

**Regional workshop on Enhancing Urban Resource Efficiency
and Circular Economy in Asia and the Pacific**

REPORT OF THE WORKSHOP



19-20 March 2018
Bangkok, Thailand

INTRODUCTION

1. Background

1.1 The Asian and Pacific cities are now home to more than half of the region's population. Along with rapid urbanization, the region's cities are estimated to generate 1.8 billion tonnes of solid waste annually by 2025, increasing from 0.28 billion tonnes in 2012, contributing to one of the highest per capita waste projections.¹ While there are several initiatives to address waste management issues through use of innovative approaches and solutions in the region, current practice of waste management in the region is still highly inefficient with an increasing volume of resources ending up in landfills and oceans that also includes plastic waste in a large quantity.

1.2 Recognising that there are still enormous challenges and the need for greater urban waste management in the region, ESCAP organized a two-day interactive meeting entitled “Regional Workshop on *Enhancing Urban Resource Efficiency and Circular Economy in Asia and the Pacific*” on 19-20 March 2018 at the United Nations Conference Centre (UNCC) in Bangkok, Thailand. This workshop is the concluding activity of the project, “Pro-poor and sustainable solid waste management in secondary cities and small towns in Asia-Pacific” which has been implemented by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) since 2009 with technical support from the Waste Concern, Bangladesh.

2. Objectives, participation and structure of the workshop

2.1 The main objectives of the regional workshop were to (i) share sustainability lessons from ESCAP's normative, analytical and technical cooperation activities in enhancing urban resource efficiency through improved waste-to-resource recovery; (ii) identify the intersectoral linkages of various waste solutions, including IRRCs, to enhance urban resource efficiency and resilience, and promote broader circular economy policy approaches in the formal and informal sectors; and (iii) recommend policy actions to scale-up and replicate appropriate models for urban resource efficiency, waste management, and circular economy, among others.

2.2 A total of 50 participants (excluding ESCAP secretariat staff) participated in the workshop. Twenty-six of them were the representatives from 16 ESCAP member States (national and local level), and rest from UN agencies, non-governmental organisations and academic institutions (see annex 1: list of participants).

2.3 The workshop was composed of: (i) opening and introductory session; (ii) impact presentations; (iii) panel discussion; (iv) thematic discussion in breakout groups; and (v) opinion building (reflections) for future course of action (see annex 2: programme, and annex 3: breakout groups details).

¹Hoornweg, D., and Bhada-Tata (2012). What a Waste: A Global Review of Solid Waste Management. Urban Development Series – Knowledge Papers No. 15. Washington, DC: World Bank. Available from: <https://goo.gl/7MD9kh>

- 2.4 The final reflections from national and local government participants, and subject specialists recommended to further explore opportunities to advance waste management activities in urban areas through implementation of urban resource efficiency and circular economy approaches in the region.

PROCEEDINGS OF THE WORKSHOP

1. Opening Session of the Workshop

- 1.1 Welcoming the participants, Mr. Stefanos Fotiou, Director, Environment and Development Division (EDD), ESCAP highlighted the importance of resource efficiency and circular economy to strengthen the localization of the sustainable development goals (SDGs), promote renewable energy, energy efficiency, decoupling of economic growth and reduce waste and pollution in different ecosystems. Mr. Fotiou further highlighted the role of the informal sector in the local economy and encouraged the need for advancing resource efficiency and circular economy through new and innovative financial mechanisms. Informing the key objectives of the workshop, Mr. Fotiou believed that the workshop outcome would support the on-going natural resource management agenda of ESCAP, provide fresh issues for the 2018 session of Committee on Environment and Development, feed into the upcoming Section 23 project on unlocking the informal economy to recover plastic waste and reduce marine pollution, and accelerate progress to the Regional Roadmap for implementing the 2030 Agenda for Sustainable Development in the region as well as the seventh Ministerial Conference on Environment and Development in Asia and the Pacific held in September 2017. He expressed his hope that the workshop outcome would also support the substantive development of the flagship publication on the *Future of Asian and Pacific Cities* report which would be launched in 2019.
- 1.2 Mr. Prasert Sirinaporn, Director, Office of National Environment Board of Thailand informed that 27 million tons/year of solid waste is generated in Thailand. Of this, around 1.7 million tons/year is used to generate electricity, and 0.5 million tons/year to produce refuse-derived fuel (RDF). Mr. Sirinaporn also informed that the Government of Thailand announced solid waste management an issue at the National Agenda in 2015 with targets in its 20-year National Strategy. Furthermore, he informed that Thailand's 12th National Economic and Social Development Plan (2017-2021) and Environmental Quality Management Plan (2017-2021) aimed to prevent and reduce waste at source, and increase the proportion of recycling to more than 30 percent of the total quantity of waste in the country. He highlighted several programmes such as implementation of 3Rs, deposit-refund, reduce plastic, and the garbage bank under implementation by the local governments and other organisations. Mr. Sirinaporn mentioned obstacles and key challenges for an effective solid waste management system, including the lack of collaboration between central and local organizations, lack of adequate human resource and knowledge in the local authorities, insufficient budget and sanitary landfill sites, less attention from the chief of local authorities, low waste collection fee, and non-segregation of waste in many households.
- 1.3 Appreciating ESCAP for its support to establish the IRRC, Mr. Nguyen Tien Dung, Vice-Chairman, Quy Nhon City, Viet Nam informed that the 'traditional approach' of waste management is being largely replaced with IRRC model to address waste issues in his City. Mr. Dung shared his experiences in managing municipal waste, including key activities in the Nhon Phu IRRC and Long My landfill, and benefits of the IRRC model there. Mr. Dung informed that Viet Nam's 2009 National Strategic Plan for Integrated Management of Solid Waste calls for waste separation at source, recycling and composting of organic waste and safe disposal. Mr. Dung suggested adopting a

‘synchronized system’ to manage solid waste, using appropriate recycling techniques and methods, integrating the waste management approach into local plans of action, mobilizing local government institutions and communities, and establishing small IRRCs to provide waste management services to small communities.

- 1.4 Mr. Mohammad Muneer Shah, Chairman/Mayor, Town Committee, District Shaheed Benazir Abad Sindh, Pakistan shared experiences in establishing and operating the IRRC with the professional assistance of the Akhtar Hameed Khan Memorial Trust. He opined that the IRRC is not only environment-friendly and sustainable but promises monetary benefits as well. Mr. Shah informed that this joint-venture solid waste management programme is ‘show-cased’ in Sindh Province. Mr. Shah highlighted the need for training, training materials, and dissemination tools, as well as social mobilizers and a social mobilization campaign to change the way decision-makers think through capacity building and social engagement. He opined for individual and collective effort on solid waste management.

- 1.5 Key messages of the session are as follows:

- a. Outcomes of the workshop would guide the future works of ESCAP in promoting resource efficiency and circular economy in the Asia-Pacific region and will provide substantive inputs to the *Future of Asian and Pacific Cities* report 2019.
- b. Key challenges on solid waste management are mostly related to the lack of collaboration and cooperation amongst multi-stakeholders, central and local organisations, lack of knowledge-based human resource, budget and sanitary landfills, and non-segregation of waste in municipalities.
- c. ESCAP should continue to support the developing countries in scaling-up and replicating the IRRCs to provide waste management services in urban areas through capacity building and social mobilization.

2. Resource Efficiency and Circular Economy in the Region

2.1 During this session, Mr. Ram Tiwaree, ESCAP made a presentation on the need of promoting resource efficiency and circular economy towards a sustainable waste management in the rapidly urbanizing Asia and the Pacific. Following this presentation, as Moderator Mr. Stefanos Fotiou, Director, EDD, ESCAP invited four discussants (Ms. Dyah Poerawayanti, Indonesia; Mr. Fayaz Ahmed Memon, Pakistan; Mr. Mushtaq Ahmed Memon, ROAP/UN Environment; and Mr. Arab Hoballah, Team Leader, SWITCH-Asia Sustainable Consumption and Production Facility) to share their country and regional experiences on waste management, resource efficiency and circular economy.

- 2.2 Key messages that came from the above presentation, panel discussions are:

- a. Most of the developing countries in the region have yet to promote the circular economy approach through policies and legal instruments and there is room to integrate this approach by encouraging provincial and local governments while localizing the SDGs.
- b. Leaders (Mayors) of the local governments can make a good business for their city from resource efficiency and circular economy. In the urban waste sector, this can be achieved by generating and utilizing knowledge, skills, and funding along with stakeholder participation and use of appropriate technologies.

3. Resource efficiency and Circular Economy through Municipal Solid Waste Management

- 3.1 Mr. Iftekhar Enayetullah, Director, Waste Concern made a presentation on “Integrated Resource Recovery Center (IRRC) lessons learned: Contributions to urban Resource Efficiency, Circular Economy and sustainability in the Asia-Pacific region. Following the presentation, panel discussion was held focussing on the future of IRRCs supporting resource efficiency and circular economy.
- 3.2 Six panellists from each IRRC country (Mr. Ranver Ahmed, Bangladesh; Mr. Heng Yon Kora of Cambodia; Ms. Mariani Yanti, Indonesia; Ms. Sumaira Gul, Pakistan; Mr. Chularathna Udeni Herath Mudiyansele, Sri Lanka; and Mr. Ngo Huy Liem, Viet Nam) shared their thoughts on what worked, what did not work and ways to make IRRCs sustainable by implementing 3R policies, promoting waste separation at source and waste banks, and using the IRRCs as a 'gateway' to promote resource efficiency and circular economy.
- 3.3 In interactive discussion, participants shared issues related to waste recycling, price control of products (compost), promoting the IRRCs in hilly regions, acceptance of a co-compost product, marketing subsidy, plastic waste, and operational complexities in faecal sludge. In response, it was suggested to incentivise compost sales and recycling plants through tax holidays, provision of land and/or 'soft financing'. As moderator, Mr. Ram Tiwari, ESCAP summarized the discussion and mentioned IRRCs as a good model to manage solid waste. He expressed satisfaction about the well-functioning of all IRRCs, and emphasised the need for developing more decision-making tools.
- 3.4 Key messages of this session include:
 - a. Lack of local government support and leadership in promoting the IRRCs is a perennial challenge in a few countries. However, the proven contribution of IRRCs in achieving SDGs, NUA, and NDCs provides ample evidence for scaling-up and replicating the IRRC and the effective implementation of sustainable waste management solutions in cities.
 - b. Local 'champions' on sustainable waste management should be mobilized to inform policy-makers/decision-makers so that by generating and utilising data for policy formulation and by developing decision-making tools, there is a systematic integration of resource efficiency and circular economy in national and local waste management policies and strategies.

4. Understanding the intersections of formal and informal value chains

- 4.1 This session focussed on concepts, research findings and practical experiences in understanding the informal waste sector in cities and discussed policy recommendations in advancing resource efficiency and circular economy. Ms. Rhonda Douglas shared international experiences on waste pickers' activities and contributions in promoting resource efficiency and circular economy and key lessons in building formal-informal linkages on SWM.

- 4.2 Moderated by Ms. Natalie Harms, ESCAP, five panellists (Prof. Poornima Chikarmane, Ms. Priya Kathuria, Mr. Ashish Rao-Ghorpade, Ms. Trish Hyde and Ms. Rhonda Douglas) highlighted understanding, ideas, concerns and opinions on the informal waste sector and advancing resource efficiency and circular economy by engaging informal waste pickers, promoting waste pickers cooperatives, using appropriate technologies, fostering innovation hubs and improving inclusiveness and social-economical resilience.
- 4.3 Participants raised issues related to prioritisation of formal and informal value chains and need for a campaign to recognise the role of informal sector in social sector, address syndicating approach of waste pickers, and lawbreaking practices.
- 4.4 Key messages emerged from the session are:
- a. In urban centres, informal waste-pickers have contributed to advance resource efficiency, improve their livelihoods, and reduce cost for waste disposal. To enhance waste-pickers efficiency, it is necessary to build their capacity for collection, recycling and disposal of waste, including social recognition and building formal-informal linkages for sustainable waste management in cities.
 - b. Establishing functional partnership between the local government and the waste pickers will ensure socio-ecological resilience by promoting integrated and inclusive waste management initiatives, and synergies between informal and formal economies to enhance resource efficiency and circular economy.
 - c. Plastic presents an urgent environmental, social and economic challenge. The circular economy can improve the lives of and value contribution of informal workers.

5. The Circular Economy in Asia-Pacific Region

5.1. This session on day two focussed on the contribution of waste management solutions in cities and towns. Ms. Solene Le Doze, ESCAP shared her understanding on circular economy concept with solutions and practical examples linking it with SDGs 11 (sustainable cities) and 12 (responsible consumption and production), and its need for developing eco-city.

5.2 Mr. Mushtaq Ahmed Memon, ROAP/UN Environment moderated the panel discussion and five panellists namely: Ms. Jacqueline Caancan, Mr. Petch Manopawitr, Mr. Andrew Noble, Mr. Kulwant Singh and Mr. Abu Hasnat Md. Maqsood Sinha focussed on key issues in promoting circular economy in the region, including the need for creation of necessary institutional mechanisms, and incentive opportunities, deploying nature-based solutions, converting waste to compost and returning it to farm, promoting public-private partnership, and informing policy-makers and communities to develop necessary practical policies.

5.3 Participants raised issues related to use of chemical fertiliser in agriculture, environment management system introduced in the UN building, Bangkok for waste management, and handling supermarket waste and e-waste. Mr. Mushtaq Ahmed Memon reiterated that 'seeing is believing' and there is a need for consistency and collective efforts in promoting circular economy.

5.4 Key messages of this session are:

- a. Some countries have practised resource efficiency and circular economy in waste management and developed eco-friendly towns or eco-cities. The resource economy approach is well embedded in national policies and plans in many developing countries while the circular economy approach is yet to be in place.
- b. Internalising zero-waste initiatives, replacing plastic bottles with glass and refillable water stations, and converting organic waste into compost have proven to be effective. Public-private partnerships provide a basis to advance waste-to-resource models and plastic management may be an 'entry point' for integrating circular economies into national policies.
- c. The 3R related policies and strategies of some countries have been the turning point to advance waste management, generate funding, reduce costs for landfills, provide land for recycling facilities, involve manufacturers in managing waste, and incentivise the consumer for recycling.

6. Outcome of the Interactive Discussions in the Breakout Groups

- 6.1 Two breakout sessions: one on day one, whereas another on day two were held. The first session had five groups each focusing on a specific area in understanding the intersections of formal and informal economies towards improving urban resource efficiency and circular economy. The second session also had five groups and each focused on defining an aspect of what makes a resource efficient, circular economy city system.
- 6.2 On day one, five working groups (Annex 3) discussed understanding the intersections of formal and informal economies towards improving urban resource efficiency and circular economy on the following themes:
 - i. Mapping of stakeholders involved in the informal economy with regard to urban resource efficiency and circular economy facilitated by Ms. Priya Kathuria;
 - ii. Identifying the intersections between the formal and informal urban economies facilitated by Ms. Poornima Chikarmane;
 - iii. Mapping urban resource flows and value chains with regards to circular economy facilitated by Mr. Ashish Rao-Ghorpade;
 - iv. Innovative technologies and solutions for engaging stakeholders in circular economy facilitated by Ms. Trish Hyde; and
 - v. Policy intervention points for inclusive and resilient urban circular economy facilitated by Ms. Rhonda Douglas.
- 6.3 Similar to day one, five working groups (Annex 4) discussed on the following five themes to identify key elements to promote resource efficiency and circular economy in the cities on day two:
 - i. financial instruments for urban infrastructure and service provision, facilitated by Mr. Kulwant Singh;
 - ii. individuals, institutions and governance networks, facilitated by Ms. Poornima Chikarmane;
 - iii. innovative tools for mapping/measuring resource flows and technologies for resource efficiency, facilitated by Mr. Andrew Noble;

- iv. optimising urban material flows and recovery, facilitated by Ms. Jacqueline Caancan; and
- v. natural ecosystems/nature-based solutions, facilitated by Mr. Alex McWilliam

6.4 Key messages from the above-mentioned breakout groups are:

- a. Recognition and mobilisation of waste pickers promote sustainable use of recyclables and value chains, improve livelihoods through informal economy, and increase the life of landfills. It is necessary to harmonise policies, use appropriate technologies, promote public-private partnership, and strengthen institutions to benefit from waste management solutions.
- b. Emphasis should be given to define the role of individuals and institutions, design climate-resilient adaptation/mitigation activities, ensure financing from multiple sources, formulate policies and strategies along with guidelines and manuals, develop regulatory networks and coordinating bodies, and bridge data gaps about the collection and composition of waste, involvement of slum and non-slum households, informal workers and enterprises in waste management, and value chain (formal and informal economies).
- c. Building capacity of and support to civil society organisations is important to promote resource efficiency and circular economy and provide appropriate incentives for positive actions such as through enabling policies, legal and financial measures for sustainable waste management and innovative solutions of programmatic nature.

7. The Way Forward and Closing

- 7.1 Central and local governments' representatives and experts from different constituencies shared their reflections on the outcome of the two-day workshop and emphasised to continue applying 3R approaches, and promote resource efficiency and circular economy in waste management in cities. Moderating the session, Mr. Stefanos Fotiou, ESCAP encouraged the speakers to provide guidance for ESCAP as well in promoting resource efficiency and circular economy.
- 7.2 Appreciating the outcome of the workshop, Ms. Renu Dahal, Mayor, Bharatpur Metropolitan City of Nepal highlighted the constitutional, policy, legal provisions and role of local governments on waste management in Nepal, recommended to share more good practices, expressed her willingness to translate workshop learning into action, and advance integrated waste management approach in her Metropolitan City.
- 7.3 Mr. Kinlay Dorjee, Mayor, Thimpu Municipality of Bhutan opined that workshop learning would contribute to localise and achieve Sustainable Development Goals and promote IRRC model for municipal waste management. He shared initiatives of Thimpu Municipality of involving private sector, use of GPS in trucks, and CCTV and also mobile applications to expedite waste management services. He also informed that organic and dry wastes are separately collected; and households are penalised after third

warning for non-segregation of waste. Mr. Dorjee highlighted the role of volunteers and opined to local leaders to partner with 'energetic groups' in waste management initiatives.

- 7.4 Mr. Iftekhar Enayetullah recommended to concentrate in five areas: (i) policy/strategy and rules such as on 3R; (ii) fiscal incentives such as low interest financing for private sector projects; (iii) capacity building and awareness raising with focus on development of decision-making tool, technology selection, catalogue of solutions, on-line training and monitoring of emission reductions; (iv) inter-ministerial coordination; and (v) adoption of programmatic approach on resource efficiency projects to enhance urban resource efficiency and circular economy.
- 7.5 Mr. Andrew Noble opined that opportunities exist for innovations in technology, business models, social mobilisation and behaviours. Financial viability of resource recovery and reuse should subsidise the financial stability of processes and add greater value to the products. Mr. Noble opined that such transformation requires much time, and this may be possible by 2030.
- 7.6 Considering the waste management in practice a linear approach, Ms. Poornima Chikarmane highlighted the need for strengthening the informal sector, protecting and strengthening the current formal sector, and understanding the contribution of informal sectors in countries' GDP. She advised to look after the municipal budget used in waste collection and transport and involvement of large sector of women in informal economy and urged to protect recycling industries to promote circular economy.
- 7.7 Closing the two-day workshop, Mr. Stefanos Fotiou stated that IRRC related current project of ESCAP is an important project to promote 3R principles and 'waste-to-resource' approach, and this workshop has provided valuable learning and suggested to scale-up and replicate the IRRCs. Mr. Fotiou emphasized that ESCAP is willing to continue providing policy support, advocacy, building capacity of the municipalities, and work together with other partners to promote programmatic approach to support municipal waste management. On resource efficiency and circular economy, Mr. Fotiou emphasised the need to empower national, provincial and local governments with tools and methods to design their own solutions. He highlighted that pricing is one of the very important and effective tools to promote circular economy approaches. Mr. Fotiou stressed also that the private sector has a tremendous responsibility on addressing environmental issues like waste management and that the private sectors power of innovation could create products and services that could promote circular economy. During the session, Mr. Fotiou advised the local governments to prioritize waste management as one of the main services that they provide to the peoples and on the basis of good results to solicit their support, introduce a system for waste management with combination of 'regulations and rewards', and consider political and social decisions over finance towards favouring public goods over private profits.
- 7.8 The key recommendations of the regional workshop include the following:
 - a. continue supporting the **technical capacity building** of national and local governments in vendor/technology selection, establishing public-private partnerships, defining localised SDG-based targets and scaling-up and replicating sustainable waste management solutions to foster resource efficiency and promote

circular economies. Capacity building should be extended to civil society organisations and private sector where necessary.

- b. encourage member States, in particular developing countries, to establish appropriate **policies, strategies and rules** to foster resource efficiency and promote circular economy approaches. Specific areas for focus include: data collection and analysis; ways to work upstream in the value chain; public procurement; labelling; extended producer responsibility; fiscal incentives (i.e. soft loans and taxation); capacity building and awareness raising; inter-ministerial coordination; and the adoption of a programmatic rather than project based approach.
- c. document good practices on resource efficiency and circular economy and help to identify 'local champions'.
- d. work collaboratively across the region, including coordinated 'proof-of-concept' projects that can be leveraged into region-wide and country specific programs.
- e. target plastic waste, in particular given its correlation with the degradation of coastal environments, and support the waste hierarchy approach to achieve 'zero-waste'; and
- f. encourage member States to recognise and mobilise informal waste pickers to promote sustainable use of recyclables and value chains through policy harmonisation.

Annex 1

Regional workshop on Enhancing Urban Resource Efficiency and Circular Economy in Asia and the Pacific

List of Participants

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RESEARCH AND ACADEMIC INSTITUTIONS

AIT

Mr. Guilberto Borongan, Coordinator and Senior Programme Specialist, Waste Management Cluster, Regional Resource Centre for Asia and the Pacific (RRC.AP), Asian Institute of Technology (AIT), 3rd Floor, Outreach Building, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand, Email: guilberto@rrcap.ait.asia

Ms. Prakriti Kashyap, Senior Programme Officer, Regional Resource Centre for Asia and the Pacific (RRC.AP), Asian Institute of Technology (AIT), 3rd Floor, Outreach Building, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand, Email: prakriti.kashyap@rrcap.ait.asia

SNDT WOMEN'S UNIVERSITY

Prof. Poornima Chikarmane, Associate Professor, Pune Campus, SNDT Women's University, Maharshi Karve Vidyavihar, Karve Road, Pune, India, Email: caeepune@sndt.ac.in

STOCKHOLM ENVIRONMENT INSTITUTE (SEI)

Mr. Andrew Noble, Senior Research Fellow, Stockholm Environment Institute (SEI),
15th Floor, Witthayakit Building 254 Chulalongkorn Soi 64, Phayathai Road, Pathumwan, Bangkok
10330 Thailand, E-mail: andrew.noble@sei.org

UNITED NATIONS AGENCIES AND BODIES

UN ENVIRONMENT

Mr. Mushtaq Ahmed Memon, Regional Coordinator for Resource Efficiency, UN Environment, Asia-Pacific Office, Bangkok, E-mail: memon@un.org Regional Coordinator for Resource Efficiency,

UNIDO

Ms. Sooksiri Chamsuk, Programme Officer, United Nations Industrial Development Organization (UNIDO), 57 Phrasumen Road, Banglamphoo, Pranakorn, Bangkok 10200, Thailand, Email: s.chamsuk@unido.org

ESCAP SECRETARIAT

Mr. Stefanos Fotiou, Director, Environment and Development Division (EDD)
Mr. Ram Tiwaree, Economic Affairs Officer, Sustainable Urban Development Section, EDD
Ms. Solene Le Doze, Economic Affairs Officer, Environment and Development Policy Section, EDD
Ms. Flavia Reale, Environmental Management Officer, Division of Administration
Ms. Natalie Harms, Associate SD Expert, Environment and Development Policy Section, EDD
Mr. Batu Uprety, Consultant, Sustainable Urban Development Section, EDD
Mr. Rahul Vaswani, Consultant, Sustainable Urban Development Section, EDD
Ms. Alejandra Quevedo, Intern, Sustainable Urban Development Section, EDD
Mr. Alexander Vougioukas, Intern, Sustainable Urban Development Section, EDD

Regional workshop on *Enhancing Urban Resource Efficiency and Circular Economy in Asia and the Pacific*

Workshop Programme

Day 1: 19 March 2018, Monday, Master of Ceremony: Ms. Alejandra Quevedo, SUDS/EDD, ESCAP

08:30 – 09:00

Registration of the Participants

Resource Efficiency and Circular Economy in the Asia-Pacific Region

The opening session will inform the participants about the objectives of the workshop, and needs for promoting resource efficiency and circular economy approaches in the Asia-Pacific region leveraging the experiences from ESCAP's project in managing solid waste in cities. ESCAP will use this convening to support the development of priority thematic areas for the 2019 Future of Asian Pacific Cities Report.

- Welcome/Opening Address: Mr. Stefanos Fotiou, Director, Environment and Development Division (EDD), ESCAP (10 minutes)
- Remarks (5 minutes each)
- Mr. Prasert Sirinaporn, Director, Office of National Environment Board, Thailand
- Mr. Nguyen Tien Dung, Vice-Chairman, Quy Nhon City, Viet Nam
- Mr. Mohammad Muneer Shah, Chairman, Town Committee, District Shaheed Benazir Abad Sindh, Pakistan
- Introduction of the participants by constituency (5 minutes)

Opening and Introductory Session

09:00 – 10:45

Impact Presentation (15 minutes):

- Mr. Ram Tiwaree, Economic Affairs Officer, SUDS/EDD, ESCAP

Discussants (5 minutes each)

- o Ms. Dyah Poerawayanti, Second Head, Final Processing Site, Ministry of Environment and Forestry, Indonesia
- o Mr. Fayaz Ahmed Memon, Deputy Director, Ministry of Climate Change, Government of Pakistan
- o Mr. Mushtaq Ahmed Memon, Regional Coordinator for Resource Efficiency, ROAP/UN Environment
- o Mr. Arab Hoballah, Team Leader, SWITCH-Asia SCP Facility

Moderated by Mr. Stefanos Fotiou, Director, EDD, ESCAP

25 minutes interactive discussion; Moderator's Summary (5 minutes)

10:45 – 11:15

Photo session and Tea/Coffee break

Resource Efficiency and Circular Economy through Municipal Solid Waste Management

This session will (a) share the experiences and sustainable urban development benefits from ESCAP's implementation of Integrated Resource Recovery Centers (IRRCs) which promoted 'waste-to-resource' approaches in nine secondary cities and small towns in six Asian developing countries; and (b) discuss the strategies, partnerships and policy intervention points for implementing decentralized and inclusive solutions for municipal solid waste management that improve urban resource efficiency, and contribute to circular economy and sustainability in the Asia-Pacific region.

Session 1

Impact presentation

IRRC lessons learned: Contributions to urban resource efficiency, circular economy and sustainability in the Asia-Pacific region - Mr. Iftekhar Enayetullah, Founder and Director, Waste Concern, Bangladesh (15 minutes)

Interactive Panel Discussion

The future of IRRCs in supporting resource efficient circular economies (What worked? What didn't work? Business models which promote operational sustainability)

11:15 – 12:30

- a. Bangladesh - Mr. Ranver Ahmed, Town Planner, Kushtia Municipality
- b. Cambodia - Mr. Heng Yon Kora, Founder/Director, Community Sanitation and Recycling Organization
- c. Indonesia - Ms. Mariani Yanti, Head of Cooperation Division, Jambi City
- d. Pakistan – Ms. Sumaira Gul, Programme Manager, Dr. Akhtar Hameed Khan Memorial Trust
- e. Sri Lanka - Mr. Chularathna Udeni Herath Mudiyanse, Executive Director, SEVANATHA
- f. Viet Nam - Mr. Ngo Huy Liem, Country Director, ENDA

Moderated by Mr. Ram Tiwaree, Economic Affairs Officer, Sustainable Urban Development Section (SUDS), EDD, ESCAP

15 minutes for Q/A

Moderator's Summary (5 minutes)

12:30 – 13:30

Lunch Break

Understanding the intersections of formal and informal value chains

Resource persons will share concepts, research findings, and practical experiences in understanding the informal waste sector in cities and policy recommendations on its linkages in advancing urban resource efficiency and circular economy models in Asia-Pacific cities. This session will also share gender considerations in promoting circular economy through waste management activities.

Impact Presentation

Ms. Rhonda Douglas, Programme Strategy Advisor, Women in Informal Employment: Globalizing and Organising (WIEGO), Ottawa (20 minutes)

Session 2

13:30 – 15:00

Panel Discussion

- a. Prof. Poornima Chikarmane, Associate Professor at SNDT Women's University, Pune, India (10 minutes)
- b. Ms. Priya Kathuria, SWaCH, Pune, India (10 minutes)
- c. Mr. Ashish Rao-Ghorpade, Deputy Director, ICLEI South Asia (10 minutes)
- d. Ms. Trish Hyde, Director, Plasticity, Australia (10 minutes)
- e. Ms. Rhonda Douglas, WIEGO

Moderated by: Ms. Natalie Harms, Associate Sustainable Development Expert, Environment and Development Policy Section, EDD, ESCAP

25 minutes for Q/A; Moderator's Summary

15:00 – 15:15	Tea/Coffee break
	Breakout discussion groups on understanding the intersections of formal and informal economies towards improving urban resource efficiency and circular economy
	Breakout groups
15:15 – 16:45 (Session 2 contd.)	<ul style="list-style-type: none"> a. Mapping of stakeholders involved in the informal economy with regard to urban resource efficiency and circular economy. Facilitator: Ms. Priya Kathuria b. Identifying the intersections between the formal and informal urban economies. Facilitator: Ms. Poornima Chikarmane c. Mapping urban resource flows and value chains with regards to circular economy. Facilitator: Mr. Ashish Rao-Ghorpade d. Innovative technologies and solutions for engaging stakeholders in the circular economy. Facilitator: Ms. Trish Hyde e. Policy intervention points for inclusive and resilient urban circular economy. Facilitator: Ms. Rhonda Douglas
16:45 – 17:30	<p>Group presentations and cross discussion- 5 minutes for each presentation from breakout groups), 15 minutes for Q/A)</p> <p>Moderated by: Ms. Natalie Harms, Associate Sustainable Development Expert, Environment and Development Policy Section, EDD, ESCAP</p> <p>Moderator's Summary (5 minutes)</p>
17:30 – 19:00	<p>Networking Reception combined with Clean Air Week Participants</p> <p>Venue: In front of the Conference Room 4, UNCC, First Floor</p>

The Circular Economy in Asia-Pacific Region

This session will focus on the contribution of waste management solutions in cities and towns towards promoting circular economy. Experts and countries will share their practical experiences in the form of case studies. Presenters will also share country initiatives through policies, programmes and piloting to promote circular economy in Asia-Pacific region.

Recap of Day: Mr. Alex Vougioukas, SUDS/EDD, ESCAP

Impact Presentation

Ms. Solene Le Doze, Economic Affairs Officer, EDPS/EDD, ESCAP(20 minutes)

Session 3

Panel Discussion

09:00 – 10:30

- a. Ms. Jacqueline Caancan, Director II, Department of Environment and Natural Resource, Environment Management Bureau, Philippines
 - b. Mr. Petch Manopawitr, Deputy Head, Indo Burma Group, IUCN, Thailand
 - c. Mr. Andrew Noble, Senior Research Fellow, Stockholm Environment Institute (SEI) Asia Centre
 - d. Mr. Kulwant Singh, Director, CEO, 3R Waste Foundation, India
 - e. Mr. Abu Hasnat Md. Maqsood Sinha, Executive Director, Waste Concern
- Moderated by** Mr. Mushtaq Ahmed Memon, Regional Coordinator for Resource Efficiency, ROAP/UN Environment

10 minutes for each panellist and, 25 minutes for Q/A

Moderator's Remark (5 minutes)

10:30 – 10:45

Tea/Coffee break

Breakout Groups – What makes a resource efficient, circular city system?

Each group will identify key elements to make the resource efficient and promote circular economy in the cities.

Session 4

10:45 – 12:30

Presentation on guidance for breakout groups – Mr. Rahul Vaswani, SUDS/EDD, ESCAP

- a. Financial instruments for urban infrastructure and service provision
Facilitator: Mr. Kulwant Singh, Director, CEO, 3R Waste Foundation, India
- b. Individuals, institutions and governance networks
Facilitator: Prof. Poornima Chikarmane, Associate Professor at SNDT Women's University, India
- c. Innovative tools for mapping/measuring resource flows and technologies for resource efficiency
Facilitator: Mr. Andrew Noble, SEI
- d. Optimising urban material flows and recovery
Facilitator: Ms. Jacqueline Caancan, Philippines
- e. Natural ecosystems / nature based solutions
Facilitator: Mr. Alex McWilliam, IUCN

12:30 – 13:30

Lunch Break

<i>Session 5</i>	<i>Breakout Groups Plenary</i>
	Breakout groups present their recommendations in plenary discussion (10 minutes for each group, and 20 minutes Q/A)
13:30 – 14:45	Moderated by Mr. Abu Hasnat Md. Maqsood Sinha, Executive Director, Waste Concern
14:45 – 15:00	Moderator’s remark (5 minutes) Tea/Coffee break
<i>Session 6</i>	<i>The Way Forward and Closing</i>
15:00– 16:00	Final reflections (10 minutes each)
	a. Ms. Renu Dahal, Mayor, Bharatpur Metropolitan City, Nepal
	b. Mr. Kinlay Dorjee, Mayor, Thimpu Municipality, Bhutan
	c. Mr. Iftekhar Enayetullah, Founder and Director, Waste Concern, Bangladesh
	d. Mr. Andrew Noble, Senior Research Fellow, Stockholm Environment Institute, Asia Centre
	e. Ms. Poornima Chikarmane, Associate Professor at SNDT Women’s University, India
	Moderated by: Mr. Stefanos Fotiou, Director, EDD, ESCAP
	Next steps and closing: Mr. Stefanos Fotiou, Director, EDD, ESCAP (10 minutes)

Annex 3

Breakout discussion groups on understanding the intersections of formal and informal economies towards improving urban resource efficiency and circular economy

- Mapping of stakeholders involved in the informal economy with regard to urban resource efficiency and circular economy
- Identifying the intersections between the formal and informal urban economies
- Mapping urban resource flows and value chains with regards to circular economy
- Innovative technologies and solutions for engaging stakeholders in the circular economy
- Policy intervention points for inclusive and resilient urban circular economy

Participants for group discussion

GROUP A	GROUP B	GROUP C	GROUP D	GROUP E
Facilitators				
Ms. Priya Kathuria	Ms. Poornima Chikarmane	Mr. Ashish Rao-Ghorpade	Ms. Trish Hyde	Ms. Rhonda Douglas
Members				
Mr. Ranver Ahmed, Bangladesh, LG – IRRC Partner	Mr. Kinlay Dorjee, Bhutan, LG	Mr. Suy Thea, Cambodia, LG	Mr. Mahendro Sulisty Aji, Indonesia, CG	Mr. Md. Abul Kalam Azad, Bangladesh, CG
Ms. Reijieli Kakua Ema Silvo, Fiji, LG	Ms. Poppy Nurul Isnaini, Indonesia, LG	Ms. Yunita Indrawati, Indonesia, LG	Mr. Khonekeo Kingkhang, Lao PDR, CG	Mr. Ngeth Bol, Cambodia, CG
Ms. Mariani Yanti, Indonesia, LG	Mr. Yoshinori Suga, Japan, CG	Mr. Ye Tun, Myanmar, CG	Mr. Delgerbayar Badam, Mongolia, CG	Ms. Dyah Poerawayanti, Indonesia, CG
Ms. Renu Dahal, Nepal, LG	Ms. Manju Adhikari Pyasi, Nepal, LG	Mr. Vishwa Mani Gyawali, Nepal, CG	Mr. Nalin Mannapperuma, Sri Lanka, CG	Ms. Jacqueline Caancan, Philippines, CG
Mr. Mohammad Muneer Shah, Pakistan, LG	Dr. Kulwant Singh, Waste Foundation	Ms. Elma Morsheda, ADB	Ms. Alexis Michelle Rourk, US EPA	Mr. Fayaz Ahmed Memon, Pakistan, CG
Mr. Nguyen Tien Dung, Viet Nam, LG	Mr. Heng Yon Kora, Cambodia, IRRC Partner	Ms. Ann Moey, IUCN	Mr. Alex McWilliam, IUCN	Mr. Petch Manopawit, IUCN
Ms. Sumaira Gul, Pakistan, IRRC Partner	Ms. Aparna Veerarouthu, Plasticity	Ms. Nguyen Thi Hoai Linh, Viet Nam, IRRC Partner	Ms. Ira Larasaty, SWITCH-Asia	Dr. Ngo Huy Liem, Viet Nam, IRRC Partner
Ms. Julie Yang, ICLEI	Mr. Chularathna U. HMudiyanselage, Sri Lanka, NGO	Mr. Abu Hasnat Md. Maqsood Sinha, Waste Concern	Mr. Iftekhhar Enayetullah, Waste Concern	Mr. Mushtaq Ahmed Memon, UNEP
Mr. Vicharana Intrakamhaeng, Thailand, LG	Mr. Prakriti Kashyap, AIT	Mr. Guilberto Borongan, AIT	Ms. Sooksiri Chamsuk, UNIDO	Mr. Andrew Duncan Noble, SEI
Mr. John Y. Choi, US Embassy, BKK				
Male – 5 Female – 11 Total = 10	Male – 6 Female – 4 Total = 10	Male – 6 Female – 4 Total = 10	Male – 6 Female – 4 Total = 10	Male – 7 Female – 3 Total = 10

Note: CG = Central Government, LG = Local Government

Annex 4

Breakout Groups on *what makes a resource efficient, circular city system?*

- 1 Financial instruments for urban infrastructure and service provision
Individuals, institutions and governance networks
- 2 Innovative tools for mapping/measuring resource flows and technologies for resource efficiency
- 3 Optimising urban material flows and recovery
- 4 Natural ecosystems / nature-based solutions. Facilitator: Mr. Alex McWilliam, IUCN

Proposed Participants for groups

GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Facilitators				
Mr. Kulwant Singh	Prof. Poornima Chikarmane	Mr. Andrew Noble	Ms. Jacqueline Caancan	Mr. Alex McWilliam
Members				
Mr. Md. Abul Kalam Azad, Bangladesh, CG	Mr. Ranver Ahmed, Bangladesh, LG – IRRC Partner	Mr. Suy Thea, Cambodia, LG	Mr. Mahendro SulistyoAji, Indonesia, CG	Ms. Yunita Indrawati, Indonesia, LG
Mr. Kinlay Dorjee, Bhutan, LG	Ms. Reijieli Kakua EmaSilvo, Fiji, LG	Ms. Dyah Poerawayanti, Indonesia, CG	Mr. Vishwa Mani Gyawali, Nepal, CG	Mr. Khonekeo Kingkhambang, Lao PDR, CG
Ms. Poppy Nurul Isnaini, Indonesia, LG	Mr. NgethBol, Cambodia, CG	Mr. Delgerbayar Badam, Mongolia, CG	Mr. Nalin Mannapperuma, Sri Lanka, CG	Mr. Ye Tun, Myanmar, CG
Mr. Yoshinori Suga, Japan, CG	Ms. Mariani Yanti, Indonesia, LG	Ms. Elma Morsheda, ADB	Ms. Alexis Michelle Rourk, US EPA	Mr. Ashish Rao Ghorpade, ICLEI
Ms. Renu Dahal, Nepal, LG	Ms. Manju Adhikari Pyasi, Nepal, LG	Mr. Fayaz Ahmed Memon, Pakistan, CG	Mr. Petch Manopawitr, IUCN	Ms. Sumaira Gul, Pakistan, IRRC partner
Mr. Nguyen Tien Dung, Viet Nam, LG	Mr. Mohammad Muneer Shah, Pakistan, LG	Mr. Heng Yon Kora, Cambodia, IRRC Partner	Ms. Aparna Veerarouthu, Plasticity	Mr. Iftekhar Enayetullah, Waste Concern
Ms. Ira Larasaty, SWITCH-Asia	Ms. Nguyen ThiHoai Linh, Viet Nam, IRRC Partner	Ms. Ann Moey, IUCN	Mr. John Y. Choi, US Embassy, BKK	Mr. Guilberto Borongan, AIT
Mr. Chularathna U.H Mudiyansele, Sri Lanka, IRRC Partner	Ms Julie Yang, ICLEI	Dr. Ngo Huy Liem, Viet Nam, IRRC Partner	Mr. Vicharana Intrakamhaeng, Thailand, LG	Ms. Trish Hyde, Director, Plasticity
Mr. Mushtaq Ahmed Memon, UNEP	Mr. Prakriti Kashyap, AIT	Mr. Abu Hasnat Md. Maqsood Sinha, Waste Concern	Ms. Sooksiri Chamsuk, UNIDO	Ms. Priya Kathuria, SWaCH
Male – 7 Female – 3 Total = 10	Male – 5 Female – 6 Total = 11	Male – 7 Female – 3 Total = 10	Male – 6 Female – 4 Total = 10	Male – 6 Female – 4 Total = 10

Note: CG = Central Government, LG = Local Government