2018 High Level Political Forum (HLPF).

8. H.E. Ms. Sumitra Mahajan, Speaker of the Lok Sabha, Parliament of India, launching a book on "Conservation in Lifestyle: Indian Heritage", stated that public participation and nature-respect self-driven initiatives are key success factors for a clean society. The concept of 3R has been an integral part of India's cultural ethos for centuries. However, modernisation and urbanization has unfolded their own challenges before us, leading to various adverse health issues among the urban population. She reiterated that scientific management with the underlying concept of Reduce, Reuse and Recycle are in synergy with the "Swachh Bharat Mission" (Clean India Mission). Urging the Mayors and Commissioners to maintain the cleanliness of their cities, she attached high importance to the full-scale utilization of the organic component of municipal waste, as a valuable resource, for reduction of green-house gas emission, energy recovery, and employment creation.

9. The Opening Session concluded with endorsement from the dignitaries that the Regional 3R Forum in Asia and the Pacific serves as an important platform to engage Asia Pacific Countries to collectively deliberate on issues concerning mainstreaming 3Rs in the overall policy, planning and development processes and shaping strategies.

III. Towards Zero Waste Society – The 3R Way

10. Effective implementation of 3R policy, institutional mechanisms and technological interventions are important elements for moving towards zero waste society. Communities can bring environmental sustainability across the entire waste management chain through the implementation of 3R and zero waste concept. The Forum recognized that the behavioural change is also the key to achieve a zero waste society along with the infrastructural, technology and financial incentives. The Forum recognized that the concept of Zero Waste Society deserves support of all sections of the society, the government, policy makers, citizens, professionals and technologists and private sectors, not just for addressing the environmental concerns but also for a resilient, resource efficient, inclusive and less polluted society. Promotion of collection of waste, its segregation, processing and its final disposal in a scientific manner are key to achieve zero waste society.

11. The Forum recognized the success so far achieved in the Swachh Bharat Mission (Clean India Mission). The Mission emphasizes 100% scientific waste management in all 400 target cities of the country. People's participation and support of all stakeholders associated, along with the government backing, have been key to success of the Mission. Simple interventions like sanitation and cleanliness surveys and star-ratings based on several indicators encourage local governments to bring in efficiency in waste management. Administrative reforms like habitation clusters, contract management, partnerships, open technology sourcing, renewable obligations and awareness campaigns, etc. can result in novel and customised solutions to the waste problems towards a closed loop waste cycle. The results of implementation of these policies in the states of India particularly in Madhya Pradesh and Chhattisgarh were quite revealing as to how the cities are able to reduce, reuse and recycle the solid waste particularly with the engagement of the households, the community and also the private sector.

12. The case study of South Australia indicated as to how circular economy provides the basis and the best way forward for moving towards zero waste society. South Australia used modern infrastructure as well as landfill tax to reduce waste going into the landfills. Right incentives have to go hand in hand to achieve the expected results. Incentives can be financial or non-financial. Future direction for a circular economy (CE) in Southern Australia are based on the Adelaide 3R Declaration on Circular Economy initiative. Job creation enhanced in several sectors and gave increased recycling rate of 80%.

13. Gender and community capital can be tapped to promote entrepreneurship in waste management. Segregation at source is the key to unlocking the potential of 3Rs and the circular economy. Resource efficiency, AFR (Alternative Fuel and Raw Materials) and co-processing can lend stability to 3R way. Job creation, research, technology development, material substitution, and entrepreneurship promotion need to be emphasised to precipitate acceptability of 3R and circular economy concept. Private entrepreneurs have to be encouraged in their technology evolution of better waste processing and recycling technologies.

14. Among the major challenges faced by local governments are availability of appropriate technologies as per their local demands and situations, financial and capacity constraints. The Indian experience showed that the public- private-partnerships were successful in quite a few cities where private sector were directly involved in managing organic waste for composting.

15. The Forum identified a number of benefits of 3R such as reduction in carbon footprint, improved public health, livelihood generation and creation of waste entrepreneurship. Needs for reduction of plastic waste was also highlighted using several strategies. Industry initiatives are also key supplementary mechanisms to waste reduction.

IV. The 3Rs and Clean Water -The Role of the Circular Economy for Reducing Water Pollution

16. Water security is central to sustainable development. Water is critical for socio-economic development, healthy ecosystems and for human survival itself. The pressure on the global water resources (both surface

and ground) is increasing due to growing gap between water supply and demand, anthropogenic water pollution and climate change impacts. Advancing 3Rs and circular economy encourage the use of treated water and sustainable use of water resources to achieve a number of benefits such as the safe drinking water and effective sanitation system, among others.

17. Urban centers in the Asia Pacific regions are highly vulnerable to water security issues. On one side, they are facing the increased water demand, on the other side, even the existing limited fresh water sources have been contaminated with the wastewater pollution. Climate change related impacts on water resources are one of the prime water security issues which is directly linked into urban resilience. In order to address these issues, there is a need to focus on the holistic solutions of 3R. Meanwhile, it is also important to address this water security issues more as a water management issue.

18. Urban water security issues have to be linked into the Sustainable Development Goals, specially linking into goal 6, which specifically address the target to increase wastewater recycling and reuse. The water sharing between agriculture, industry and domestic sector need to resolve considering the socio-political issues at the river basin level.

19. The existing liner water systems are inefficient, they only increase the gap between water supply and demand. As alternative to this, the closed loop or circular water economy offer diversified resource option, efficient conveyance and optimal reuse. To achieve this circular water economy option, there is a need to revisit the conventional centralized water and wastewater treatment to decentralized system which promotes better water reuse applications. In addition the transformation of circular economy demands affirmative actions from national governments to increase water use efficiency mainly of the demand side such as improving irrigation efficiency by selecting correct irrigation technologies and irrigation scheduling linking into local climatic and soil information etc.

20. On the domestic water consumption side, focus should be on development of innovative water saving appliances. Rainwater harvesting will be the corner stone of the urban circular water economy development. As for the financial arrangement, water infrastructures should be developed by partnering both private and public sectors, which share the risks between the two.

21. The Forum highlighted specific examples from across the globe – the Cauvery water dispute between the Indian states of Tamil Nadu and Karnataka, the fact that 91% of Indian rivers are polluted, and the example of Cape Town which is the first major city to run out of water. The Forum acknowledged that while the issue of water scarcity does exist in reality, there also exists political will necessary for tackling this issue, and highlighted the necessity for policy-relevant interventions and multi-stakeholder consultations including the private sector, along with actions geared towards effective water management.

22. While SDG 6 focuses on Clean Water and Sanitation, the Forum highlighted the need to change from a "use and discharge approach" to a "use, treat and reuse approach" (in synergy with the sustainable consumption approach of SDG 12) by striking a balance between supply side and demand side management of water. Some specific solutions discussed in the Forum included efficient irrigation systems (drip irrigation, sprinkler irrigation), improved water-saving appliances including eco-toilets (e.g. SATO toilets), rain water harvesting, closing the water loop to promote circular economy, decentralized waste water treatments such as Johkasou.

During the deliberations, the Form cited the example of a good practice in Belgium where water is provided as a tailor-made service customized to use of specific consumers. The case of Singapore was also cited which, despite water availability being far less than the cited 1700 cu. metre norm, had no water scarcity, owing to effective water management. A multi-pronged approach including policy interventions geared towards encouraging circular economy in water, effective water management through technology enablement by the private sector, and multi-stakeholder actions in waste water reuse and recycle would help mitigate the problem.

V. The 3Rs and Clean Land - Role of the Circular Economy in Preventing Land Pollution

23. Land degradation has been at the critical situation in many of the countries in the Asia and the Pacific due to open dumping and open burning of wastes leading to not only the problem related to different types of adverse effects on the land associated with health impact of human, living animals even the flora and fauna. Due to lack of 3R infrastructure and circular economic utilization of various waste streams, solid wastes are often collected and disposed on the top of the land surface as uncontrolled open dumps. This not only serves as the main source of pollution but also as work as breeding grounds for mosquitoes, flies and other disease carriers. The land pollution has a number of adverse effects on the physical, chemical and biological properties of the land that reduces its productivity. The environmental impact of illegal waste burning contributes significantly to increase in environmental pollution, particularly dioxins.

24. It was reported that 45% of the global waste i.e. nearly 620 million metric tonnes of waste are open- burned. It has also been seen from the record that more than 35% of the fifty biggest landfill sites are located in the Asia and the Pacific. The land pollution becomes the end result of different activities in the society namely oil spillage, improper waste disposal, generation of effluent in industries, poor collection of waste, landfill leachate percolation, indiscriminate industrialisation and deforestation and many other such activities.

25. Open burning and illegal dumping also allow the percolation of harmful substances in the food chain. All these activities ultimately results into land pollution. These are the challenges to the developing societies. On the other hand, there are some good stories of reducing impact, and enhanced remediation has been observed through different 3R initiatives, mainly in countries like Australia, China, India, Japan and Republic of Korea.

26. The Forum recognized the potential opportunities of implementing 3R and circular economic development strategies to prevent physical and chemical degradation of land as well as effective utilization of organic waste and biomass for sustainable farming and energy. Remediation of already polluted land, rehabilitation of deserted lands, landfill mining, utilization of organic waste and biomass for sustainable farming, continuous mass campaign to prevent open burning, waste recovery through composting and enforcing appropriate legislation encouraging earning from the waste recovered materials, are some of the solutions which needs to be addressed to have sustained 3R and circular economy initiatives for preventing land pollution.

27. In some of the countries the traditional burning of waste and biomass waste needs to have the government intervention to provide an alternative solution to stop such activity. It is required to have a national target for respective countries, strategies and policy development, robust supply chain and technological support to prevent the land degradation in support of the SDG 15 (protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss).

28. The Forum witnessed two key note addresses on 3R and water security in India. The keynotes concluded that only with improvements in water governance, a holistic and coordinated approach to air, water and solid wastes management, 3R can make a difference in the quality of life of the Indian people.

VI. The 3Rs and Clean Air - The Role of the Circular Economy towards Prevention of Air Pollution

29. Air pollution is an intensifying environmental challenge in Asia and the Pacific, where uncontrolled, unmonitored and unregulated biomass burning and open burning from open dump sites is still inevitable. Air pollutants like particulate matter, black carbon, methane, etc. are released to the atmosphere, essentially interrelated to short-lived climate pollutants (SLCP) or greenhouse gas emissions with significant impacts on human health, agriculture, forests, and habitats. Air pollution affects environmental health, social, and economic aspects. Exposure to air pollution in outdoor and indoor costs USD 5.11 trillion per year and has consequential health impact in terms of non-communicable diseases i.e. stroke, heart disease, respiratory disease and lung cancer.

30. The Forum provided an opportunity to maximize synergy among different networks in view of a common interest in Asia and the Pacific, as well as to strengthen international cooperation, particularly on 3R and circular economy. Taking into consideration the progress of the SDGs and the Climate Paris Accord in Asia and the Pacific, there's a need of interventions on the linkages on co-benefits in the nexus of sustainable waste management and circular economy and 3Rs for preventing air pollution. The Forum recognized that it is important to integrate to existing national frameworks and/or develop policies, strategies and actions at national and archetypical waste management contexts (urban, peri-urban and rural) on 3Rs and circular economy to achieve SDGs.

31. Diverting waste (technical and bio-nutrient materials) from final disposal through the adoption of 3R and circular economy can prevent air pollution or the emission of SLCPs and provides social, economic and environmental benefits. Countries and cities also need to access technologies for MSW (including organic waste/food waste) and biomass waste utilization as a resource to address and reduce air pollution (i.e. due to the emissions of SLCPs and GHGs). Solutions may also include integrated air quality and climate policies/actions; improved agriculture and waste management practices; banning open burning of waste; and the need for behavioral change and awareness campaigns.

32. The Forum advocated to put forth a circular economy and 3R as a strategy for preventive measure of air pollution (biomass burning and open burning) in the national policy framework along with municipal and regional master plans and programs - with financial support from government. Integrated solid waste management was promoted to address open dumping, as well as providing incentive policies for energy from waste thereby subsidizing energy produced from waste. Inter-ministerial level was encouraged to harmonize policies and programs, while ensuring public education and involvement for a proactive solution in addressing air pollution in the waste sector.

33. In terms of transboundary air pollution from biomass burning, sub-regional cooperation includes the Haze ASEAN Free 2020, where countries have to carry out and implement early warning of forest fires and prevent biomass residue from open burning. ASEAN haze cooperation also have monitoring stations i.e. meteorological centre (analyzes through satellite images) to put every effort to reduce the hotspots. The ASEAN Haze encourage green agriculture system for utilization of biomass residue. In additions, several existing initiatives on air pollution, such as EANET, CCAC, among others, are tackling multiple issues simultaneously including local pollution, transboundary aspects, as well as climate change.

VII. 3R for Protection of Coastal and Marine Ecosystem

34. Impact on coastal and marine ecosystem due to poor waste disposal practices, in particular the plastics waste, is a major global concern and a critical transboundary environmental issue. These issues have serious implications in achieving the SDG 14 (conserve and sustainably use the oceans, seas and marine resources for sustainable development). Scientific studies says more than 5 trillions of plastics are floating in ocean, whereas much more are deposited and accumulated in bottom sediments. They bring toxic chemicals to organisms such as fish and shellfish, causing concern about food security. Disposal of micro-plastics to the ocean has major impacts on the marine ecosystem as these materials are ingested by marine organisms causing severe food security issues, particularly in Small Island Developing States (SIDS).

35. Control of land-based source of plastic waste is necessary to reduce the inputs of plastic wastes to the ocean. There is a need to consider wide spectrum of 3R options to reduce the generation of plastic wastes. Among them, reduction of production of unnecessary single-use plastics could be helpful, considering long-term environmental impacts. The Forum recognized the importance of institutional capacity building on monitoring of plastics in coastal and marine environment, inter-agency cooperation, public private partnership and regional cooperation in river management towards prevention of coastal and marine pollution.

36. There is an urgent need to address the coastal and marine pollution due to the disposal of plastics waste in achieving SDG14. Global initiatives such as Clean Seas Campaign and North West Plastic Action Plan (NOWPAP) have contributed significantly to solving the issue. The Government of the Republic of Korea has initiated the Korean Floating Waste Reduction and Removal Project which has been very effective in removing and treating plastic waste from waterways in the country. In addition, many countries have action plans to ban single use plastics. Strengthening the policies related to marine pollution, capacity building of local and national level, development of marine research and development activities and raising awareness

can be critical towards solving the issue. Further, there is need to address the issue of disaster waste in the context of coastal and marine ecosystem.

VIII. Greening of SMEs and Enhancing National Productivity - Role of Circular Economy

37. The Forum recognized that low carbon industrial development is key driver towards decoupling economic development from resource consumption. SMEs around world contribute over 80% of the industrial activities and exports. SMEs also heavily depend on natural resources for their production and also a significant contributor to total industrial pollution.

38. Implementation of resource efficient cleaner production (RECP) activities and circular economic (CE) concepts are key interventions to improve the productivity and resource efficiency in SMEs. Typically, SMEs are weak in recognising the business case for such activities. SMEs regard initiatives such as RECP and CE could be a drain on their profits and technologies involved are too complicated. SMEs typically undervalue the true cost of waste management.

39. SMEs face numerous challenges in moving towards low carbon industrial development. Lack of knowledge about environmental and social impacts of their practices, lack of awareness of environmental requirements, affordability of new technologies are some these challenges. In order to overcome these challenges several countries in the region have initiated projects related to greening the economy.

40. India, for instance, has initiated a project under Zero Effect Zero Defect (ZED) to assist their SMEs to move towards green industrial development. This is a maturity model where SMEs progress from compliance to excellence. Indian government is planning to implement this model in 1 million SMEs around India during next 3~5 years. Key feature of this model is the assessment of outcomes based on 50 parameters, and based on the final score, SMEs are rated for their performance.

41. In PR China, for instance, SMEs contribute over 70% of total industrial pollution from 40 million units. Greening the SMEs using CE through cleaner production and waste recycling is a key driver in PR China. The government has established 45 national demonstrative eco-industrial parks (EIPs). Greening the Guiyu E-waste recycling industry is an excellent demonstration of how industries can move from predominantly informal sector activities to circular economy industrial park. The Forum recognized the importance to develop complete legislations and policy based on economic incentives and sound networking among the SMEs to share their experiences.

IX. Resource Security and 3R Technologies

42. Resource security is a critical underpinning factor for achieving the SDGs. It was recognised that SDGs are universal in nature aiming to bridge the gap between conventional approaches to economic development,

poverty eradication, environmental sustainability and sustainable management of natural resources. The sustainability of Asia-Pacific region will largely depend upon the supply security of natural resources, raw materials and minerals, freshwater resources, renewable energy sources; supply security of resources largely depends on the scale of introduction of circular economy which ultimately drives (3R) technological interventions. 3R technologies can be discussed in a number of domains such as collection, sorting, resource recovery (including WtE), recycling, efficient material processing, industrial production, industrial symbiosis, eco-design, product sharing, etc. The Forum discussed a number of new and advance 3R technologies such as nanotechnology, green chemistry, internet of things (IOT), and ICT, and industry 4.0 as a technological driver towards resource security, and circular economic development as well as their spilling effects towards clean environment (land, water, air) and GHG reduction.

43. The Forum observed that the technology development and application and use practices are largely centered around the recycling and less on reduce and reuse. The challenge is monetization, inability of best practice adoption and learning and also innovativeness in public policies. There is an opportunity to explore new innovative technologies like virtualization and supply chain optimization which may have better business cases and monetization possibilities but this need to be explored further.

44. One of the key challenges is the failure of multi-agency, (including industry, research houses and govt. agencies) collaboration which leads to working in silos resulting into system level failure and optimum resource management is a function of integrated management of functions. Singapore and China were mentioned as two countries making significant progress in addressing resource security issues with multiple technologies which includes IoT, IIoT, virtualization, dematerialization, exploring new materials and technologies like 3D printing.

X. Financing 3R – Domestic and International Investments

45. It is not always about the volume of financing, rather access to various financing mechanisms both at national and international level. Therefore opportunities to strengthen such financing mechanisms. Together with financing, it is also important to consider capacity building in bankable project formulation and development. It is important to consider that the projects need to be evidence based with necessary and reliable data and information backups and localized priorities. Comprehensive picture on what companies and business sector are doing in relation to resource efficiency and greening supply chain is important considerations in the financing and investment domain.

46. JICA's experience has revealed 3 key messages for 3R projects: Identification of challenges/backgrounds for appropriate intervention, involvement of civil society for social innovation and promotion of environment education, and creation of better business environment for efficiency and sustainability involving technology, regulation, institution and finance. Japan has been supporting other countries through international cooperation. Japanese experience and

technology can be transferred to other countries to help them address their waste management problems. Japan emphasizes the importance of package support, including system and technology based on the Japanese basic strategy of environmental infrastructure overseas development.

47. World Bank's programs in waste management are focussed on cross sectorial projects focussing on analytical evidence. Urban Local Authorities and private sector technology providers are critical stakeholders for a successful investment climate. Development of a national roadmap for integrated waste management, development of national level waste management network to share experiences and setting up an apex waste management body are key requirements for a successful waste management system. 3R Forum can provide a platform for international cooperation for mobilisation of international support. In this regard it is important to connect 3R activities with SDGs and clean climate fund. It is important to convert the global goals to national level goals and development of indicators to monitor project progress for creating good business environment.

XI. Major Achievements and Initiatives by Countries on the Implementation of Ha Noi 3R Declaration (2013~2023)

48. There is clear evidence from the progress made by participating countries that the Regional 3R Forum in Asia and the Pacific is assisting and guiding them to mainstream 3R policy in member countries. There is a steady progress in legislation and policy development in many member countries related to source separation, composting, waste-to-energy technologies and emerging waste streams. However, the countries are also faced with a number of issues and challenges in moving forward. These include and not limited to the lack of proper collection, transportation, and treatment capacity for waste, lack of land for sanitary landfill, a lack of legal arrangements and rules for solid waste management, lack of public awareness, lack of technical know-how to promote 3R initiatives and lack of involvement by the private sector. Weak enforcement of legislation, limited financial resources, lack of waste management infrastructure, inadequate public participation and weak coordination among institutions and government agencies are also contributing factors for impeding the progress. Developing a business case for recycling of waste streams to enable the engagement of the business community to create businesses in the recycling and waste management sectors is seen as a high priority. In spite of these issues and challenges, all the participating countries have demonstrated some progress, a selection of them stated below. It is of paramount importance that the Regional 3R Forum in the Asia and the Pacific continue to guide and support these countries to ensure such momentum is sustained.

49. **Afghanistan**: Afghanistan has introduced a Solid Waste Management Plan (SWMP) There are several pilot projects planned to be implemented under this plan to improve waste management and sanitation in 12 major cities of Afghanistan.

50. **Australia**: Australia has developed the Product Stewardship Act 2011 that allows for industries and products to be regulated in several ways, while also making provision for voluntary activities. The National Television and Computer Recycling Scheme (NTCRS) is a co-regulatory product stewardship scheme regulated under this Act. Australia also has in place a National Food Waste Strategy providing a framework to halve Australia's food waste by 2030.

51. **Bangladesh**: The National 3R Strategy for Waste Management was launched in 2010 and aimed to achieve the complete elimination of waste disposal in open dumps, rivers and flood plains by 2015. The Seventh Five Year Plan (2015–2020) includes 3R strategies and programmes for waste management and low-carbon sustainable development and integrate with the SDGs.

52. **Bhutan**: The Waste Prevention and Management Act and Regulation of 2012 and amendment in 2016 stipulate the promotion of 3R principles. Bhutan has amended the waste regulation in 2016, and with the Zero Waste Project 2015, new incentives for private business engagement in the waste sector will be encouraged..

53. **Cambodia**: Has introduced and implemented several policies, legislations and programmes including the National Spatial Planning policy, National Development policy, Go Green, Green City Development, National Coastal Development Guidelines and National Industrial Development Policy.

54. **Federated States of Micronesia**: The Governments are planning to strengthen the recycling programs and update and revise the Waste Management Strategies in 2020 and to undertake a Zero-waste policy integrated into the National Environment Act which will address a clean environment.

55. **India**: Under the aegis of Swachh Bharat Mission, India is on way to achieve 100% scientific management of municipal solid waste in all statutory cities / towns. Steady progress has been made towards this with over 73% urban wards having 100% door to door collection and over 36% urban wards having 100% segregation of municipal solid waste into dry and wet wastes. India has developed policy interventions for converting waste to wealth, viz., waste to compost, waste to energy, use of plastics in roads and construction and demolition waste into building materials, and is promoting waste recycling.

56. **Indonesia**: Indonesia is implementing a national policy and strategy for solid waste management under Presidential Regulation No. 97 Year 2017 (JAKSTRANAS) as a masterplan to target 30% reduction and 70% handling of solid waste by 2025 with the support of initiatives such as the Clean City Program and Waste Bank Program, build recycling facilities and promote public participation programs.

57. **Japan**: Japan established the Fundamental Law for Establishing a Sound Material-Cycle Society in 2000. Many awareness-raising programs for waste reduction by local government initiatives such as "Sapporo waste reduction campaign", "Sapporo slim Sunday", and "Shopping with your own bag". Eco-town programmes has been implemented under initiatives of Ministry of the Environment and other related ministries in several targeted cities since 1997. The 4th Fundamental Plan for Establishing a Sound Material Cycle Society in Japan, which is underway Cabinet decision and expected to be officially announced in the second quarter of 2018.

58. **Kiribati**: The recycling program known as “Te Kaoki Maange” has been very successful and widely recognized in the region as a good waste management model for other Pacific island countries to adopt and learn. However, Kiribati is still facing management issues on e-waste and end-of-life vehicles, simply due to its limited landmass and non-availability appropriate waste management technology.

59. **Kyrgyzstan:** The issues of environmental safety and environmental sustainability are included in the draft of the Strategy for Sustainable Development of the Kyrgyz Republic for 2018-2040 "Taza Koom-Jany Door" (Pure Society - New Age), which is planning to be adopted, Government Program "Jany Doorgo-Kyrk Kadam" (40 Steps to New Era), which is already approved. National campaign "Taza Jazhoo"(Pure Life) is also being implemented.

60. **Lao PDR**: The Mekong Region Waste Refinery-International Partnership towards Achieving Zero Waste, Zero Landfill and Reduce Greenhouse Gas Emission Project has been implemented to reduce solid waste origins of greenhouse gas emission in the Mekong region and to transfer technology in the region.

61. **Malaysia**: Malaysia revised its National Solid Waste Management Policy in 2016 and has set a policy to reduce the amount of solid waste to be disposed in landfills by 40% in the year 2020. The Government has set a goal of 30% household recycling rate by 2020.

62. **Maldives**: The National Waste Management Act was drafted in 2016 and amendment of the National waste management regulation is on going since 2017 to date. The target is to strengthen the legal framework for enforcement of waste regulation, build adequate infrastructure, and control public practices of littering and dumping of waste through public education.

63. **Marshall Islands**: The new Container Deposit Legislation (CDL) has been passed and new policy has implemented to ban on Styrofoam plates and cups as well as plastic shopping bags.

64. **Mauritius**: The landfill gas to energy project at the landfill generates 3MW/hour of electricity. Mauritius is also currently developing a national waste recycling and resource recovery strategy

65. **Mongolia**: The Government of Mongolia has approved national development policies and programs such as the Green Development Strategic Action Plan, the National Program for Reducing Air and Environmental Pollution, and the Sustainable Development Concept of Mongolia to address the environmental issues.

66. **Myanmar:** Myanmar is planning to implement National Waste Management Strategy and Action Plan based on the principle of zero waste and circular economy to encourage private sector participation in municipal waste management in short, medium, and long terms.

67. **Nepal:** Nepal has developed inter-municipal cooperation in areas for effective waste management such as strengthening municipal capacity in 3R, establishing basic infrastructure for recycling and promoting 3R activities at the local level.

68. **Pakistan**: Pakistan has developed Pakistan Climate Change Act 2017 and a Framework for Implementation of Climate Change Policy (2014-2030). This contains elements such as projects on energy from waste and establishment of provincial cleaner production centres.

69. **Palau**: Palau has endorsed central government policies to eliminate import of plastic bags, to utilize or reduce organic waste, such as composting, energy recovery and development of new landfill, under the National Solid Waste Management Strategy.

70. **The Philippines**: The Philippines introduced the Ecological Solid Waste Management Act in the year 2000 (RA 9003), which incorporates the waste hierarchy approach to waste management with emphasis on segregation of waste at source as mandated to all local government and adoption of best available technologies for waste-to-energy programmes. The government of the Philippines has introduced an Eco-labelling programme and a Green Procurement Programme.

71. **The Russian Federation**: The Government has introduced and implemented various laws and regulations on Extended Producer Responsibility (EPR) and Prohibition of landfilling of wastes that contain useful recyclable components and unprocessed organic wastes. The Government adopted strategy for developing waste recycling industry based on 3R principle, and is planning to move towards the principle of circular economy and adopt the laws on regulation of secondary resources and incentive measures will be created for private sector.

72. **Singapore**: Singapore aims to achieve a recycling target of 70 per cent by 2030 and works towards becoming a Zero Waste Nation by reducing its consumption of materials, and reusing and recycling them. Singapore will introduce extended producer responsibility concept in the management of e-waste, and mandatory reporting requirement for packaging data and packaging waste reduction by 2021.

73. **Solomon Islands**: Has introduced and implemented several policies related to 3Rs such as the National Waste Management and Pollution Control Strategy 2017-2026 that considers 3R and resource efficiency. The National Climate Change Policy (NCCP), the Solomon Islands National Plan of Action (CTI), the National Solid Waste Management Strategy 2009–2014 has broadened its scope to encompass other waste streams such as Healthcare Waste, Hazardous Waste, Liquid Waste, Solid Waste and E-Waste.

74. **Sri Lanka**: The National Solid Waste Management Policy formulated in 2007 was revised by Ministry of Mahaweli Development and Environment in 2018 The Government has been introducing various concepts and policies-Zero Waste concept, Green Procurement, Green Accounting, Green Reporting and the Sustainable Consumption & Production Policy

75. **Thailand:** Thailand has developed the National Waste Management Master Plan (2016–2021) to support integrated waste management. The Zero Waste Project, Government Green Procurement, Pollution Prevention Program, Cleaner Production and Clean Technology, and Clean and Green City Projects are pilot programs developed.

76. **The Republic of Korea**: 3R policies are at very mature stage in the Republic of Korea. The country has changed its waste management system to a resource circulation society and has an ambitious plan of zero land filling by 2020. Also, in order to enhance resource circulation society, the country has enacted the framework Act on Resources Circulation on May 29, 2016 and enforced on Jan 1, 2018.

77. **Tonga**: Tonga has a draft waste management strategy and has adopted a number of initiatives, including awareness campaigns (such as "Clean, Green Tonga" and the Clean Schools Initiative),

78. **Tuvalu**: Tuvalu has integrated waste management as a priority into the National Strategy for Sustainable Development 2016–2020 (Te Kakeega III), implementation of the Tuvalu Integrated Waste Policy and Action Plan 2017–2026, and enforcement of Waste Management Act 2017. A new recycling facility has been constructed to house recyclable materials.

79. **Viet Nam**: Viet Nam plans to extend the ratification of the National Strategy for Integrated Management of Solid Waste 2025, vision to 2050, the National Strategy on Environmental Protection to 2020, vision to 2030 and amended the Law on Environment Protection 2014, and the Law on energy efficiency 2010.

XII. Launch of State of 3Rs in Asia and the Pacific

80. The session announced publication of the first regional synthesis report of "State of the 3Rs in Asia and the Pacific." Developed in coordination with a number of key experts, the report comprises an indicator-based assessment of 3R policy implementation in 11 countries including Bangladesh, Cambodia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, Thailand, and Viet Nam as well as the Pacific Island region. By utilizing comparable measures for waste prevention, recycling, biomass utilization, marine plastics prevention, and e-waste management, the report presented an assessment of progress made on waste and resource efficiency in Asia and the Pacific.

81. The panel emphasized that future work should address how to change behavior as well as to establish business case for waste prevention and resource saving based on science-based knowledge creation as to how and what to be done. In this regard, multi-disciplinary approach as well as multi-stakeholder involvement are recommended. In addition, harmonization and increase in comparability of data should be further supported to enhance institutional capacity for data-based policy formation and monitoring. The exercise to create regional-wide knowledge on the 3Rs and circular economy can help better assessment of state of 3R policy implementation. This should result in regional knowledge management mechanism such as regional and national focal institutions as science-policy interface supported by regional data hub on waste and the 3Rs. The panel agreed on usefulness to continue, further update, increase reliability of region-wide knowledge initiative such as "State of the 3Rs in Asia and the Pacific". The session ended with launching of the first State of 3R in Asia and the Pacific by Mr. Yasuo Takahashi, Vice-Minister of Global Environmental Affairs, Ministry of the Environment of Japan.

XIII. Reporting of Pre and Parallel-Events

82. 7th IconSWM 2017 attended by 29 countries expressed Swachh Bharat Mission was identified as one of the excellent programs in India based on 3R principle and there are many learning points from this. All six rules

on waste management has been revised in 2016 but they need proper implementation. E-waste Management rules 2016 is based on EPR has been implemented that needs to be strengthened in India. Effective implementation of the rule requires development of good collection system and implementation of EPR, developing CDW recycling plants. Intensive Training and awareness of the ULB personnel and more professional service and technology providers are required. The industry session revealed that co-processing in Cement Kiln and Power Plants to utilize RDF or similar components utilizing non-hazardous wastes has been enforced while a guideline on RDF is in the final stage of development by the government. India is now taking a lead role in respect to the implementation of 6R and the Circular Economy Principles. IconSWM-ISWMAW is an international platform which advocates the concept of 3R & Circular Economy and has taken up a research project of assessing the status of global implementation of Circular Economy where 25 counties are involved.

83. A pre-event for the Eighth Regional 3R Forum in Asia and the Pacific, celebrating India National 3R Day for Swachh Bharat (Clean Indian Mission) opened on Monday afternoon, 9 April. Mr. Manish Singh, Commissioner, Indore Municipal Corporation, welcomed participants from 40 countries and many of India's cities. He said that the Eighth Regional 3R Forum's themes should help give direction to cities, their officials and managers responsible for formulating and executing policies promoting clean and resilient infrastructure. He noted that Indore, named India's cleanest city in 2017, was proud to host the conference and have the 3R Declaration bear its name. Ms. Birgitte Bryld, UN Department of Economic and Social Affairs (UN DESA), observed that each session of the Eighth Regional 3R Forum was directly relevant to the 2030 Agenda and the achievement of the Sustainable Development Goals (SDGs) and its targets. She said the 3R Regional Forum's outcomes would provide a timely and important contribution to the 2018 review of the 2030 Agenda and SDGs by the High Level Political Forum (HLPF). Mr. Vinod Kumar Jindal, Ministry of Housing & Urban Affairs (MoHUA), India, welcomed all participants on behalf of the Government of India. Noting that the host city of Indore has been managing its wastes in a scientific manner, he expressed pleasure that India is hosting of the Eighth 3R Forum at this opportune time when the country has embarked on its Clean India Mission.

84. South Asia Co-operative Environment Programme (SACEP) organized a parallel event on Tuesday afternoon, 10 April, on Recycling of Land based Marine Litter: Challenges and Opportunities in South Asia Region. The Member countries of South Asian Seas Programme (SASP) shared their respective national Marine Litter action plan report along with Regional Action Plan report, to fulfill its mandate of providing and enabling assistance at the regional level to address environmental challenges of the countries in South Asia. It is understood that the marine environment provides a vital blue economy resource base for the industrial and socio-economic development of the countries. It includes important interests such as fisheries, harbors and allied infrastructure, tourism and various types of industries. Almost all the activities with marine sector are concentrated along the coastal belt. The 8th 3R forum provided SACEP as an opportunity to bring experts from SAS member countries for valuable deliberations and also enable SACEP and member countries to connect to a variety of stakeholders from national, regional and global Agencies. The outcomes of the regional action plan report will be circulated to member states for their necessary endorsement and will be launched at the World Environment Day 2018 in a regional event.

85. Asia 3R Civil Society Event was held on 11th April 2018 as a parallel event. Japanese NGOs and Indian NGO gathered together to share the positive action & plans "Creating sustainable and Healthy living in local communities through 3Rs" They discussed and NGOs shared important roles. Also, they emphasized the importance of partnership among key stakeholders.

86. International 3R Exhibition was held on 10th-12th April 2018 as a parallel event. Private companies and international organizations exhibited their activities. H.E. Mr. Hardeep S. Puri, Minister of State (I/C), Ministry of Housing and Urban Affairs (MoHUA), Government of India, H.E. Ms. Sumitra Mahajan, Hon. Speaker of the Lok Sabha, Parliament of India and Ms. Maya Singh, Minister for UD, Government of India and H.E. Mr. Tadahiko Ito, State Minister, Ministry of Environment, Japan went around the exhibition.

87. CII as Industry Partner of 3R Forum organized a technical exhibition, industry awards and conducted a full day Indian Industry session on 3R and waste management. The exhibition had pavilions of 4 countries Japan, Singapore, Australia and Russia, UN pavilions, Municipal Corporation from Kanpur, Coimbatore and Indore, 2 state pavilions MP and CG, and 40 Industry exhibitors. CII conducted 3R Industry awards for exemplary work of Indian Industry in various categories such as E waste, waste to recyclables, MSW management and industrial waste. CII received applications from across India from Start up, SME's and Large Industry. The day long industry session deliberated on topic such as achieving Mission Zero Waste, role of 3R in achieving sustainability and circular economy, waste management based on 3R. Speakers from industry shared their work and experiences, technology and best practices.

XIV. Asian Mayors Policy Dialogue on Achieving Clean Water, Clean Land and Clean Air through 3R and Resource Efficiency

88. The Asian Mayors Policy Dialogue on Achieving Clean Water, Clean Land and Clean Air through 3R and Resource Efficiency was held on 9 April 2018 as an integral part of the 8th Regional 3R Forum in Asia and the Pacific. Various presentations confirmed the need to integrate the 3R and resource efficiency in urban city development plans and strategies to mitigate the impacts of urbanization and to make cities and human settlements inclusive, safe, resilient and sustainable. With the fast increasing population and urbanization in the past decades especially in the Asian region, cities are also experiencing economic development and with it accompanying challenges such as climate change and environmental pollution, among others. To achieve the SDG 11, there was the need to change the approach to address these challenges. The New Urban Agenda emphasises the need for a paradigm shift in the management of urbanization and the significant role of the local governments. Essentially there was a need to move from linear to circular approach and the need for a closed-loop economy through resource efficiency.

89. The city level presentation for the city of Indore and Kitakyushu shared their different initiatives to achieving the SDG 11 to make cities and human settlements inclusive, safe, resilient and sustainable. The city of Indore with a strong political will and community engagement is undertaking projects on

human settlement / affordable housing, safe public transportation, cleaning up of public spaces and more efficient waste management approaches. These would increase climate change mitigation and enhance health and economic resilience of the people.

90. Kitakyushu as a green growth city, shared its international environmental strategies which included strategies for overcoming pollution through international environmental cooperation. Kitakyushu which experienced severe pollution in 1960s could overcome pollution and regain the blue sky and the blue sea which could become possible through partnership with stakeholders such as the government, the citizens and the private companies. Kitakyushu currently has ongoing collaborative city-to-city projects with some Asian cities such as the waste management project in Surabaya, Indonesia and Waste management project in Cambodia.

91. Circular economy is one of the most important concept in developing cities which already demonstrated effective results in the area of waste management, smart city development, material consumption reduction, water consumption reduction as well as recirculation, utilization of renewable energy and many other areas. The references of 3R practices in several cities in Asia and the Pacific, namely Kawasaki in Japan, Bandung in Indonesia, South Australia, Surat and Indore and some other cities in India were made in the session where a number of areas in which the benefits out of the implementation of 3R have been achieved. 3R and circular economy demonstrated entrepreneurship development which in turn generates different types of business and green jobs across the globe.

92. Some of the practices namely, city to city collaboration between Kawasaki and Bandung, green transportation in Jakarta, internet of things (IoT) in South Adelaide, National programs in India for circularity of water resources, smart city projects in India, organized repairing initiatives are some of the demonstrated projects showcasing the importance of value chain in achieving 3R and circular economy and capitalizing on opportunities in circular economy.

93. The forum recognized that 3R, waste management and recycling has an underpinning function for the urban functions. A lot of opportunities for inter-municipal partnerships and cooperation are related to capacity building about the operationalization of, for instance, recovery facilities, composting facilities, exchange waste from one city to another based on recycling potential or marketing facilities. At the national level, a network of urban local bodies (ULBs) is recommended that may be nurtured and supported by the Central Government Ministry such as the Urban Development. In some countries in Asia, such networks already exist and are operational. It will be useful and effective however if these national networks focus on the agenda of smart and circular cities and the 3Rs. This concept of networking may be escalated at the international level between ULBs from two countries to take advantage of mutual learning. Collaborations between city of Osaka with Ho Chi Minh City and Quezon city, and between City of Yokohama and Danang City, Vietnam, are examples to follow.

94. The Mayors Dialogue recognized the alarming concerns of plastics impacting marine life and also reptiles and amphibians. The bio-accumulation of micro-plastic is a significant problem that releases chemicals that serve as endocrine disruptors. In the seas the fishes consume micro – plastics and

whales are ingesting plastics and clogging their guts and dying, and on land domestic animals and cattle ingest plastics dumped with food waste and other organic / inorganic material. The emphasis on more research to be undertaken regarding micro-plastics and their hazard has been indicative of the need to better understand the physical and chemical basis of the problem.

95. Regarding India, new Plastic Waste Management Rules have been notified in year 2016, and that plastics as carry bags are being prescribed to be of minimum 50 microns thickness. Further, there is a need for broad-basing the labeling of plastics in packaging with markers reflecting nature of plastic material and associated with it are user fees for carry bag providers. There is also an emphasis on extended producer responsibility (EPR) to be implemented. The responsibilities of managing plastics should be shared by all stakeholders and not be primarily in the domain of Urban Local Bodies.

96. Some progresses have been made on advanced recycling technologies, raising citizen awareness, expansion of market for recyclables, the extension of life span of landfills, effective use of waste to energy facilities, the involvement of private sector and their technologies for waste processing and safe, secure and stable processing. Some results achieved are the reduction in total volume of waste. As far as technologies are concerned, sewer systems have improved the cities' water environment, and the rehabilitation of water to be supplied for various uses. Waste-to-energy generation becomes a standard and signs indicate that land availability for landfill sites gets more and more limited. Joint Crediting Mechanisms, Public-Private-Partnerships, and assessment of GHG emissions and support for action plans and capacity building are other successful examples in the region. Numerous cities sign cross border memorandums of understanding (MoUs), focusing on, for instance, and building house hold separation and anaerobic digestion of biological wastes.

97. As to chemical waste, new concepts coming from Europe, such as from Germany and Belgium, provide key lessons for application in Asia and Pacific. They include Extended Producer Responsibility (EPR) and Chemical Leasing, leading to functional economy related concepts such as chemicals-as-a-service when solvents (for instance) are 'leased' instead of sold, the owner will be encouraged to keep responsibility after contamination, take back the product, and rehabilitate as expert to virgin grade.

98. Examples of specific challenges are the many different chemical substances and materials, and the continuous growth of newly produced substances. As to e-waste, the growing embedding of plastics (such as PU) in products represents new challenges. Nevertheless, when looking at the recycling of complex waste streams such as chemical waste and e-waste, the industrial development perspective, the holistic approach and decisions about where to position collection systems, where to organize dismantling, what to treat locally versus what to treat internationally in large facilities represent, the environmental control over the waste treatment and eventual incineration of medical infectious waste, represent an important point of attention.

99. Some best practices such as the Waste Data Sheets, and the implementation of a Pollutant Release and Transfer Register system were reported. The embedding of information and automation systems, including IoT, machine learning, detailed and mass composition data mining, are expected to make waste management systems more efficient. Creating digital twins of materials could also help to redirect material flows to optimal recycling routes. Similarly, buildings need to be seen as material stocks and when given kind of a 'passport', urban mining concepts and local bodies can start to anticipate on the material flows end-of-life. In order to assess the impact of measures, modelling and frameworks from other regions, e.g., Europe, are available for eventual translation into Asian & Pacific context.

100. The forum recognized the importance of sharing information about secure, safe and clean treatment concepts, such as the Korea Electronic Recycling Cooperative. Industries and companies have an important role to play, for example, the technological capacity building with municipalities. The chances for job creation can't be overestimated. Cities are at the forefront, and business/private sector can help overcome the skills gap to overcome various gaps at municipal level.

101. Recognizing the importance of 3R, resource efficiency and circular economic development approach for achieving inclusive, resilient and sustainable cities in line with the objectives of the SDGs and the New Urban Agenda, the participating Mayors and local authorities of the Forum signed the voluntary and good-will *Indore 3R Declaration on Achieving Clean Water, Clean Land and Clean Air in Cities* (see Annex 1).

XV. The Way Forward

102. The Asia- Pacific is a dynamic, fast growing region economically, in terms of rapid urbanization and industrial transformation. But along with progress comes serious challenges for the world's most populous region, challenges that are amplified by the increasing severity and frequency of natural disasters and climate change dynamics, reminding us of the urgency in taking action.

103. While the international community are committed to the 2030 Agenda for Sustainable Development and the SDGs, the New Urban Agenda, the Paris Climate Agreement, the Addis Ababa Action Agenda, the Nairobi Mandate, and the Sendai Framework for Disaster Reduction, among others, there is an increasing need for Asian-Pacific countries to integrate 3R and resource efficiency into their national development plans and macroeconomic policy agendas.

104. By pursuing resource efficient and circular economic development approach, countries and cities can embark on the path of low-carbon and green growth, including realizing eco-efficient infrastructures in key development sectors such as urban design and planning, building, transport, energy, water and waste systems.

105. System change for resource efficient and circular economic development will provide significant opportunities for green business and green employment opportunities. It is important that ways are found to engage the private sector and the finance industry, including the SMEs, to enable expertise, technical knowledge and services to be activated in pursuit of sustainable production and consumption and ultimately the achievement of sustainable development. Their awareness of the benefits of circular economic development is important and should be supported by government policies and programs, including financing decisions.

106. As Asia-Pacific countries industrially and economically grow, financing implementation of 3R policies, programs, including infrastructure development, will be critical to reducing the volume of all waste streams – MSW, plastics, chemicals and hazardous wastes, etc. in living environment and natural ecosystem, and in mitigating negative environmental impacts, while supporting a wide range of domestic and global priorities to improve health and environment. In moving towards zero waste societies, the countries need to explore new sources of funding to finance development of appropriate 3R infrastructures (e.g., state of art waste collection and processing facilities, resource recovery facilities, recycling industries, eco-industrial zones, science parks, etc.), to promote collaboration among key stakeholders and active participation of citizens. In this regard, the national and regional banks could take necessary initiatives in financing 3R start-up companies and industries.

107. The countries and cities need to strive towards scientific and technological advancements to achieve environmentally sound management of chemicals and all types of waste streams throughout their life cycle and significantly reduce their release to air, water and land in order to minimize their adverse impacts on human health and the environment. To this regard, the cities and local authorities should effectively implement the "*Indore 3R Declaration on Achieving Clean Water, Clean Land, and Clean Air in Cities*".

108. In achieving inclusive, resilient and sustainable societies, the 8th Regional 3R Forum for Asia and the Pacific should continue to provide a strategic platform to discuss and share best practices in 3R areas, including technologies to deal with new and emerging issues of concern in both resource and waste management.

XVI. Closing Session

Annex 1: Indore 3R Declaration on Achieving Clean Water, Clean Land and Clean Air in Cities

PREAMBLE

Achieving access to clean land, clean water and clean air are fundamental rights of citizens. The 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs) and the New Urban Agenda (NUA) have, inter-alia, a common objective to make cities and human settlements safe, resilient, inclusive and sustainable. In order to achieve this objectives sound management of, 3R (Reduce, Reuse, Recycle), circular economic development, sustainable waste management and

resource efficiency assume paramount importance. Pursuing 3R as an economic industry could further enable cities to move towards on the path of sound material cycle societies and circular economic development to achieve necessary socio-economic and industrial transformation through the sustainable use of natural resources, enhanced water and energy security, reduced carbon foot-print, and improved land, water and air quality.

THE DECLARATION

Cognisant of the above socio-economic context in achieving the 2030 Agenda for Sustainable Development, the SDGs and the NUA, we, the Mayors, city and local government authorities and representatives at the Asian Mayors' Policy Dialogue on Achieving Clean Water, Clean Land and Clean Air through 3R and Resource Efficiency, as part of the 8th Regional 3R Forum in Asia and the Pacific held at Indore, Madhya Pradesh (India), do hereby declare and adopt, on this 11th day of April 2018, our commitment to:

1. ***Accelerate*** movement of holistic waste management in our cities through prevention, reduction, reuse and recycling of all waste streams (including industrial waste, municipal solid waste, and domestic waste water) with an objective to achieve clean land, clean water and clean air, including Greenhouse gas (GHG) reduction;
2. ***Implement*** local-level actions to make cities clean, safe, smart, resilient, resource efficient, inclusive and sustainable through the effective implementation of 3R policies and promote tenets of circular economy for moving towards a zero waste society;
3. ***Foster*** sustainable urban development planning and practices focusing on eco-products, green energy, rainwater harvesting, conservation of water bodies, urban farming with composting, safe disposal of agricultural waste, green city development, green construction materials, etc. for maintaining bio-diversity;
4. ***Inspire*** citizens to take proactive ownership for managing their own waste, including segregation at source, on-site processing of bio-degradable waste, safe handling of other waste forms and safe disposal by concerned agencies;
5. ***Partner*** and collaborate with civil society organizations, including integration of informal sector with formal waste management chain in order to provide decentralized approaches to 3R, along with providing sustainable livelihood opportunities, while minimizing health and environmental impacts;
6. ***Leverage*** national and international collaborations to promote (i) 3R as an economic industry, 3R-related science, technology and infrastructure, inter-municipal, inter-indsutry and city-to-city cooperation, (ii) public-private-partnerships (PPPs) for integrated waste management, and expand investment opportunities in the 3R space;
7. ***Strive*** towards complete ban of illegal disposal of plastics in eco-sensitive or eco-fragile areas, including in tourist areas close to oceans, rivers, lakes, wetlands, other water bodies and mountains, to preserve coastal, marine and mountains ecosystems and resources, keeping in mind the widespread plastic littering which affects eco-systems;
8. ***Undertake*** to work towards sound and sustainable wastewater management and treatment and reuse with an objective to achieve water security and water quality for sustaining livelihood, in view of the the critical nexus between water quality, water security and effective implementation of 3R policies, programmes and infrastructure development;
9. ***Focus*** on sound and effective management of new emerging waste streams such as micro-plastics, chemicals and hazardous waste, e-waste, medical waste and construction and demolition waste;
10. ***Promote*** and facilitate the use and development of viable existing and emerging technology, including Information and Communication technologies to strengthen the waste management value chain; and
11. ***Engage*** in dissemination and acceptance of national and international best practices in 3R among all stakeholders for wide-scale adoption and replication.

Adopted in Indore, Madhya Pradesh (India), this Eleventh Day of April in the Year of Two Thousand and Eighteen.