

**Chair's Summary**  
**Fifth Regional 3R Forum in Asia and the Pacific**

**Multilayer Partnerships and Coalition as the basis for 3Rs Promotion in Asia and the Pacific, 25 to 27 February 2014, Surabaya, Indonesia**

**I. Introduction**

1. The Ministry of Environment and the Ministry of Public Works of the Government of Indonesia, the Ministry of the Environment of Japan (MoEJ), and the United Nations Centre for Regional Development (UNCRD) co-organized the Fifth Regional 3R Forum in Asia and the Pacific from 25 to 27 February in Surabaya, Indonesia. The Forum was supported by the United Nations Industrial Development Organization (UNIDO), the United Nations Environment Programme (UNEP) International Environmental Technology Centre, the Institute for Global Environmental Strategies (IGES), the Secretariat of the Pacific Regional Environment Programme (SPREP) and the Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM/Japan International Cooperation Agency).
  
2. The Forum was attended by approximately 500 participants, comprising government representatives from thirty-three Asia-Pacific countries (Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, People's Republic of China (hereinafter, China), Cook Islands, Fiji, India, Indonesia, Japan, Kiribati, Republic of Korea (hereinafter, Korea), Lao PDR, Malaysia, Maldives, Marshall Islands, Mongolia, Myanmar, Nauru, Nepal, Pakistan, Palau, the Philippines, Samoa, Singapore, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tuvalu, Vanuatu, and Viet Nam), Subsidiary Expert Group Members of the Regional 3R Forum in Asia, international resource persons, representatives from various United Nations and international organizations, scientific and research organizations, non-governmental organizations (NGOs), representatives from the private and business sector, and local observers and professionals on waste management from Indonesia. As a pre-event of the Forum, the Government of Indonesia organized the "Indonesia Waste Care Day" on 24 Feb 2014 in the City of Surabaya inviting 26 city mayors, heads of agencies, communities and the business sector, among others, who signed a declaration "Towards achieving Indonesia Clean of Waste 2020" (Indonesia Bersih Sampah 2020) by reducing 20% of today's levels of waste generation.

3. As a parallel side event of the Forum, NGO communities from Indonesia and Japan jointly organized a NGO Forum, “Fifth Asia 3R Citizens Forum – Community-based 3R implemented and promoted by NGOs Converting Waste Biomass into Resource”. As another side event of the Forum, the “Indonesia-Japan International 3R Exhibition” was held demonstrating a range of 3Rs and waste recycling technologies.
4. Natural resources and ecological assets are being used at increasing rates across many parts of Asia and the Pacific region, enabling economic growth, fuelling unprecedented growth in cities, and increasing consumption. The fast rise in natural resource consumption in the region contributes to natural resource depletion in the region and globally, and results in accelerated climate change. The goal of improving resource efficiency and reducing the waste and emission intensity of Asia-Pacific economies has become a significant driver of government policies and programmes, including macroeconomic policies in most, if not all, countries in the region. Moving towards a resource efficient and sound material cycle society is inherently a multi-stakeholder process which calls for multilayer partnerships within and between communities, businesses, industries, and all levels of government. Such multi-stakeholder partnerships are key to realizing the thirty-three goals for resource efficiency and waste minimization identified in the Ha Noi 3R Declaration (2013–2023).
5. Because of the importance of collaboration for the success of the 3Rs, the theme of “Multilayer Partnerships and Coalition as the Basis for 3Rs Promotion in Asia and the Pacific” was chosen for the Fifth Regional 3R Forum in Asia and the Pacific, 25 to 27 February 2014. The forum, hosted by the Government of Indonesia, addressed various forms of partnerships and coalitions for implementation of the Ha Noi 3R Declaration (2013–2023). The multilayer partnerships are based on the fundamental understanding that the 3Rs encapsulate more than municipal waste management, acknowledging that waste and emission levels are intrinsically linked with overall natural resource use and are influenced by a wide range of key development sectors such as agriculture, industry, and energy, among others, towards transitioning to a resource efficient economy and society.

## **II. Opening Session**

6. Welcoming the participants, the Honourable Governor of East Java Dr. Haji Soekarwo said East Java is the second largest province in Indonesia with a population of more than 38 million (in 2013). With economic growth of 6.5% for the last three years, solid

waste generation in East Java has increased rapidly. East Java, like many other provinces in Indonesia and other developing countries, is facing a set of problems regarding waste management, such as lack of community awareness and technology constraints. The Governor stressed the need for policies and strategies that would help improve solid waste management. Several municipalities, including the City of Probolinggo, the City of Malang, and several other urban agglomerations, have already been working on 3R activities successfully through composting and waste bank activities. These activities not only reduce the amount of waste but also provide income-generation opportunities for local communities. The Governor expressed his expectation that the 2014 forum could support the East Java Province as well as all countries in Asia and the Pacific in their endeavours and actions to manage solid waste through implementing 3R policies.

7. Ms. Chikako Takase, Director of UNCRD, emphasized that attention should now be focused on implementation. She indicated that with the Ha Noi 3R Declaration in hand, it is time to make defined progress in its implementation. She explained that the theme of “Multilayer Partnerships and Coalition as the Basis for 3Rs Promotion in Asia and the Pacific” was chosen with this in mind, because partnerships and extensive collaboration are key to moving forward with implementation. The Forum will consider a wide range of partnerships, including international cooperation at country-to-country level; international cooperation and collaboration, including regional and subregional cooperation; city-to-city collaboration; Government-NGO-communities cooperation; and industry-industry partnerships. She stressed that subregional cooperation is especially important for small island developing states (SIDS) and was of the view that the outcome of the dedicated session on SIDS and the implementation of Ha Noi 3R Declaration could be a valuable contribution to the United Nations SIDS Conference to be held in Samoa in September 2014. The local host of the forum, Surabaya, serves as a very good example in the promotion of 3Rs through city-to-city collaboration. Another important aspect of this Forum is the sizeable participation by representatives of the private sector, which is a good basis for discussion of industry-industry collaboration. Finally, she mentioned that member states would consider the Surabaya Declaration as emphasizing the need for partnerships for implementing the Ha Noi 3R Declaration. The Surabaya Declaration is also a tribute to the host city of Surabaya and its continuing efforts to promote the 3Rs for Indonesian cities and beyond.
8. Mr. Shinji Inoue, Parliamentary Senior Vice-Minister of the Environment of Japan, expressed his deepest gratitude to Ministry of Environment Indonesia, Ministry of

Public Works Indonesia, and UNCRD for co-organizing the Fifth Regional 3R Forum in Asia and the Pacific. He also extended his appreciation to the City of Surabaya for a warm welcome to the forum participants. He stressed Japan's engagement in international cooperation to promote the 3R principles and objectives and endorsed the importance of renaming the Regional 3R Forum to stress the inclusion of the Pacific Islands and their involvement in implementing the 3Rs. While the ongoing bilateral cooperation between Japan and Indonesia was noted, the Senior Vice-Minister expressed his support for city-to-city cooperation such as between Surabaya and Kitakyushu, and Tokyo and Jakarta. In his view, implementing 3R policies such as controlling the quantity of generated waste, reducing volumes of final disposal of waste, increasing recycling rates and waste-to-energy processes will contribute to securing citizens' living conditions and will address global warming, conserving biodiversity, and achieving economic development. He emphasized the active participation of a great number of Japanese participants representing local municipalities, private businesses, research institutes and NGOs, which underlines the continued role of Japan's know-how and environmental technologies for regional development in Asia and the Pacific.

9. Delivering the opening statement on behalf of H. E. Mr. Djoko Kirmanto, Minister of Public Works, Republic of Indonesia, Mr. Imam S. Ernawi, Director General of Human Settlements, informed the forum that Indonesia, being the fourth most populous country in the world with a projected population of about 270 million in 2015, currently generates waste estimated at about 130,000 tons per day. The Government of Indonesia has formulated policies and strategies to enhance solid waste management, which have been implemented by the central and local governments. Despite the past success of 3R implementation Indonesia requires further support and partnerships for sustainable waste management. About 500 units of communal 3R (between 2007 and 2014) and 248 final disposal sites (between 2006 and 2014) have been developed by the Ministry of Public Works with the goal of achieving a 20% reduction from today's waste levels by 2019. In addition, prototype landfill gas capture systems have been developed in several cities, such as Kendari, Bitung, Banjar, Malang, Probolinggo and others.
10. Delivering the keynote presentation, H. E. Prof. Balthasar Kambuaya, Minister of Environment of Indonesia, drew the attention of the Forum to a large set of challenges. Nowadays, we live in a very complex, dynamic and borderless world. Without effective environmental management economic growth causes tremendous pressure to environmental sustainability, which may negatively affect human health. The current levels of ecosystem degradation and resource depletion threaten global energy, food,

and water security. Caused by growing urbanization and consumption, waste management is becoming a major and growing public health and environmental concern in the urban areas of many developing countries. Rio+20 highlighted sustainable cities as one of its priority areas. Solid waste in Indonesia is dominated by organic (food and trimming) waste 60%, plastic waste 14%, and paper waste 9% and the rest consists of metal, rubber, textiles, glass, etc. In general, Indonesia is still practising conventional waste management, i.e. collection, transfer, and dumping at final disposal and a very small amount of waste is managed through 3Rs (reduce, reuse, and recycle). Act No. 18 of 2008 requires Indonesia to reshape the way solid waste is managed. The 3R principles are becoming the main approach for waste management in Indonesia. There are four key actors for policy implementation: community, central government, local government, and business. According to the Minister, the solid waste management strategy in Indonesia is based on four pillars: community capacity development, strengthening the commitment of ministries and national agencies, strengthening local leaderships and capacity, and strengthening the commitment of business sector. One cornerstone of the 3R implementation strategy in Indonesia is collaboration and building partnerships. Indonesia experienced a good example of collaboration when 27 Indonesian city mayors and heads of provinces, communities, and the business sector signed a declaration in Surabaya that will help Indonesia to be Clean of Waste by 2020 (Indonesia Bersih Sampah 2020) by reducing today's levels of waste generation by 20%.

### **III. Effective Implementation of the Ha Noi 3R Declaration in Asia and the Pacific**

11. The Ha Noi 3R Declaration – Sustainable 3R Goals for Asia and the Pacific (2013–2023) agreed at the 4th Regional 3R Forum in Asia and the Pacific in 2013 has been an important step towards supporting public policies that aim for resource efficiency and waste minimization at regional, national and city levels. The objectives identified in the Ha Noi 3R Declaration aim to inform and inspire policy discourse in Asia and the Pacific, and provide guidelines for the policy and business communities, for city governments and the general public about the policy objectives of resource efficiency and waste minimization. The agenda for the next decade is about achieving development based on using natural resources effectively and efficiently and to generate wealth from waste through the implementation of the goals outlined in the Declaration. This will support economic prosperity, well-being, and economic competitiveness in Asia and the Pacific.

12. The Ha Noi 3R Declaration provides a comprehensive framework for countries to

develop 3R policies, programmes, and projects, and has identified the need for institutional capacity-building. It was recognized that a whole life cycle perspective for sustainable resource management and managing waste streams underpins the notion of the 3Rs.

13. The main objective of this fifth regional forum was to progress the implementation of the objectives of the Ha Noi 3R Declaration and to identify the partnerships among different stakeholders that are needed to enable the successful implementation. To this end, a position paper was delivered by Dr. Heinz Schandl of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia. The position paper introduced a set of policy instruments and referred to the need to choose the right policy mix, to establish a range of multilayer partnerships and to form a new coalition among national government, local government and municipalities, the private and business sector, scientific and research institutions, NGOs, and the broader community.
14. The position paper identified the importance of leadership and a high level of coordination among different government agencies as one of the key enabling factors for the effective implementation of the Ha Noi 3R Declaration. A coordinating authority for the 3R policy implementation will help avoid duplication of effort and contradictory policies. The forum noted that in many countries in Asia and the Pacific a whole of government approach to resource efficiency and waste minimization is only about to emerge and more needs to be done to establish the level of collaboration among government agencies that is required to align 3R policy objectives with other domain policies. The presentation identified a number of success factors including sustainable partnerships among government agencies, private sectors, and community for 3R policy implementation, several concrete actions such as organizing a national dialogue including different stakeholders and linking with other policy domains such as climate mitigation and adaptation, energy and water security, urban air pollution, rural development and supply security of critical natural resources, which are recommended as a way forward to mainstream the 3Rs as a policy driver for waste reduction and resource efficiency in the region.
15. The Forum recognized a number of success factors for 3R policy implementation. These include leadership and co-ownership, cross-departmental collaboration, improving implementation at regional and urban scales, harmonization of development and 3R objectives, measuring progress of the 3Rs, finding the right policy mix, building a national innovation culture, and identifying win-win situations for economic and environmental outcomes based on the 3Rs. Establishing new forms of cooperation

between government, the business community and the community at large will underpin the successful implementation of the 3Rs. The implementation of 3R policies will be achieved through introducing successful policy instruments, which may include advocacy, using existing networks, money, direct government actions, and laws.

16. While monitoring and evaluation are an integral part of the policy cycle, there is a critical capacity gap in many countries in the region with regard to institutional capacity, credible data, information, and indicators to be able to evaluate the effectiveness and efficiency of the 3R implementation process. On behalf of the Asia Resource Circulation Policy Research Group, Mr. C.R.C. Mohanty of UNCRD, presented the key findings of a study that suggests a Core Set of 3R Performance Indicators which may be used for monitoring progress of the implementation of the Ha Noi 3R Declaration over the coming decade. The presentation highlighted the importance of a strong knowledge base (raw data, indicators, information, expertise and institutions) for the 3Rs at national level which, once it becomes available, will help countries to (a) keep track of pressures on and sustainability of natural resources and ecological assets – land, biodiversity, fresh water, and coastal and marine resources; (b) to evaluate existing 3R policies and programmes and institutional capacity, and design future policies towards a resource efficient and zero waste society; (c) help provide critical information to foster various partnerships, including business models of private-public partnerships, which the private sectors are increasingly looking for.
  
17. A growing number of emerging economies in the region such as Thailand, Indonesia and Viet Nam have started to incorporate 3R principles as a priority in their national development plans and have instituted high-level environmental strategies to guide harmonization between economic goals, the sustainable use of natural resources and environmental protection. The Forum recognized the strong momentum for integration of the 3R principles and of sustainable resource management in the overall policy, planning, and development process to mitigate an increasing reliance on volatile and limited natural resources. At the same time, many countries emphasized key factors to ensure the effective implementation of the 3R policies including raising the awareness of the policy community at all levels of government of the multiple benefits of the 3Rs. There is a need to enhance leadership and increase collaborative capacity to ensure the effective involvement of all stakeholders, which will nurture a policy environment that supports recycling industries and businesses, and sets new incentives to develop markets for green products and sound recycling practices.
  
18. The experience of Japan suggests that national and local efforts for the 3Rs will open up

new and green job opportunities. It was recognized that there will be a large training demand for new and existing workers, especially in those industries that are resource and emissions intensive, to deliver to the 3R objectives. The case of Indonesia demonstrates that the 3Rs have become a priority and an integral part of the national law of SWM. Indonesia, however, faces a number of implementation challenges such as a lack of resources, human capacity, political commitment, and infrastructure. The Indonesian experience also shows that effective implementation of 3Rs requires both policy intervention and infrastructure development, as well as developing human and social capital such as leadership, 3R as a culture ingrained in society, collaborative capacity, and powerful demonstration of successful cases such as the case of Surabaya city which aims to implement 3R programmes to achieve a healthy and prosperous city. Indonesia is also considering legislating extended producer responsibility (EPR) to be mandatory for the companies and manufacturers by 2020.

19. Viet Nam has mainstreamed the 3R principles into its National Socio Economic Development Strategy, the National Social Economic Development Plan, and the National Strategy for Environmental Protection. Viet Nam has also developed a National Green Growth Strategy, and has adopted a resolution which seeks to espouse functional zoning based on ecological characteristics, natural resources and potential impacts of climate change as a basis for development planning, integrating land-use planning and marine special planning. Zoning for ecological functions will support policy interventions and institutional reform that has the capacity to recognize natural resource constraints and avoid ecosystem degradation.
20. The Forum recognized a number of challenges for least developed countries and small island developing states (SIDS) in implementing 3R policies. They include institutional capacity to deal with emerging waste streams such as e-waste, hazardous waste and chemicals, plastics in coastal and marine environments, etc., financial constraints, lack of cross-governmental collaboration, lack of coordination among waste management authorities, and lack of access to required technologies, among others.
21. Experience from the Maldives demonstrated these unique challenges in implementing 3R initiatives. Challenges experienced in the Maldives include a lack of segregation at source, a lack of proper waste collection and transportation systems, open burning prevailing as the dominant disposal method, and a lack of coordination among different government agencies, as well as a lack of political leadership and commitment to SWM, and lack of public awareness.

22. Securing a budget for policy implementation is a common challenge for many developing countries across the region. Political commitment and strong leadership at national or local governmental level will be key to overcoming these challenges. In general, development banks and aid agencies are supportive to financing 3R policies initiatives in countries and cities which can demonstrate strong and long-term political commitment. Use of various incentives could be a key driver for wider participation from various stakeholders that are motivated to facilitate 3R implementation.
23. The Forum recognized that the 3Rs should be scaled up to the regional level to support utilizing waste flows as a resource through transnational collaboration. Sharing of success stories such as those of long-term national efforts to establish a sound material cycle society in Japan, the efforts of the Surabaya City Council towards a healthy and green city or the efforts by Waste Concern, an NGO initiative in Bangladesh, to provide a few examples, would provide more confidence among countries and stakeholders for implementing the 3Rs. In a similar vein, Thailand is implementing the 3Rs in its National Environmental Management Plan and National 3R Strategy for MSWM, and aims to promote green products and green procurement.
24. The representatives of Afghanistan drew special attention to their post-conflict situation where 3R is still a new concept that is not well known by the government and business community. In general, the country lacks institutional capacity, regulations, standards and knowledge and technical know-how for the implementation of 3R objectives. North-south as well as south-south cooperation, including sharing experience, information and knowledge or the promotion of technologies would be important means for overcoming challenges such as those faced by Afghanistan.
25. There is ample evidence from several countries that policy and business communities and the general public acknowledge the importance of 3Rs for urban sustainability. There is a growing awareness of the benefits of industrial symbiosis, an approach where the waste of one industry becomes an input to another industry. For instance, in Viet Nam tapioca wastewater from the food processing industry is reused in aquaculture fish farms. Viet Nam has also identified high potential areas for industrial symbiosis in the utilization of industrial waste by-products in the building and construction industry. Another concrete example in Viet Nam is the usage of fly ash discharged from thermal power plants to produce high strength concrete that is used to repair coastal concrete structures along Viet Nam's vast coastline. Similarly, the steel industry in Viet Nam has been using slag waste as a material for zinc recovery. In all

these cases, industrial symbiosis has provided win-win outcomes for the economy, natural resources and the environment.

26. Despite a number of success stories, the private and business sector faces a number of challenges in realizing viable business models for the practical implementation of the 3Rs. Major challenges faced by enterprises are lack of confidence in the profitability of 3R based business activities, an absence of policy frameworks that support 3R business activities, a lack of partnerships with local and national governments, and a perceived higher overall risk. The Forum recognized the importance of incentive schemes that help accelerate the participation of both the private and public sector in implementing 3Rs. The experience from Bangladesh, a low-lying and land scarce country, shows that a well-developed incentive scheme can significantly reduce the amount of plastics going into landfills.
27. Another key enabling factor for implementing the 3Rs is the participation of all major stakeholders. The experience of Bangladesh showed that the participation of all stakeholders in developing the national 3R strategy was very important for its successful uptake. Based on the national 3R strategy, the Government of Bangladesh funded a number of model projects to implement 3R initiatives.
28. Forum participants flagged the importance of “regional cooperation” for 3R implementation given one country’s or municipality’s waste could become another country’s or municipality’s raw materials. In this regard, the Regional 3R Forum in Asia and the Pacific could further explore the prospect of fostering regional cooperation through the 3Rs to establish a region-wide consensus about the need to achieve a resource efficient society.

#### **IV. Country-to-Country Cooperation and Partnerships for the Promotion and Implementation of 3R Policies and Programmes**

29. Delivering the background presentation, Dr. Prasad Modak outlined how multi-stakeholder and multilayered partnerships can facilitate the implementation of the 3Rs. He highlighted approaches local governments could use and how coordination

among different stakeholders would occur effectively. Various collaborative models such as the twinning model, the cluster model and hub and spoke model and hybrids were discussed in detail with examples. Countries were encouraged to choose the most appropriate model should they wish to establish multilayered partnerships by considering their specific socioeconomic and geopolitical characteristics. Examples such as the Basel Convention, J-PRISM and RET-21 Baltic were presented. The importance of developing a Referral Policy and Implementation Framework for Waste Management was brought up by participants. This would help to identify knowledge gaps and provide direction for country-country collaboration.

30. The presentation by Mr. Junichi Shiraishi, Vice-Minister for Global Environmental Affairs of Japan, introduced various policies and experiences in promoting 3Rs in the Asia-Pacific region from Japan, including the history and current situation of the 3Rs in Japan, especially the sound material cycle society concept and national material flows. He also touched upon critical waste issues in Asia, various cooperation models for promoting 3Rs, and Japanese efforts on the Climate and Clean Air Coalition (CCAC) and Joint Crediting Mechanism (JCM).
31. The Forum highlighted that green technologies are very critical for developing countries to promote the 3Rs and suggested that technology transfer should be facilitated so that developing countries can share new technologies and facilitate adoption. Different stakeholders, such as NGOs, civil society, research institutes and governmental organizations, should work together in delivering training and capacity-building programmes in 3R areas. Country-to-country cooperation could facilitate sharing of important knowledge and experiences on implementing extended producer responsibility (EPR) which would enable manufacturers to better fulfil their responsibility for managing various wastes across the life cycle.
32. Under the Basel Convention, technical assistance and capacity-building activities have been included in the work of the Secretariat of the Basel Convention for many years. One of the main delivery mechanisms of these activities is through the Basel and Stockholm Conventions' regional centres, which are best positioned to carry out training and pilot projects targeting countries in their respective regions. Several technical guidelines have already been developed to assist countries in the environmentally sound management of various waste streams. In addition, the Basel Convention Partnership Programme was launched in 2002, addressing emerging e-waste issues such as through the Mobile Phone Partnership Initiative (MPPI) and the Partnership for Action on Computing Equipment (PACE). The Secretariat has also

participated in other waste-related partnerships such as under the UNEP, ITU and UNU/StEP. The challenges in meeting the capacity-building needs of parties to the Convention relate to financial constraints, and to identifying their actual needs, which vary according to their economic and environmental situations.

33. The delegates from the Republic of Korea mentioned initiatives on promoting the 3Rs internationally, especially the Korea-China-Japan environmental collaboration, the IPLA<sup>1</sup> network, and the green growth initiatives advocated by the Korean government to foster country-country cooperation. More examples of country-country cooperation in promoting the 3Rs involving SIDS include the Samoa-Japan cooperation (focusing on the 3Rs) and the Samoa-EU cooperation (focusing on water and waste management).
34. The representatives from the SIDS drew special attention to key challenges they face such as the lack of technologies, funds and regulations. Special attention needs to be given to addressing issues of emerging waste streams, such as e-wastes, medical wastes, and plastics in coastal and marine environments. In this regard, country-country cooperation to foster transfer of required technologies and management know-how to small island countries was emphasized. It is essential that SIDS manage their wastes in the most environmentally friendly manner since such countries are ecologically fragile and do not have enough space for landfill.
35. The Republic of Maldives has established a comprehensive waste management regulation which requires all islands to build up one waste management station and all resorts to initiate their own waste management programmes to minimize waste generation. Given that small island countries face problems like floods and sea level rise, it is crucial for them to find suitable solutions for managing waste. The delegate from Nauru introduced their waste management experiences and expressed interest in strengthening institutional capacity, waste processing infrastructure and the policy framework. Similar observations were made by the delegate from Sri Lanka, emphasizing a need for country-country cooperation.
36. As a post-conflict country, Afghanistan raised specific issues related to waste generated in war zones and the need for country-country cooperation. With limited institutional and technical capacity, and a lack of regulations and enforcement, illegal waste import and dumping in developing countries is a big challenge, and the Forum recognized the

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<sup>1</sup> International Partnership for Expanding Waste Management Services of Local Authorities (IPLA) is a Rio+20 partnership.

importance of country-country cooperation in this regard.

37. The Government of Japan and UNCRD proposed a “3R White Paper” to support the implementation of the 3Rs in Asia and the Pacific for consultation and consideration. The “3R White Paper” will develop a synthesis and provide a status report on 3R implementation in Asia and the Pacific, including data monitoring to measure implementation progress on a country by country basis. This proposed activity complements and supports the objectives of the Ha Noi 3R Declaration (2013–2023).

**V. City-City/Inter-municipal Cooperation through North-South-South cooperation for advancing 3Rs at Local Level**

38. The Forum reviewed many best case examples for a number of cities. Surabaya has initiated a number of activities that are related to the 3Rs. For example, the city has initiated over 200 waste banks to provide assistance to communities involved in recycling activities. The city utilizes compost from organic waste composting in city landscaping and community gardens. One of the key contributing factors for large-scale composting activities is the cooperation with Kitakyushu on the Takakura method of composting. Organic and inorganic waste is also used for small-scale power generation. The city has also initiated eco-schools to educate children about 3R activities. Proper management of solid waste has resulted in reduced water contamination risk from flooding and significant improvement in public health, with drastic reductions in pollution-related diseases. There are many other green initiatives which make Surabaya an excellent example for other cities facing similar challenges.
39. Phitsanulok Municipality of Thailand has initiated a curriculum development project on community-based waste management, targeting policymakers, local government personnel, communities and train-the-trainer on public participation, polluter pays principles, the 3Rs and waste separation at source. In collaboration with the Ministry of Natural Resources and Environment of Thailand, the Municipality has organized workshops for more than 200 local governments in Thailand and extended its support to the National University of Laos to establish a learning centre on community-based waste management for local authorities. In collaboration with the Ministry of the Environment, Japan and IGES, Phitsanulok Municipality has provided training and facilitated project implementation towards city-to-city cooperation in Battambang, Cambodia on participatory waste management and organic waste separation at source for composting.

40. The city of Dhaka has initiated a composting project for managing market waste along with many other initiatives which serve as good examples for other cities having to deal with high levels of organic waste. The city of Kathmandu has developed a community-based recycling project in collaboration with JICA. It has also initiated inter-local authority cooperation among five municipalities within the region, serving as an excellent example of city-city cooperation. Ho Chi Minh City has a cooperative arrangement with Osaka city to manage organic waste. A number of activities have been initiated as part of this cooperation, including workshops on biogas generation.
41. With the joint effort of Kawasaki city and UNEP IETC and support from the Ministry of the Environment of Japan, cities like Penang, Bandung and Shenyang have developed good cooperation with Kawasaki eco-city to share concepts, methodologies, tools, and technologies in the areas of integrated waste management through annual meetings. Activities related to this project include awareness-raising on best practices. Another example to serve a good model of city-to-city and inter-municipal cooperation is the Clean Association of TOKYO 23 (CAT23), a special purpose municipal government, covering 9 million residents of the area to deal with intermediate treatment of municipal solid waste in a hygiene manner, through advanced pollution control. Building on such experience and expertise as the “Tokyo Model”, CAT23 also aims to foster international cooperation by supporting developing countries.
42. Eco-parks and eco-towns need to encompass a range of eco-initiatives including biodiversity and resource efficiency initiatives to promote this concept across the region. It was acknowledged that local government associations are in a very sound position to assist member councils in further developing and sharing experiences in 3R activities. They are also in a position to lobby for funding sources. While there is very strong evidence of 3R activities happening in cities, significantly more effort is needed to extend this experience to other cities through improved and well structured city-city cooperation. Donor agencies and organizations can assist in this process.
43. The Rio+20 outcome document – *The Future We Want* – attached importance to sustainable cities and human settlements. Also the post 2015 development agenda is expected to attach significant importance to sustainability and resiliency of cities. More than two-thirds of humanity are expected to live in urban areas and city centres by 2050. One of the critical challenges is that city level policy and actions mostly focus on end-of-pipe solutions rather than waste prevention and minimization. In order for 3Rs and resource efficiency to be part of the city development agenda, city-city cooperation is instrumental in building required expertise, knowledge bases and institutions,

including monitoring and evaluation mechanisms. In this regard, the Forum could consider accommodating a dialogue among a group of mayors on a regular basis within its framework.

## **VI. Triangular Cooperation (Government-Scientific and Research Institutions-Private Sector) for Supporting Viable Business Models for 3Rs and waste management**

44. The background presentation delivered by Prof. Sinichi Sakai of Kyoto University showed the importance of science-based information for policy and business fields. The presentation further demonstrated that triangular cooperation between government, research institutes and the private sector can contribute to a sound knowledge base for assessing potential risks and impacts of industrial hazardous and chemical wastes on human health and the environment. It can also contribute to the development of science for human and reproductive health, technologies for chemical control, and policy and fiscal instruments for chemical control. At the international level, UNIDO's Green Industry Platform facilitates multi-stakeholder partnerships between business, government and civil society.
45. Based on an integrated solid waste management research and study funded by a cooperation of municipalities and international organizations, such as JICA, UNEP and ATZ, the new waste-to-energy units are being developed in a number of countries. It was noted that developing viable business models for the 3Rs and waste management that include government, science and the private sector is very important. Such partnerships will increase the effectiveness of waste management, compared to different actors acting in isolation. Key success factors for such partnerships include the introduction of clear policies and direction from decision makers, budget allocation for research and study, issue related laws and support or promotion of cooperation with the private sector.
46. In Viet Nam, the development process for the National Strategy for Integrated Solid Waste Management to 2025, vision to 2050, was based on scientific information about integrated waste management and 3R measures and included experiences of various developed and developing countries in solid waste management and the 3Rs. The assessment of waste generation and solid waste management in Viet Nam includes forecasts of waste generation. Through the policy development process, a wider consultation involving scientists, management bodies, ministries, and local bodies, was also carried out. Viet Nam has publicly advocated for a Green Growth Strategy, which

is a cross-cutting strategy for responding to economic crises, climate change and resource efficiency. This cross-cutting strategy brings government agencies, universities, scientific institutes and the business sector together in addressing the domains of carbon reduction, resource efficiency and 3Rs.

47. A number of other private sector bodies assist the Government of Viet Nam to enhance R&D and the scientific knowledge base in 3R areas, including the Vietnam Business Council for Sustainable Development and the Vietnam Chamber of Commerce and Industry (VCCI).
48. The National Cleaner Production Center (NCPC) established under the Sri Lankan Ministry of Industrial Development provides all the necessary technical support and training for sustainable production and consumption and the 3Rs. Similarly, the Sri Lankan Ministry of Environment works closely with the private sector in the management and disposal of electric and electronic waste, and clinical waste management. For instance, the Ministry and its relevant agencies work with HOLCIM Lanka Ltd for disposal of scheduled waste coming from the industrial sector and the disposal of PCBs and other chemicals. There are also a number of private sector agencies the Ministry works closely with on the disposal of fluorescent and CFL bulbs containing hazardous substances such as mercury. Industries like E-wis are also working with the Ministry on disposal of computer based e-wastes, etc.
49. Mr. Tom Andersson, Vice Mayor of the City of Borås, Sweden, presented the Swedish business model which is based on closed loop recycling and involves the University of Borås, the City Government of Borås, Borås Energy and Environment, and the SP Technical Institute of Sweden. The main driver for the Swedish activities is the EU waste directive, in particular the landfill ban and the aim of achieving zero waste. The city also aims to become free from fossil fuels. The results of this programme include job creation and building of knowledge and experience, which are useful for the expansion of similar projects at the international level such as those in Indonesia and Viet Nam.
50. In Singapore, the waste management model is based on a partnership between the public sector, scientific and research institutions and the private sector. The public sector sets strategic policy for waste management and promotes research in relevant areas by research institutions through the provision of seed funding. The private sector has the ability to commercialize new 3R technologies developed by the research institutions. Private sector participation also helps to enhance efficiency and thereby

lower the cost of waste management. When waste collection services were privatized in Singapore, open tenders were called and a price-quality evaluation method was used in the award of the tenders for the public waste collection contracts. Of the four waste-to-energy incineration plants in Singapore, two are operated by the private sector. With the privatization of waste management, the government assumed a more regulatory role. In order to promote innovation and technological enhancements in waste management, the government provides support for research and development through the provision of seed funding or grants. The Innovation for Environmental Sustainability Fund (IES Fund) and the Environmental Technology Research Programme (ETRP) were set up to drive technology development with significant impact on waste management. So far, 19 projects on waste management technology costing S\$18 million have been funded under the ETRP and over S\$13 million had been awarded to 66 projects under the IES Fund, including 16 projects on waste management and recycling. To complement the Government's efforts in enabling technology development, local universities and polytechnics have established environmental research institutes to conduct environment-related research.

51. Small island developing states, such as Kiribati, face many challenges in waste management due to their size and economic conditions, including the promotion and implementation of the 3Rs. In this regard, currently the main role of private sector in SIDS is mainly focusing on collection and exports of recyclables, including end of life vehicles, but problems of hazardous waste disposal (such as e-waste, asbestos waste, etc.) remain a serious question and need to be addressed.
  
52. For some countries such as Pakistan, waste management is a devolved subject being dealt at Provincial and local levels. The concept of 3Rs is managed through the informal sector, where waste gets contaminated thus losing its economic value. However, there are various policies in place wherein a comprehensive framework is proposed to bring the three sectors to work together. There is a need that research institutions be supported by governments. The Pakistan Environmental Protection Act 1997, National Environment Policy 2005, National Sanitation Policy 2006, National Climate Change Policy 2012 and National Development Strategy 2012 are the main legal frameworks and they are all based on scientific research. Along with Solid Waste Management guidelines, the hazardous substances legislation is in preparation and supported by the Basel and Stockholm Conventions. A project for management of electronic waste management is currently being formulated by the government through financing from indigenous sources.

53. In some other developing countries, solid waste management is in its infancy where the focus is mainly on final disposal in landfills, and steps taken to implement 3R are just beginning. For instance, Lao PDR's waste management policies are in the process of preparation.
54. Since the 1990s the Japan Business Federation has implemented the Voluntary Action Plan on the environment which has been successful in reducing the landfilling of waste from 58.4% in 1990 to only 5.9% in 2011. Through high technology incineration, waste heat recovery has been the main benefit achieved. It was stressed that the key element in the triangular partnership is to obtain trust from governments and local citizens and to provide the required legal protection to promote the 3Rs. From an academic point of view, academia could provide a bridge between governments and industry, assist governments in research and development and dissemination of 3R knowledge through conferences and publications. Academia can also provide evaluations of impacts of different technologies related to the promotion of the 3Rs. The need to strengthen cooperation and coordination between governments and research institutions was also stressed.

## **VII. Industry-Industry Partnerships for Advancing 3R from a Market Perspective**

55. In order to streamline, establish, and sustain 3R implementation among small and medium enterprises (SMEs), industry-industry partnership is the key, which also makes a business case. It was agreed that industry-industry partnership is an effective pathway for successful implementation of 3R among industries. Though few examples of such partnerships are already available in the region, mainly in the form of waste exchange, there is a strong need to evolve a structured framework and a regional platform for facilitation, promotion, and consolidation of sound and comprehensive industry-industry partnerships on 3Rs.
56. 3R implementation through industry-industry partnerships will make it market oriented, culminating into long-term economic and environmental benefits for industry sectors at national and regional levels. However in order to boost it, effective coordination and a guided stepwise approach are necessary depending upon local economic situations, industrial development, and relevant existing policies. Success of such an effort is also contingent upon the availability of 3R know-how, technologies, and infrastructure. Industry-industry partnerships can also be expedited through appropriate creation of attractive incentive schemes and development of suitable support mechanisms for participating industries.

57. Development of eco-industrial parks/hubs, establishment of national and regional level funds for R&D on 3Rs, and strong commitment of all local, national, and regional stakeholders were found to be instrumental for accelerating and widening industry-industry partnership on the 3Rs in the Asia-Pacific region. At the national level, strong emphasis was placed on effective and efficient coordination among related ministries and other governmental entities working with or for industries for the advancement of 3Rs.
58. Organization of multi-stakeholder forums at regular intervals at national and regional level involving industries, governments, experts, scientists, academia, NGOs, technology suppliers, and community was found to be crucial in evolving ways and means for hastening and strengthening industry-industry partnerships for the 3Rs at national and regional level. Therefore such forums should continue to be organized.

#### **VIII. Multilayer partnerships for advancing 3Rs in agriculture and rural sector (biomass waste)**

59. The Forum recognized the need to enhance the use of biomass to maximize resources. The biomass utilization level differed among nations in the region. Some countries such as Bhutan and Nepal have good practices on biomass utilization but many countries face open burning problems and non-utilization of biomass which significantly contributes to soil degradation, environmental pollution and generation of greenhouse gas emissions. Therefore, knowledge-sharing among country members was suggested as an essential requirement to increase biomass and livestock waste utilization in the region.
60. Public-private partnerships and economic instruments, including financial support and technology transfer, are recommended to help develop capacity in the private and public sectors and local government entities in implementing 3R technologies in agriculture and the rural sector, to achieve a number of co-benefits such as GHG emission reduction, energy security (biomass to renewable energy), sustainable livelihoods in rural areas and poverty reduction, etc. through efficient utilization of biomass and agricultural waste.
61. All stakeholders including farmers should work together to maximize use of biomass and livestock waste. Ministries of Agriculture, agricultural universities and research institutions and agro-industries should work together in a more collaborative way to

promote the 3Rs in agriculture and rural sectors with the objective of achieving food security by reducing wastes or losses in the entire food supply chain such as production, post harvesting and storage processing and packaging and distribution.

62. Generally, a lack of adequate political will to harness potential economic benefits of mass scale utilization of biomass and agricultural waste in rural area is recognized. This could also be due to ambiguous definition of biomass.

**IX. Multilayer Partnerships for 3R Infrastructures and Facilities (eco-industrial zones, science parks, eco-towns, etc.)**

63. Participants reaffirmed the important role of municipal governments in setting a vision for sustainable cities, from city planning initiatives to revitalization of older cities and neighbourhoods, as stated in the Rio+20 outcome document. While waste management has been a traditional entry point, all types of infrastructure and facilities need to integrate 3R principles at early and fundamental stages of development planning.
64. The infrastructure planning process, particularly at the urban level, is a complex but highly critical process for 3R implementation. Insufficient planning has left cities in the Asia-Pacific region unprepared to manage growing waste streams, and support is urgently needed in some cases to build 3R infrastructure and facilities for waste management. Different waste streams will require different infrastructure and corresponding management systems involving industry and consumers to ensure they are delivering at the scale and speed required.
65. The private sector is interested in participating in the planning and implementation of 3R. At the same time, the private sector is highly sensitive to investment risks, which are present and have prevented investment. Dialogue is required between the private sector and national and local governments so that barriers to 3R investment are recognized and overcome. Known barriers to investment include insufficient macro-level policies that make a country unattractive due to foreign investment risks, lack of economic signals to process waste into products, lack of a tipping fee, and high perceived technology risk (especially for pension and private equity funds). Even at the local level some barriers exist, such as low capacity to collect and sort waste. Overcoming these barriers to investment into 3R infrastructure will encompass legislative reforms and the right policy mix, including (a) financial instruments (tariffs, landfill tax, tax breaks, renewable energy certificates, subsidies, revolving funds, feed-in tariffs and polluter pays instruments); (b) risk mitigating instruments

(guarantees, currency hedging); (c) capacity-building for private investors on 3R benefits; (d) awareness-raising on 3R, and (e) cooperation at many levels. Countries should take steps to understand and quantify their waste streams, and to establish objectives that will help the private sector determine the scale and type of facilities needed.

66. Multilateral agencies and banks have a role in knowledge-sharing, lowering project risks, and engaging national governments to overcome policy barriers to the private sector. Some countries in the region are no longer eligible to access funding for 3R infrastructure from development banks due to their development status, but should explore options in private sector divisions of development banks.
67. A mix of national policies is needed for 3R infrastructure including voluntary, awareness-raising, financial instruments and regulations. Each country will have to determine the right mix of policies for its specific situation. Specific examples: high-level 3R policies, showcase best practices, extended producer responsibility and container deposit legislation, (free) plastic bag bans, favourable financial incentives for well performing cities/industries, green public procurement and knowledge-sharing for 3R innovation in particular for design for recycling. Market fluctuations in secondary material prices and demand affect the success of national initiatives, and options to mitigate this impact should be explored. Countries should measure progress on 3R implementation, and use indicators in incentive schemes.
68. National banks have an important role to play in facilitating 3R infrastructures. Many national banks in the region already have loan schemes related to sustainable development, but this should be scaled up by addressing barriers to accessing the finance. Banks could become more technically aware of 3R benefits and facilitate access to finance for 3R projects. Cities and industries must become more aware of 3R-friendly finance opportunities, e.g. climate finance, which could be managed through national banks.
69. Partnerships and cooperation are needed both horizontally across sectors, and vertically between national and local levels to make 3R happen at the local level. Countries should strengthen dialogue between local and national government stakeholders about 3R barriers, then use existing round tables to identify 3R synergies. Fundamentally, the “silo mentality” must be broken by encouraging different bodies to talk to each other. The importance of individuals in making change happen should not be underestimated.

**X. Local governments – NGO/CSO Partnerships for Advancing 3Rs in Municipal Waste Management**

70. NGOs/CSOs play a very important role in advancing the 3Rs, particularly on initiatives related to the mobilization of communities, awareness-raising on 3R principles and for the separation of waste at source, as well as capacity-building activities. But their important role can go beyond community mobilization, for example by taking charge of waste collection services, advocating for policies, and through the implementation of specific projects and initiatives on the ground. In Pakistan for example, NGOs have been instrumental in advocating for environmental policies, such as a ban on the use of plastic bags and in raising awareness on unsanitary waste disposal practices such as burning. While the role of NGOs/CSOs is generally recognized by governments in the region, more should be done to further engage and empower these organizations.
71. In post-conflict cities and countries in transition, where waste management infrastructure may have been destroyed or simply does not exist, NGOs/CSOs can play an important role in servicing their respective communities, not only by collecting and treating waste in a decentralized manner, but also through introducing the principles of 3R through awareness-raising initiatives.
72. Participation of different stakeholders is crucial for the effective implementation of the 3Rs on the ground, and NGOs have a key role to play in reaching out to these stakeholders. Activities involving schools and youth can be particularly effective in promoting behavioural change and community participation. For example, in Brunei Darussalam the Brunei Environment Youth Envoy (EYE) has been instrumental in mobilizing youth for environmental protection, including waste management. The principles of 3R should also be included in school curricula as part of environmental education as in, for example, Afghanistan and Indonesia.
73. It was noted that the informal sector plays a key role in the collection and recycling of waste, and its role should be further recognized and leveraged. Waste pickers can become active collaborators in formal waste management processes when their needs and interests are duly addressed, and NGOs/CSOs are well positioned to effectively engage them.
74. Local governments often have limited resources for 3R implementation, but partnerships can help leverage additional resources. The meeting recognized that there is already a culture in developing countries in the region for reusing and recycling, and

not to throw waste away. This cultural aspect and associated traditional knowledge should be leveraged, and NGOs/CSOs can be instrumental in this regard. Triangular cooperation involving local governments, the private sector and civil society can be a means of leveraging additional resources at the local level.

75. Availability of land for waste management, in particular waste disposal, is a challenge faced by all countries, as reported for example by Sri Lanka. 3R policies can be an effective tool to divert waste from landfills, as recognized in the Solomon Islands. In this regard it is important to integrate national 3R strategies into local development plans. In Bangladesh, for example, some municipalities have started to incorporate the national 3R strategy into their master plans, including the allocation of land for recycling purposes.
76. There are many successful examples of local participation mechanisms in the region, including the existence of a local coordination committee in Nauru, participatory environmental governance in the Philippines, and village clean-up days in Lao PDR. Many examples of successful partnerships between local governments and NGOs exist, including the experiences of Waste Concern in Bangladesh, the fifty NGOs in Kathmandu that are working with the municipality, experiences in Surabaya and Cebu, and the “NPO Genki Network for Creating a Sustainable Society” in Japan.
77. The Fifth Asia 3R Citizens Forum organized as a side event of the 5th Regional 3R Forum in Asia and the Pacific demonstrated NGO-NGO cooperation between two countries – Indonesia and Japan. The NGO Forum highlighted community-based 3R actions converting waste biomass into resource and socio technology to ensure sustainable waste management. The outcome of this NGO Forum suggests the significance of close partnership between the governments and NGOs/civil society in policymaking as well as for social and legal systems.

## **XI. Public-Private Partnerships (PPPs) for 3Rs in E-Waste (WEEE) Management**

78. E-waste is one of the fastest growing urban waste components in Asia. By 2017, the amount of e-waste generated in developing countries is expected to exceed the amount produced in developed countries. In the e-waste sector, the PPP concept would need to be broader than the conventional “business” based model. It should cover associated issues such as services and infrastructure. The common definition of e-waste is about waste flows from PCs and mobiles phones only, while electrical and instrumentation waste components are not taken into consideration. There is demand for creating

community level awareness and education. In the e-waste collection and treatment chain, the informal sector plays an important role in recovering waste and using it as a resource. Informal recycling, however, poses the risk of operational failures of built recycling facilities. At the same time many multinational companies (MNCs) are not keen to work with local/national governments around e-waste, mainly due to different “work cultures”.

79. In relation to the issue of extended producer responsibility (EPR), two possible modes of operation exist, namely: (a) business-to-business (B-to-B), which is possible mainly for companies which produce large products and when only a few selected companies (MNCs) are involved in producing these products; and (b) business-to-consumer (B-to-C), which is more suitable for small electronic equipment with multiple products (e.g. PCs with mouse, keyboard, screen etc. produced by different companies). These could be difficult and complex processes, nevertheless the Regional 3R Forum should aim to promote such innovative business models with in-built incentives systems.
80. Diverse administrative systems in Asian countries indicate that one cannot develop a unique “fit-for-all” type of EPR system. While considering the current European or Japanese EPR systems, local issues and conditions need to be analysed and taken into account. It could be helpful for localized EPR systems to be developed in parallel with local hazardous waste legislation and regulations. There is a need for stronger legislation, which should encompass and take into account – (a) the role of informal sectors; (b) e-waste management infrastructure; (c) moving from just product sales to end of life management of products (thus end of life management of a product will become part of the sales cost, etc.).
81. The following enabling conditions could be considered to promote sustainable management of e-waste by local authorities (municipalities) – (a) private sector participation in e-waste recycling infrastructure projects is often hindered by the lack of reliable data (quantity and quality), thus, there is a need to develop a sound waste inventory method; (b) cluster based e-waste management, mainly for software parks, commercial centres, and industrial parks: e-waste management can be done as part of local infrastructure management and services (like waste supply and sanitation); (c) central procurement using a single company, where product and service are incorporated as a single component; (d) incorporation of EICC (Electrical Industry Code of Conduct) approved companies as a part of any electrical equipment bidding process, so the take-back system can be easily incorporated in the management system; and (e) not only focusing on large volume based centralized recycling industries (as

done by big multinational companies). It is important to look at distributed e-waste across various parts of a country and to review small-scale recyclers, types of technologies available, etc. In this regard, there is a need to develop local and innovative business models considering informal sectors, community involvement, small-scale recyclers, and MNC initiatives (e.g., the approach to management of old PCs, etc. taken by Microsoft Uganda).

82. The Forum emphasized the need for strong regional cooperation in dealing with e-waste. One idea raised was promotion of regional cooperation among recycling industries. In this regard, the focus could be on – (a) proper collection (technology know-how/infrastructure) and storage; (b) e-waste transfer issues dealing with Basel Convention, transboundary movement of hazardous wastes, donation of equipment at the end of the life cycle – which could ultimately create more e-waste; and (c) a regional registry of companies (database) to deal with e-waste related issues, with third party review comments.

83. As for regional cooperation, especially among small island nations, it could be worthwhile to explore the establishment of a regional recycling centre so that problems of economies of scale can be addressed.

## **XII. Measures for the implementation of the Ha Noi 3R Declaration in Small Island Developing States (SIDS)**

84. SIDS are small, remote countries, distributed over large geographic areas. They typically have small populations and are prone to natural disasters. As a consequence, these communities have unique issues to confront when dealing with integrated waste management. These include low waste generation rates, limited land availability for waste disposal, and often limited technical and financial capacity to manage waste issues. They also have waste streams that are becoming increasingly important problems, such as plastic, e-waste, bulky waste, end of life vehicles, and health-care waste.

85. The typical Pacific SIDS' municipal solid waste stream is composed of 60% organic waste, with a further 35% of waste being potentially recyclable. Based on a population of about 10 million for all Pacific SIDS, and an average waste generation rate of approximately 0.6 kg/person/day, it is estimated that 760,000 tons of recyclable materials and 1.3 million tons of compostable materials are generated each year in the Pacific region. Other priority recyclable waste streams include used oil and end of life

vehicles. It is estimated that 3.25 million litres of used oil (or 50% of the amount imported) are generated by Samoa, Vanuatu and Fiji on an annual basis. The quantity of end of life vehicle stockpiles throughout the Pacific region are unknown, however combined export volumes from Fiji, Samoa, Tonga, Tuvalu and Vanuatu are expected to increase by 25% by 2020.

86. JICA has been operating in the Pacific region in collaboration with SPREP since 2000 to provide a sustainable platform for improved regional waste management. Activities over the last 15 years include regional and national waste management strategy development, and bilateral and subregional technical assistance. The JICA J-PRISM project is a five year project currently being completed in eleven Pacific island countries to improve solid waste management by strengthening national capacity for waste management in line with national policy, strategies and priorities based on the “Regional Solid Waste Management Strategy 2010–15”. Activities carried out in the Pacific region include regional and national activities such as provision of technical advice, landfill management and 3R training, provision of on-the-job waste management training, study visits, dispatch of local experts, and also development of a regional capacity database in collaboration with SPREP. Container Deposit Legislation (CDL) training is also a focus of J-PRISM assistance for the Pacific region. All these activities help strengthen regional capacity for improved waste management including the regional cooperative framework and partnership for 3R (+Return) among a variety of stakeholders.
87. CDL is an example of an economic instrument for facilitating recycling of consumer goods such as aluminium cans in the region. Kiribati, Palau, and FSM have adopted CDL programmes for PET, aluminium, glass, and used lead acid batteries (ULABs). Revenues from CDL schemes in the Pacific are typically channelled through a treasury fund, and usually the recycling system is operated by a private contractor. Threats to the sustainability of CDL systems include a declining deposit fund caused by inadequate management, or refund issues around deposit-exempted containers (as in the case of exemptions for disaster relief supplies), and lack of monitoring and enforcement by regulating agencies, resulting in an increasing stockpile of low value subsidized materials that are not exported. Currently, 37 million containers (aluminium cans and PET bottles) are redeemed and exported from Pacific countries annually for recycling through CDL programmes. This creates local jobs and local incomes, and reduces pressure on landfill space. Challenges to expansion of CDL programmes in the Pacific region include dispersed populations and recyclable waste, poor transport networks that hamper outer island collection, and low or non-existent prioritization of CDL schemes

by national governments.

88. The challenges to promote the 3Rs (+Return) concept in the Pacific can be illustrated by the increasing quantities of second hand cars being imported into the region. Importation rates need to be reduced, imported vehicles reused locally, and then ultimately returned to their point of manufacture. The CDL model could also be practically adopted for management of many Pacific waste streams including e-waste, used oil, and end of life vehicles.
89. Priorities for improved recycling in the Pacific region include expansion and fast-tracking of the CDL system at the national level, establishment of a regional information and regional recycling platform and improved collaboration with Asian markets for recyclables. The unique challenges in the Pacific region also represent opportunities to promote waste avoidance, mainstream 3R concepts, investigate alternative options for 3Rs and develop local recycling solutions. There is also a need to establish a network of Pacific island recyclers, and to explore and develop long-term partnerships with Asian importers and recyclers.
90. Plastic litter is a major pollution issue in Pacific coastal and marine environments. Plastics are a modern waste stream which is typically discharged from the land during run-off events. Plastics usually float and can travel long distances across oceans, and often accumulate in ocean gyres where they can become more voluminous than zooplankton.
91. Plastics in the marine environment progressively break down into micro-plastics making their management increasingly difficult. Plastics can have a range of impacts in the marine environment including smothering, entanglement, physical effects arising from plastic ingestion, and from the transfer of hydrophobic persistent organic pollutants (including PCBs, DDTs, and HCHs) from the plastic when it is ingested. The transferred POPs may cause endocrine disruption and reproductive impacts in affected animals and birds. As a consequence, marine plastics should be classified as a hazardous waste and reducing the loss of plastics from land is essential to manage this growing threat. This can be practically influenced through promotion of the 3R concept.
92. Minimizing waste generation is important for sustainable development in both Asia and the Pacific. The Solomon Islands' priorities to reduce waste production include promotion of the 3R concept, improvements to waste disposal sites, and waste

management education and awareness-raising. A communication strategy promoting the 3Rs, waste segregation at source, and promotion of the eco-bag concept to reduce the national use of plastic bags are all important national waste management initiatives. An eco-school programme modelled on the “Clean School Program” in Fiji was developed in the Solomon Islands through south-south cooperation and peer-to-peer learning with Fiji. Challenges for improved waste management in the Solomon Islands include lack of trained personnel, the limited availability of waste management equipment, lack of institutional frameworks, no current source separation, no recycling facilities and the limited availability of finance to implement activities. Promotion of good communication and inter-agency collaboration is essential for future success in the country.

93. The largest waste stream in the Port Vila (Vanuatu) is waste generated from the city markets. This organic waste stream creates considerable pressure on landfill capacity. A multi-stakeholder approach to this problem was undertaken which involved not only cross sectional collaboration among municipalities, but also NGOs, volunteers, private companies and market vendors. Market vendors are encouraged to separate waste at source through a variety of awareness-raising activities undertaken by NGOs and volunteers. Facilities to allow this segregation to be carried out were installed, and within two months a significant amount of organic waste was diverted from landfill to a composting facility. This has reduced landfill operation costs, and is an excellent example of a low tech, low cost solution. Improved PPP will help sustain this programme.
94. There was general agreement by the Forum of the need to promote the 3Rs through education and among SIDS. Furthermore, the integration of 3R in regional programmes dealing with climate change, disaster management, biodiversity management, and others was also considered a priority. However, the necessity to improve formal agreements with donors to apply and enforce 3R principles to donor-supplied equipment was noted by the Forum.
95. The potential role of faith-based groups was suggested as an avenue to raise awareness with families and communities to improve community-based management and segregation of waste. The importance of obtaining commitment from donors for PPP was also expressed, including the provision of support from donors and governments to private companies to finance start-up waste management operations.
96. Capacity development was a strong theme of the discussions, particularly with respect

to technical engineering training, and research in waste management solutions for the Pacific Islands. The importance of implementing regional training and workshops with donor assistance was also recognized. Furthermore, it is encouraged for SIDS to become formal members of the International Partnership for Expanding Waste Management Services in Local Authorities (IPLA) network in order to share experiences and learn about best practice relevant to SIDS.

**XIII. Climate and Clean Air Coalition. The Municipal Solid Waste Initiative as a Basis for new Forms of Cooperation for advancing the 3Rs. Exploring Synergies with the Regional 3R Forum in Asia and the Pacific**

97. There is an urgent global need for local and national governments to take coordinated action to collectively move towards 3R implementation. 3R actions to improve waste management practices can reduce methane from open dumping and landfilling, and black carbon from transportation of waste and open waste burning. Reducing these short-lived climate pollutants supports local and global actions to address climate change. Key sources of short-lived climate pollutants from the municipal solid waste sector are understood to come from the transport and disposal of waste. Successful 3R implementation depends on multilayer partnerships and coalition to support upstream actions like reducing the amount of waste being transported and disposed of, as well as increasing recycling and composting. Furthermore, 3R implementation needs to be supported by the complementary actions of all stakeholders, bringing together national government policies and economic incentives, private sector investments, integrated local government engagement, and support from non-governmental organizations to raise public awareness.
98. The Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), a voluntary framework involving partners from national governments, institutions, and non-governmental organizations, established an initiative to support and bolster global actions to reduce methane and black carbon from the municipal solid waste sector. Recognizing the progress of 3R implementation in the Asia-Pacific region, opportunities exist for the further expansion of 3R through strengthening triangular cooperation to support regionally appropriate solutions. In addition to supporting existing 3R efforts, the CCAC also brings key actors together to support sustainable financing of waste activities, a challenge experienced by many countries and local governments. With the help of country partners like Japan, the Climate and Clean Air Coalition is well positioned to support scaling up of 3R implementation and accelerate action globally.

#### **XIV. The Way Forward**

99. All countries in the Asia-Pacific region recognized the importance of multilayer partnerships and cooperation for the implementation of the 3Rs and unanimously adopted the “Surabaya 3R Declaration on the Promotion of Multilayer Partnerships and Collaboration for the Expansion of 3Rs in Asia and the Pacific” (Annex 1). The Surabaya 3R Declaration calls for country-to-country cooperation, south-south-north cooperation, city-to-city and inter-municipal cooperation, industry to industry cooperation, government and NGO/CSO cooperation, among other forms of partnerships, towards effective implementation of 3Rs. The Surabaya 3R Declaration complements the objectives underlined in the Ha Noi 3R Declaration towards transitioning to a resource efficient and zero waste society.
100. The Forum expressed the need for developing, through expert consultation, a guiding referral framework to assess the effectiveness and efficiency of national waste management policies and implementation plans. This would support undertaking a SWOT (strengths, weaknesses, opportunities and threats) analysis of resource efficiency and waste minimization in countries and could form the basis for country-to-country cooperation.
101. Multi-level partnerships between government, business, academia and the broader community are an important condition for governing and implementing the 3Rs. Research, innovation and practice (RIP) parks should be established in the region and support waste to resource (W2R) policies and practices. Through multilayer partnerships and coalitions, these parks could be built next to academic campuses, facilitated by government and mobilized by investors and entrepreneurs for up-scaling and replicating innovations. This will influence policies, practice and academic curricula to mainstream waste to resource programmes.
102. The Regional 3R Forum in Asia and the Pacific has assembled high-level government representatives, practitioners and academics focusing on environmental sustainability and the fundamental role of the 3Rs in advancing the sustainable management of natural resources and waste. The Forum could explore building linkages with other policy domains that intersect with 3R objectives, especially with government agencies responsible for the economy, finance, trade and social affairs, to strengthen mainstreaming of 3R goals and objectives into the national policy and development agenda.

103. A need for national dialogue to advance framing the issues of resource efficiency and waste minimization within countries was identified by the forum. The level of awareness of the importance of resource efficiency and waste minimization for economic and development planning in countries among the general policy community and the wider public is still limited. Economic development objectives are understandably high on the public policy agenda and issues related to the 3Rs often have a lower priority or are overlooked altogether. Increasing the general level of awareness is very important to establishing the necessary support for 3R initiatives at all levels of society, to underpin successful policy implementation.

104. It would be beneficial for Asian and Pacific countries in long run to acknowledge important linkages of the 3Rs with other policy domains including climate mitigation and adaptation, energy and water security, urban air pollution, and supply security of critical natural resources. Climate impacts, especially, are increasing in frequency and severity and knowledge of their consequences for waste flows is lacking. Storms, coastal and inland flooding and bushfires have not only economic and social costs but also affect the material and energy balance of a country because of the large-scale need for clean-up and replacement of infrastructure and buildings, which substantially adds to waste flows within a country.

## **XV. Closing Session**

105. On behalf of the Government of Maldives, Minister of State for Environment and Energy, Mr. Hassan Shah, officially announced Maldives' intention to host the Sixth Regional 3R Forum in Asia and the Pacific in 2015. In this regard, the participants of the Forum witnessed a handing over from the host country, Indonesia, to the next host, the Republic of Maldives.

106. Ms. Chikako Takase, Director, UNCRD expressed sincere appreciation to the Ministry of Environment (MOE) and the Ministry of Public Works (MPW) of the Government of Indonesia, as well as the City of Surabaya for hosting the Fifth Regional 3R Forum in Asia. She also thanked the Ministry of the Environment of the Government of Japan for its financial support to organize the Forum on a regular basis. She observed that throughout the conference, it was clear that many of the member states are working on mainstreaming 3Rs in their policies or raising awareness among

key stakeholders in the Forum. She appreciated and was touched to witness the success and strong initiative of Surabaya city during the three day Forum including the signing ceremony for Indonesia Bersih Sampah 2020. She stressed that the adoption of the Surabaya Declaration was a step forward in implementation of the Ha Noi 3R Declaration, with which she further hoped that many new partnerships would emerge and make a progress in moving forward, which is also a fitting tribute to the Mayor of Surabaya, who received all the participants with such a generosity and whose work inspired all.

107. Mr. Junichi Shiraishi, Vice-Minister for Global Environmental Affairs, Japan, expressed special appreciation to Ministry of Environment and Public Works of Indonesia as well as UNCRD for co-hosting the Forum, and extended heartfelt thanks to the City of Surabaya for its warm hospitality. While adoption of the Surabaya Declaration was highlighted, he stressed the importance of cooperation at all levels in order to promote 3R including collaboration between cities and with the private sector. Japan promises cooperation for development of the Asia-Pacific region through making use of world leading environmental technologies and know-how.

108. Delivering the closing remark on behalf of the Ministry of Public Works, Indonesia, Mr. Ir. Djoko Mursito, Director for Human Settlements and Sanitation Development, emphasized the objectives underlined in the Ha Noi 3R Declaration (2013–2023) and the need for partnerships and collaboration among the Asia and Pacific countries in implementing the goals. He emphasized the importance of country-to-country, city-to-city, and triangular cooperation (government, private, scientific and research institutions or NGO/CSO) for sustainability of 3R implementation at local and national level. As a follow-up to the Ha Noi 3R Declaration, the Indonesian mayors signed a declaration “*Gerakan Indonesia Bersih 2020*” on 24 February 2014 towards achieving Indonesia Clean of Waste by reducing 20% of today’s levels of waste generation by 2020. He finally underscored the importance of sound government policies, sharing of best practices and alternative financing required to support multilayer partnerships for advancing the 3Rs in many development sectors.

109. Delivering the final closing remark, Dr. Rasio Ridho Sani, Deputy Minister for Hazardous Substances, Hazardous Waste and Solid Waste Management, Ministry of Environment, Indonesia, expressed his special appreciation to all participants of the Forum for their constructive contribution and ideas to the success of the Forum. He also extended his deepest gratitude to the Ministry of the Environment of the Government of Japan and UNCRD for successfully co-organizing the Forum as well as for their 3Rs

initiatives and support to other countries in the Asia-Pacific region. He welcomed the successful adoption of Surabaya 3R Declaration, which demonstrates the firm commitment of Asia-Pacific countries to promoting multilayer partnership and collaboration for expansion 3Rs. The Declaration also provides a comprehensive framework for the Asia-Pacific countries to take necessary action towards effective implementation of the 3Rs through various forms of partnership and collaboration in achieving a resource efficient society. He also drew special attention to the necessity of fostering regional cooperation with various stakeholders, such as local governments, private enterprises, industries, NGOs, and the scientific community and researchers in order to achieve the objectives underlined in the Surabaya 3R Declaration. He concluded with his high expectation that the Asia-Pacific countries could make many positive impacts through the Regional 3R Forum, not only to solve environmental problems within urban areas but also much greater and beyond that towards better and more sustainable development in the future.

**Annex 1: Surabaya 3R Declaration on the Promotion of Multilayer Partnerships and Collaboration for the Expansion of 3Rs in Asia and the Pacific**

## **Surabaya Declaration<sup>2</sup>**

**on**

### **Promotion of Multilayer Partnerships and Collaboration for the Expansion of Reduce, Reuse and Recycle (3Rs) in Asia and the Pacific**

We, the representatives of Asia-Pacific countries<sup>3</sup>, city government representatives, international organizations, bilateral and multilateral agencies, scientific and research organizations, non-governmental organizations, private sector and industry groups, and professionals in the field of 3Rs and waste management, having met at the Fifth Regional 3R Forum in Asia and the Pacific, held in Surabaya, Indonesia, from 25 to 27 February 2014,

**Reiterating** the importance of renewing commitments towards effective implementation of 3Rs (reduce, reuse, and recycle) through various forms of partnerships and collaboration in achieving a resource efficient society and a green economy,

**Recognizing** the critical challenges (institutional capacity, financing and technology needs) the Asia-Pacific region is faced with in integrating resource efficiency and 3Rs in overall policy, planning and development, given the fact that many countries have become net importers of raw materials (fossil fuel, metals, timber, and other natural resources) with rapidly increasing volume and changing characteristics of urban and industrial waste, rising population and rapid urbanization along with increasing consumption and per capita waste generation that pose serious challenges for the people and the sustainability of the region,

**Noting** the recommendations in the Rio+20 Outcomes Document – The Future We Want, thereby the call of the Heads of States and Governments at Rio+20 for the development and enforcement of comprehensive national and local waste management policies, strategies, laws and regulations, and new and innovative public-private partnerships among industry, governments, academia and other non-governmental stakeholders, aiming to enhance capacity and technology for environmentally sound chemicals and waste management, including waste prevention,

**Recalling** the objectives and goal of a 10-year framework of programmes on sustainable consumption and production patterns which the 10-year framework should affirm a common vision that promotes a whole of life cycle approach including resource efficiency and sustainable use of resources, as well as science-based and traditional knowledge-based approaches, cradle to grave, extended producer responsibility and the 3R concept and other related methodologies, as appropriate,

**Reaffirming** the recommendation made by United Nations Conference on Sustainable Development (Rio+20) in June 2012, where countries agreed to adopt the 10-Year Framework of

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<sup>2</sup> Surabaya 3R Declaration is a voluntary and legally non-binding Declaration

<sup>3</sup> Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, People's Republic of China (hereinafter, China), Fiji, India, Indonesia, Japan, Kiribati, Republic of Korea, Lao PDR, Malaysia, Maldives, Marshall Islands, Mongolia, Myanmar, Nauru, Nepal, Pakistan, Palau, the Philippines, Samoa, Singapore, Solomon Islands, Sri Lanka, Thailand<sup>4</sup>, Timor-Leste, Tuvalu, Vanuatu, and Viet Nam

<sup>4</sup> Thailand reserves the right to join the Declaration at a later date

Programmes on Sustainable Consumption and Production (10YFP),

**Reaffirming** resource recirculation in accordance with mutual respect to environmental concerns of each country,

**Taking into account** the outcome of the Fourth Regional 3R Forum in Asia held in Ha Noi, Viet Nam in 2013 and the Ha Noi 3R Declaration – Sustainable 3R Goals for Asia and the Pacific (2013–2023) that provides an important basis and framework for Asia-Pacific countries to urgently voluntarily develop and implement 3R policies and programmes,

**Recognizing** the issues and challenges faced by and specific capacity needs of small island developing states (SIDS) in implementing 3Rs especially emphasizing the importance of the “Return” concept in terms of the process for “Recycling” in achieving sustainable development in view of their unique and particular vulnerabilities, including their small size, remoteness, narrow resource and import base, and exposure to global environmental challenges and external economic shocks, including a large range of impacts from climate change and potentially more frequent and intense natural disasters, and the increasing impacts of tourism activities, and thereby the need for increasing international and regional cooperation among Pacific Island Countries (PICs) and between PICs and other countries,

**Recognizing** the complex and daunting nature of waste management challenges faced by local authorities and municipalities in today’s world in view of the diversification of waste streams region-wide, the growing presence of chemicals and hazardous and toxic elements, including e-wastes, in the general waste stream, the increasing presence of waste, in particular plastics and disaster waste in coastal and marine environment that increasingly demand science-based decision-making and solutions within multilayer partnerships and collaboration,

**Recognizing** the specific challenges and needs of mountainous countries with regard to environmentally sound management of waste generated from the tourism sector,

**Underscoring** the fact that moving towards a resource efficient and sound material cycle based society will require considerable and sustainable investment and resource mobilization, including technological interventions, institutional capacity-building, and development of 3R infrastructures, programmes and projects (eco-industrial zones, science parks, eco-cities, waste recovery facilities, waste-to-energy schemes, greening small and medium enterprise (SME) operations, green products and eco-labelling schemes, biomass to composts and energy in rural areas, etc.), which is inherently a multi-stakeholder process calling for multilayer partnerships and collaboration within and between communities, businesses, industries, all levels of government, scientific and research institutions, international organizations, development banks, academia and the United Nations system,

**Recognizing** the significance of resource efficiency and 3Rs in the post-2015 development era, and thereby the important role private, industry and business sectors can play in providing 3R and green business based solutions, as Corporate Social Responsibility (CSR) and Extended Producer Responsibility (EPR), to many sustainability challenges,

**Reaffirming** that enhancing connectivity among Asia-Pacific countries would benefit all Asia-Pacific countries through promotion of multilayer collaborative efforts, and the need to strengthen cooperation towards effective implementation of 3Rs (reduce, reuse, and recycle) through various forms of partnerships and collaboration in achieving a resource efficient society, including the following, but not limited to:

- (i) **country-country cooperation** in exchanging valuable experiences and ideas, transferring knowledge and technologies, including development of collaborative projects on 3R infrastructure development, such as eco-industrial zones, science parks, eco-towns, waste-to-energy schemes, waste recovery and recycling schemes, composting schemes in rural areas, etc;
- (ii) **south-south cooperation** to strengthen exchange and collaboration between countries, and increase the flow of information, resource, expertise, and knowledge among Asia-Pacific countries;
- (iii) **city-city and inter-municipal cooperation**, both at national and international levels, in exchanging practical experiences and ideas in realizing sustainable and liveable cities with efficient waste management system through public-private partnership (PPP) and sister city cooperation;
- (iv) multi-sector partnerships and collaboration in policymaking and promotion of **sustainable business models**, involving the public, private and business sectors, and Scientific and Research Institutions; including exchange of information on sustainable financing models for 3Rs;
- (v) **industry-industry cooperation**, both at national and international level, with an objective to create local and regional markets towards regional development and employment creation;
- (vi) **government-NGO/CSO cooperation** with an objective to reduce waste management costs and increase municipal cost savings to divert for other essential socioeconomic priorities such as – access to safe drinking water and improved sanitation, better health care and education facilities, and improved public transportation facilities, etc.;
- (vii) a **regional cooperative framework among SIDS/PICs** to develop self sustaining 3R activities and easily adaptable technologies, including a pool of well-trained 3R practitioners, to collectively address issues of common concern and develop viable business models through multilayer partnerships for local employment creation; and
- (viii) a **multilayer partnership** in the area of disaster waste management among countries, businesses, academia, local authorities, international organizations and NGOs in order to provide capacity-building for disaster response and strengthen community resilience,

express our resolve to promote multilayer partnerships and collaboration for the expansion of Reduce, Reuse, Recycle in Asia and the Pacific by adopting 3R practices.