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Ministerial dialogue: "Towards a resource-efficient and pollution-free Asia-Pacific region"

Towards a resource-efficient and pollution-free Asia-Pacific region**

Summary

The aspirational vision of the Asia-Pacific Ministerial Summit on the Environment – "Towards a resource-efficient and pollution-free Asia-Pacific" – seeks to motivate policy makers and member States to embark on pathways that will achieve the Sustainable Development Goals and the nationally determined contributions under the Paris Agreement. The present paper highlights key interlinkages between the twin goals of improving resource efficiency and reducing pollution, and identifies five policy approaches that will help to harness synergies between these goals. The five policy approaches are: promote circular economy and life-cycle approaches; ensure an enabling macro policy framework; apply a systems perspective to policy making; generate disaggregated data on resource use and impacts; and promote multi-stakeholder platforms for enabling partnerships. The paper calls for greater regional collaboration in implementing these policy approaches.

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I. Introduction

1. The aspirational vision of the Asia-Pacific Ministerial Summit on the Environment – "*Towards a resource-efficient and pollution-free Asia-Pacific region*"– seeks to motivate policy makers and member States to embark on pathways that will achieve the Sustainable Development Goals and the nationally determined contributions under the Paris Agreement. With a view to achieving this vision, it provides a platform to discuss and launch initiatives and boost regional and international cooperation, including south-south collaboration.

2. The background documents prepared for the Summit provide detailed accounts on the status of the Asia-Pacific region's resource use and efficiency,[1] pollution,[2] and identify policy pathways[3] to improve resource efficiency and reduce pollution. As highlighted in the background documents, resource usage has increased exponentially since 1990 – making the region one of the most resource-intensive geographic regions in the world. The high demand for resources translates into pressures on the natural environment, resulting in land-use change, biodiversity loss, and reductions in air and water quality. Against this backdrop, the present paper identifies some of the key linkages between resource use and pollution. In doing so, it highlights the complementarities between the twin goals of achieving resource efficiency and reducing pollution. The paper concludes by discussing some of the key policy approaches that will help harness synergies in enabling transition to resource efficiency and pollution reduction in the region.

II. Linkages between resource use and pollution

3. The fundamental link between resource usage and pollution is that each stage of the life cycle of natural resource usage (extraction, production, consumption and waste management) results in negative externalities, such as pollution and waste (see figure I below).

[1] See background document E/ESCAP/MCED(7)/2 on 'Sustainable management of natural resources in Asia and the Pacific: trends, challenges and opportunities in resource efficiency and policy perspectives' prepared for the Ministerial Conference on Environment and Development in Asia and the Pacific 2017 for more in-depth information on the state of resource use and efficiency in Asia and the Pacific. Available at: http://www.undocs.org/e/escap/mced(7)/2.

[2] http://apministerialenv.org/document/UNEP_INF_1E.pdf.

[3] http://apministerialenv.org/document/UNEP_2E.pdf.

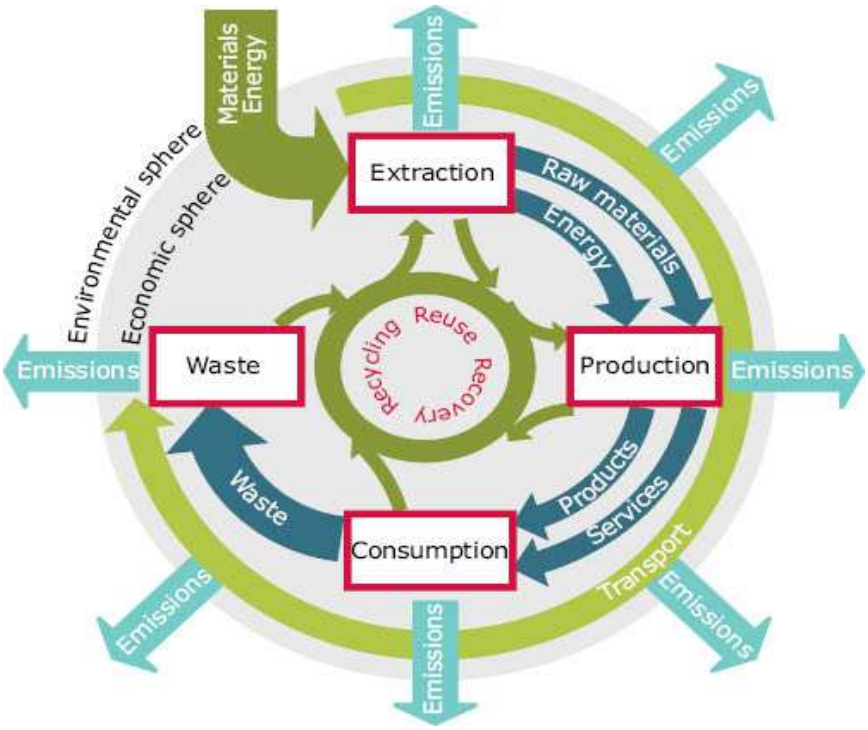

Figure I
Environmental pollution related externalities in the life cycle of resources

Source: https://www.eea.europa.eu/soer/synthesis/synthesis/chapter4.xhtml.

Increased natural resource usage is directly linked to accelerated air, land, water and marine pollution

4. Across the Asia-Pacific region, a direct link can be drawn between the patterns of increased resource use and accelerated air, land, water and marine pollution. For example, worsening air quality, which is experienced in many parts of the region, can be directly linked to increased resource usage in the transport sector and construction and agricultural activity, among other sources. Recent studies[4] estimate that the removal of fossil fuel subsidies in the region[5] and resulting reduction in overall fossil fuel usage could result in approximately 25% reduction in CO_2 emission and 60% reduction of air pollution related deaths. The emission of greenhouse gases is accompanied by "co-emitted" air pollutants, and there is a strong correlation between the increase of per capita material resource consumption and greenhouse gas emissions in the region over 1990-2015.[6] In addition, increased indoor air pollution, as a direct result of usage of biomass fuels for meeting household cooking needs, is also found to have gendered health impacts, leading to higher lung cancer rates for women[7] and higher rates of respiratory ailments in both women and young children.

[4] Coady, D., Parry, I., Sears, L., and Shang, B. (2015). How Large Are Global Energy Subsidies? Washington DC: International Monetary Fund.

[5] Refers to Emerging and Developing Asia region, as per IMF definition.

[6] http://www.undocs.org/e/escap/mced(7)/2.

[7] UNEP (2016) GEO-6 Regional Assessment for Asia and the Pacific.

5. Land-use changes to meet the Asia-Pacific region's growing consumption and production needs, including the increasing demand for agro-industrial products, is accelerating land degradation. For example, open waste dumps, increased usage of chemical inputs for agriculture, and increased usage of heavy metals in industrial production are affecting soil chemistry and nutrition. Significant areas in North and Central Asia (211.7 million hectares), South Asia (84.1 million hectares) and Southeast Asia (20 million hectares) are salt-affected, largely driven by the expansion of areas under irrigation and the use of brackish water.[8]

6. The Asia-Pacific region produces more chemicals than any other region in the world.[9] A significant proportion of these chemicals end up in the region's fresh water resources. As a result, freshwater pollution is a major threat facing the region, with more than 80 per cent of the region's rivers in poor health.[10]

7. Across the Asia-Pacific region, increasing resource usage for consumption and production processes continues to drive steep increases in waste generation.[11] With an average waste generation rate of 1.4 kilograms per person per day, the total annual municipal solid waste for the region was estimated at around 870 million tonnes in 2014, accounting for 43 per cent of the world total. Alongside the increase in municipal solid waste generation, the region is now facing an increasingly complex waste stream, including e-waste,[12] food waste, construction and demolition waste, disaster waste and marine litter.[13] Furthermore, the region is one of the largest generators of e-waste.[14] Open burning is a common treatment of e-waste in many countries, practiced mainly by informal recyclers, which negatively impacts air quality and results in adverse acute and chronic effects on human health.[15]

8. The case of plastics is a good example to further illustrate the linkages between resource usage and pollution. Plastics, especially in the form of packaging materials, are part of each stage of life-cycle of material resource usage. Ninety per cent of plastics are produced from fossil fuel resources, accounting for six per cent of global oil consumption. The increasing demand for plastic suggests that it will account for 20 per cent of global oil consumption by 2050.[16] Each year, more than eight million tonnes of plastic end up in the ocean, wreaking havoc on marine wildlife, fisheries and tourism, and costing upward of eight billion USD in damage to marine ecosystems.[17] The top five land-based sources of ocean's plastic waste in Asia are (in order) China,

[8] Ibid.

[9] UNEP (2013) Global Chemicals Outlook.

[10] UNEP (2016) GEO-6 Regional Assessment for Asia and the Pacific.

[11] Ibid.

[12] E-waste is a term used to cover items of all types of electrical and electronic equipment (EEE) and its parts that have been discarded by the owner as waste without the intention of re-use. Source: Solving the E-Waste Problem (Step) White Paper (2014): One Global Definition of E-waste, Bonn, p. 4-5. http://www.step-initiative.org/files/step/_documents/StEP_WP_One%20Global%20Definition%20of%20 E-waste_20140603_amended.pdf.

[13] UNEP (2016) GEO-6 Regional Assessment for Asia and the Pacific, Page 101.

[14] Ibid.

[15] United Nations University (2016) Regional E-waste Monitor: East and Southeast Asia, Page 66.

[16] http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf.

[17] http://www.unep.org/newscentre/un-declares-war-ocean-plastic.

Indonesia, Viet Nam, the Philippines, and Sri Lanka.[18] Up to 80 per cent of all litter in our oceans is made of plastic[19] and the ocean is expected to contain 1 tonne of plastic for every 3 tonnes of fish by 2025, and by 2050, more plastics than fish (by weight).[20] Moreover, 95 per cent of the value of plastic packaging material, worth USD 80-120 billion annually, is lost to the global economy.[21] Furthermore, open incineration of plastic waste, a common method of handling plastic waste, is an important source of air pollution.

Strong synergies between resource efficiency and pollution reduction targets

9. Resource efficiency refers to the ability to create goods and services, ensure wealth and human well-being, while reducing the input of natural resource use. By reducing the overall input of natural resources to produce economic output, resource efficiency improvements can help reduce pollution at each stage of the life-cycle of resource usage. Hence, resource efficiency improvements can be an important enabler of overall pollution reduction.

10. At the same time, efforts to reduce pollution can in turn help towards achieving resource efficiency. One important way to ensure pollution reduction is through appropriate management of waste at each stage of resource usage. Appropriate waste management can enable help recover resources and promote resource efficiency. For example, driven by increased use of chemical fertilizers and pesticides, agricultural yield per hectare has been on the rise in many parts of the region. However, over-use of these synthetic materials has resulted in water and soil pollution. Instead, the use of organic matter, naturally-derived replacements and bio-fertilizers can ensure that productivity gains will not come at the cost of land degradation and water pollution.

11. The synergies between improved resource efficiency and reduced pollution are reflected in the context of the ambitious targets of the Paris Agreement. Scenario modelling[22] which explored the future pathways for global resource use, greenhouse emissions, and economic activity to 2050 found that implementing resource efficiency policies in combination with ambitious action on climate change could deliver strong economic growth that more than offsets the near-term economic costs of ambitious climate action. This includes a potential 28 per cent reduction in the global per capita use of natural resources, and a drop in global emissions of 63 per cent below 2010 levels by 2050. The annual economic benefits of implementing these integrated strategies was estimated at more than US$2 trillion globally by 2050 relative to business-as-usual trends, while keeping track to limit average global warming to 2°C or lower. Furthermore, the models found that without significant improvements in resource efficiency, achieving global climate targets will be difficult and substantially more costly.

[18] UNEP and GRID-Arendal (2016) Marine Litter Vital Graphics, Page 94.

[19] http://web.unep.org/newscentre/un-declares-war-ocean-plastic.

[20] World Economic Forum (2016) The New Plastics Economy, Rethinking the Future of Plastics, Page 7.

[21] http://www.thejakartapost.com/academia/2016/11/02/combatting-marine-plastic-debris.html.
http://www.thejakartapost.com/news/2017/02/18/indonesia-to-declare-battle-against-marine-plastic-debris.html/.

[22] See UNEP (2016) Resource Efficiency: Potential and Economic Implications.

III. Policy approaches to promote resource efficiency and pollution: harnessing synergies

12. The interlinkages between the goals of achieving resource efficiency and reducing pollution imply the existence of plentiful synergies between policy pathways for their achievement. This section highlights some of the policy approaches to harness such synergies while simultaneously promoting resource efficiency and pollution reduction.

Promote circular economy and life cycle approaches

13. Promoting the 'circular economy' and 'life cycle approaches' will be critical. 'Circular economy' approaches incorporate resource efficiency strategies for dematerialisation (savings, reduction of material and energy use) and rematerialisation (reuse, remanufacturing and recycling) across the life-cycle of resource use systems.[23] Transformation from a linear economy of extract-produce-consume-discard to a circular economy of reutilizing the resources within the economy to reduce the intake of primary resources and minimizing the outtake of wastage and emissions is essential. This overall strategy enhances pollution reduction and resource efficiency. The shift towards circular material flows requires changes in business and consumer models, behaviours and products.[24] Promoting circular economy approaches requires changes in legal and regulatory measures. One such measure is 'compulsory extended producer responsibility', which requires producers to make provisions of collection, reuse and recycle of products when they lose their consumer properties. Japan introduced such laws in effectively dealing with packaging waste already in 1995.[25]

14. Using a systems approach, pathway analysis undertaken by the International Resource Panel to emerging economies undergoing fast paced urbanization demonstrates how packaging circular economy policies with urban planning that facilitates the exchange of materials and energy across industries and sectors can promote economic gains, resource conservation, greenhouse gases mitigation and air pollution reduction.[26] Using data from 637 Chinese cities[27] the pathway analysis demonstrates potential economic, energy, and resource savings and greenhouse gases and particulate matter emissions reductions that could be achieved by implementing circular economy strategies. This analysis shows that circular economy strategies that reduce resource use in the first place, as already implemented in Chinese cities, can be an important arsenal in the mix of strategies needed to improve air quality in cities across the globe.[28] Similarly, life cycle approaches help to connect the extraction of materials and production of goods to consumption and waste management. The utilization of life cycle approaches makes it easier

[23] IRP (2017 forthcoming): Assessing global resource use: A systems approach to resource efficiency and pollution reduction.

[24] Ibid.

[25] http://www.oecd-ilibrary.org/docserver/download/9716061ec018.pdf?expires=1499159024&id=id&accname=ocid195767&checksum=45B655C7AE463CE6BD533B19C7F8F15A.

[26] IRP (2017 forthcoming): Assessing global resource use: A systems approach to resource efficiency and pollution reduction.

[27] Ramaswami, A., et al. (2017b). Urban Cross-Sector Actions for Carbon Mitigation with Local Health Co-Benefits in China. Nature Climate Change (under review).

[28] IRP (2017 forthcoming): Assessing global resource use: A systems approach to resource efficiency and pollution reduction.

to monitor the amounts of greenhouse gas and air emissions, liquid or wastewater discharges, and solid waste from cradle to cradle of resource usage. Both circular economy and life cycle approaches can help in identifying and promoting technologies that will help to reduce pollution and enhance resource efficiency across the life cycle of resource usage.

Ensure an enabling macro policy framework

15. It is important to strengthen an enabling macro policy environment, which includes political will, awareness-raising, legislation, regulatory and fiscal frameworks and financing mechanisms. Political will and stakeholders' awareness are the starting point for effective policy interventions. Comprehensive plans at regional, sub-regional, and national and local levels for resource efficiency and pollution management need to be developed with the inclusion of assessments and baseline targets, actions and monitoring. Further, there is a need to mainstream resource efficiency and pollution reduction targets within national development agendas and sectoral policies while maintaining an overall systems perspective. It is important to ensure that the legislative, regulatory and fiscal frameworks (comprising of taxation, tax incentives and subsidies) favor the circular economy principles. Financing mechanisms are also very important elements of an 'enabling environment', as the pricing mechanisms and availability of finances can influence the business models. Internalizing of environmental externalities based on various approaches such as the "polluter pays" principle can motivate the stakeholders to reduce the intake of natural resources and to reduce the discharge of pollution and waste at each value chain stage. In turn, strategies to improve resource efficiency and waste management will help open new business opportunities to mobilise financial resources.

Apply a systems perspective to policy making

16. A systems perspective is essential to ensure that efficiencies in one area do not come at the cost of loss of efficiency or increased pollution in other areas. The International Resource Panel demonstrates a systems approach to assess the air pollution, health, and multiple SDG co-benefits of resource-efficient urbanization through pathway analysis in cities of India and China.[29] The analysis calculated resource use footprints (for water and fossil fuels) and air pollution and greenhouse gas emission footprints of infrastructure provision and food supply in New Delhi. It found that fuel-switching and end-of-pipe control solutions, though successful in temporarily reducing air pollution in the past, are not sufficient to address air pollution challenges associated with the overwhelming pace of urbanization. Using policies already applied in other Indian cities, the research further demonstrates how strategic land use and transit polices have the potential to reduce energy-related greenhouse gases emissions, while also reducing particulate matter emissions and delivering on sustainable housing and infrastructure needs. Despite these potential gains, given the transboundary nature of air pollution, policies within individual cities are insufficient to address its challenges, and necessitates both cross-sector and multi-level governance.[30] A systems perspective will further help identify multiple impacts of resource usage and incorporate the same in cost-benefit analyses and national budgets. For example, if the increased resource usage of certain sector or industry leads to specific environmental damages or negative health outcome, a systems perspective can enable collection of penalties from

[29] IRP (2017 forthcoming): Assessing global resource use: A systems approach to resource efficiency and pollution reduction.

[30] Ibid.

the polluter and reallocation of the same into additional health or environmental budgets to limit the adverse impacts. This will require policy innovation and leadership to consolidate actions and their multiple benefits across different sectors.

Generate disaggregated data on resource use and impacts

17. There is need to generate better disaggregated data and indicators on resource usage and its multiple impacts, including pollution. Robust, regularly updated data and indicators that connect the way natural resources are used in the economy and related social and environmental impacts can help identify key leverage points for designing policies.[31] Indicators reporting and evaluating the use of materials, energy, land and water, as well as emissions of greenhouse gas, capture the most significant environmental pressures and can be applied across sectors and for all geographical scales.[32] Such data and indicators could be used as the foundation for the development of targets, which are vital to incentivizing resource efficiency across sectors, facilitating policy development and guiding policy implementation and monitoring. For example, material indicators for resource productivity, cyclical use rate, and final disposal amount have been used to underpin the development of resource efficiency targets in the context of Japan's Sound Material-Cycle Policy.[33] Further, in order to generate data and to use the same in policy making, national-level accounting and statistical capacities need to be bolstered, with support from international and regional intergovernmental organizations, to improve the quality of data collection and the creation of reliable decision support tools appropriate for all country contexts.[34]

Promote multi-stakeholder platforms for enabling partnerships

18. Partnerships between governments, private sector, civil society organizations and other relevant stakeholders are critical to initiate and implement the life-style changes required at all levels to promote resource efficiency and pollution reduction. New forms of multi-stakeholder platforms on resource efficiency and sustainable resource use would be important in enabling such partnerships. The Asia-Pacific Forum on Sustainable Development provides such periodic multi-stakeholder platform for the region. The "Roadmap for implementing the 2030 Agenda for Sustainable Development in Asia and the Pacific" adopted by the forum includes specific recommendations for action in the areas of climate change, management of natural resources and energy, including measures to improve resource efficiency and reduce negative environmental impacts of growth. Another example is the Ten Year Framework Programmes on Sustainable Consumption and Production Patterns (10YFP), a UN-led global framework for action to accelerate the shift towards sustainable consumption and production in both developed and developing countries. This multi-stakeholder framework seeks to generate collective impact through developing, replicating and scaling-up policies and initiatives on sustainable consumption and production, and

[31] Ibid.

[32] Bringezu, S., Potočnik, J., Schandl, H., Lu, Y., Ramaswami, A., Swilling, M., and Suh, S. (2016). Multi-Scale Governance of Sustainable Natural Resource Use—Challenges and Opportunities for Monitoring and Institutional Development at the National and Global Level. Sustainability 8 (778): doi:10.3390/su8080778.

[33] Ibid.

[34] UNEP (2015) Policy Coherence of the Sustainable Development Goals: A Natural Resource Perspective. A Report of the International Resource Panel.

enhancing resource efficiency, at national and regional levels.[35] Over 450 institutions have dedicated staff and are guided by multi-stakeholder advisory committees as they engage across six programme areas. More than 20 small- and large-scale projects are already underway, with more under development, responding to increasing demand from national focal points.[36] More such platforms are needed to engage all stakeholders in the society for moving towards resource-efficient and pollution-free cities, countries and the region.

IV. Conclusion

19. *"Towards a resource-efficient and pollution-free Asia-Pacific"* is an aspirational vision for governments and other stakeholders alike. This vision brings together all the member States in the region as the effects of scarcity of resources and pollution transcend national boundaries. The 2030 Agenda provides a strong global consensus and momentum to improve resource efficiency and control and manage pollution in all its forms. Building on this momentum, this vision seeks to consolidate the partnerships between different stakeholders, with a view to strengthening synergies and bringing all networks together for greater collective impact in the region. It also responds to the need for enhanced regional partnerships to support the implementation of the Sustainable Development Goals focusing on goal 12 and cross-cutting targets within all the seventeen goals.

20. Promoting the key policy pathways identified in this document can be accelerated through effective regional collaboration. Considering the transboundary nature of pollution and resource usage such regional collaboration mechanisms become even more significant and urgent. In this regard, the Asia-Pacific Ministerial Summit on the Environment aims to reinforce regional efforts and create a platform to mobilize and share knowledge, expertise, technology and financial resources, to support sustainable consumption and production initiatives in all countries of the region. ESCAP and the United Nations Environment Programme Asia Pacific Office, through the thematic working group of the Regional Coordination Mechanism on resource-efficient growth, can work together to continuously facilitate this process and identify a regional framework of actions related to efficient use of resources and the reduction and management of pollution.

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[35] UNEP (2017). Resource efficiency: potential and economic implications. A report of the International Resource Panel. Ekins, P., Hughes, N., et al.

[36] Ibid