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**Review of issues pertinent to the subsidiary structure of  
the Commission, including the work of the regional  
institutions: environment and development****Starting implementation of the 2030 Agenda for  
Sustainable Development in the Asia-Pacific region: a  
focus on integration and environment and development  
issues****Note by the secretariat***Summary*

In this note, the starting point for the implementation of the environment-related targets of the 2030 Agenda for Sustainable Development is described. The analytical work of the Economic and Social Commission for Asia and the Pacific on integrating the three dimensions of sustainable development is featured, in particular a systems-approach framework and tools to demonstrate how the indivisibility of Sustainable Development Goals might be delivered.

**I. Introduction**

1. Progress in achieving Millennium Development Goal 7 on the environment in the Asia-Pacific region was highly variable across the subregions and countries. Progress on a number of fundamental targets was limited and had even slowed or regressed in many countries in the region.<sup>1</sup> The

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\* E/ESCAP/73/L.1.

<sup>1</sup> The region as a whole has maintained the proportion of land covered by forests; however, if China and India are excluded, the region regressed on this target with reversals evident in South-East Asia, South Asia (excluding India) and the Pacific. All subregions achieved the target of increasing the proportion of protected areas and, except in low-income economies, reduced their carbon intensity. Progress on providing safe drinking water was slow in the Pacific islands and in North and Central Asia. In all subregions except South-East Asia, progress on providing basic sanitation was slow. The Russian Federation was an early achiever of this target and was an exception to the subregional trend in North-East Asia. See Economic and Social Commission for Asia and the Pacific (ESCAP), Asian Development Bank (ADB) and United Nations Development Programme (UNDP), "Making it happen: Technology, finance and statistics for sustainable development in Asia-Pacific – Asia-Pacific regional MDGs report 2014/15" (Bangkok, 2015). Available from [www.unescap.org/sites/default/files/150612%20UNESCAP%20making%20IT%20hap%20report.pdf](http://www.unescap.org/sites/default/files/150612%20UNESCAP%20making%20IT%20hap%20report.pdf).

Millennium Development Goal framework recognized the interlinkages between environment and human development. However, this recognition did not translate into cross-linkages at the target level, for example between the Goals on poverty and the environment.

2. In the 2030 Agenda for Sustainable Development, countries recognized that social and economic development depended on the sustainable management of the planet's natural resources.<sup>2</sup> The 2030 Agenda therefore presents a strategic opportunity to strengthen the environmental dimension of sustainable development in two ways. The first is by expanding the coverage of environmental issues in the Sustainable Development Goals beyond the coverage of the Millennium Development Goals. Six of the Sustainable Development Goals are predominantly about protecting the environment and ensuring the sustained provision of environmental goods and services: Goal 2 on hunger, food security and sustainable agriculture; Goal 6 on water and sanitation; Goal 12 on sustainable consumption and production patterns; Goal 13 on climate change and its impacts; Goal 14 on oceans, seas and marine resources; and Goal 15 on terrestrial ecosystems.

3. Second, the environment is strengthened by embedding environment-related targets across the Goals. A healthy environment is considered a prerequisite for achieving the targets on ending poverty (Sustainable Development Goal 1) and ensuring human health (Goal 3). Opportunities to bring about environmental sustainability – mainly by addressing the socioeconomic drivers of emissions and environmental degradation and reducing the pressure on the natural resource base – are highlighted in the Sustainable Development Goals on energy (Goal 7), economic growth (Goal 8), infrastructure, industrialization and innovation (Goal 9) and cities (Goal 11). The 2030 Agenda also strengthens the opportunity to develop, transfer and disseminate environmentally sound technologies as a means of implementation (Goal 17). This integration constitutes a much stronger lever with which not only to improve the state of the environment, but also to address the underlying socioeconomic drivers of environmental degradation across the entire 2030 Agenda.

4. The objective of the present note is to provide input to member States as they engage in national and regional dialogues on planning and implementing the Sustainable Development Goals. The bright spots and hotspots of the environmental dimension at the start of implementation of the 2030 Agenda are identified, as well as strategic opportunities for environment ministries to make a high impact in the overall achievement of the Sustainable Development Goals.

5. This note is mainly based on the *Asia-Pacific Sustainable Development Goals Outlook Report (2017)*, developed under the partnership between the Economic and Social Commission for Asia and the Pacific (ESCAP), the Asian Development Bank (ADB) and the United Nations Development Programme (UNDP) on the Sustainable Development Goals, and on an ESCAP paper entitled “Analytical framework for integration of water and sanitation Sustainable Development Goals and targets using systems thinking approach”. Findings from earlier reports by ESCAP, entitled *Transformations for Sustainable Development: Promoting Environmental Sustainability in Asia and the Pacific* (co-published with the United Nations Environment Programme (UNEP), the United Nations University and the Institute for Global Environmental Strategies in 2016) and *Integrating the Three Dimensions of*

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<sup>2</sup> See General Assembly resolution 70/1, paragraph 33.

*Sustainable Development: A Framework and Tools* (with the Commonwealth Scientific and Industrial Organization in 2015) are also recalled.

## **II. The starting point for achieving the environmental dimension of the 2030 Agenda for Sustainable Development in the Asia-Pacific region: status and trends**

6. On the positive side, the era of the Millennium Development Goals in the region ended with progress on maintaining the proportion of land covered by forests, increasing the proportion of forests with protected status and reducing carbon dioxide emissions per unit of gross domestic product (GDP) and ozone consumption.<sup>3</sup> Progress on access to basic sanitation was slow and the region regressed on protecting primary forests. As the region transitioned to the Sustainable Development Goals, there was no sign of easing of environmental pressures, including increasing levels of pollution, emissions and waste.

7. The quality of water and air continues to deteriorate for many countries in the region. A huge proportion of wastewater in the region, estimated at between 80 and 90 per cent, is being discharged without prior treatment into existing freshwater bodies and the ocean. The inability to effectively address land-based pollution is affecting oceans and coastal zones, which continue to be treated as pollution sinks. Unhealthy environments are causing significant health problems in the region. For example, many cities exceed the safety standard set by the World Health Organization (WHO) of annual mean concentrations of 10 micrograms of particulate matter 2.5 micrometres or less in diameter and 20 micrograms of particulate matter 10 micrometres or less in diameter per cubic metre of air volume, primarily owing to the growth of personal vehicle fleets and poorly-maintained public transport. WHO estimates that in 2012, 5.9 million of the 7 million premature deaths due to indoor and outdoor pollution were in low- and middle-income countries in the WHO South-East Asia and Western Pacific regions.<sup>4</sup> Air pollution also exacts a heavy cost on the region's economies. The World Bank estimates that in 2013, welfare losses related to air pollution in East and South Asia were the equivalent of approximately 7.5 per cent of GDP.<sup>5</sup>

8. The Asia-Pacific region's pattern of resource use is less efficient, compared with the world average, and overall consumption continues to increase. Consumption of natural resources increased in the region between 2000 and 2010 at a faster rate than population.<sup>6</sup> In 2010, the Asia-Pacific region required the use of 2.4 kilograms of materials per unit of GDP, compared with the global average of 1.3 kilograms per unit of GDP.<sup>7</sup>

<sup>3</sup> ESCAP, ADB and UNDP, "Making it happen".

<sup>4</sup> WHO, "7 million premature deaths annually linked to air pollution", 25 March 2014. Available from [www.who.int/mediacentre/news/releases/2014/air-pollution/en/](http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/).

<sup>5</sup> World Bank and Institute for Health Metrics and Evaluation, *The Cost of Air Pollution: Strengthening the Economic Case for Action* (Washington, D.C., World Bank, 2016). Available from <http://documents.worldbank.org/curated/en/781521473177013155/pdf/108141-REVISED-Cost-of-PollutionWebCORRECTEDfile.pdf>.

<sup>6</sup> ESCAP, ESCAP Statistical Online Database. Available from <http://data.unescap.org/> (accessed 27 January 2017).

<sup>7</sup> Ibid. This figure increased to 2.7 kilograms in 2015. However, comparable data for world aggregates is not available.

9. Pressure on the region's water and forest resources shows no sign of easing. Some countries in the region withdraw considerable proportions of their freshwater supply, exceeding half of total water availability, including the Islamic Republic of Iran in 2004, Tajikistan in 2006 and Pakistan in 2008. Nearly all countries in the region are experiencing increasing pressure on water resources owing to their growing populations and economic development. Between 1990 and 2010, per capita water availability dropped by 42 per cent in Solomon Islands, 36 per cent in Malaysia, Pakistan and Nepal, 29 per cent in India and Bangladesh and 23 per cent in Viet Nam.<sup>8</sup> These pressures, coupled with impacts of climate change, make the goal of providing water for all – which in the region means providing for some 277 million people who currently do not have access to safe drinking water – extremely challenging.

10. If groundwater resources continue to be used beyond sustainable limits, agricultural production in the region will be threatened, undermining a sector that contributes about one third of employment in the region and efforts to achieve food security and eradicate poverty. The increase in demand for irrigation has led to severe groundwater stress in some areas. The proportion of water withdrawn for agriculture was more than 90 per cent for 13 countries in the region, in particular in Central Asia.<sup>9</sup> Seven of the world's 15 biggest abstractors of groundwater are in the region. Aside from the pressure coming from extraction, the quality of groundwater is deteriorating because of the effluents from chemically intensive agriculture and untreated wastewater disposal. The future impacts on quality, availability and the environment will pose a critical challenge for many countries in the region.

11. Rapid and continuing land use change and increases in demand for natural resources and arable land present serious challenges for Goal 15. While total forest cover has increased slightly because of increased forest plantation, biodiversity-rich primary forests are still under pressure. Between 2000 and 2015, roughly 135,333 square kilometres of natural forest area (calculated as forest area minus planted forest) were lost in the region, roughly three times the size of Denmark, and accounting for 10.6 per cent of world's total natural forest loss. The highest loss was registered in South East Asia, which lost around 158,862 square kilometres of natural forest area within the same period.<sup>10</sup>

12. There are positive trends in reforestation and afforestation that are resulting in substantial increases in secondary-forest cover, although this would

<sup>8</sup> *Statistical Yearbook for Asia and the Pacific 2014* (ST/ESCAP/2704).

<sup>9</sup> Afghanistan, 98.62 per cent (2000); Bhutan, 94.08 per cent (2008); India, 90.41 per cent (2010); Iran (Islamic Republic of), 92.18 per cent (2004); Kyrgyzstan, 93.01 per cent (2006); Lao People's Democratic Republic, 91.41 per cent (2005); Nepal, 98.14 per cent (2006); Pakistan, 93.95 per cent (2008); Tajikistan, 90.86 per cent (2006); Thailand, 90.37 per cent (2007); Timor-Leste, 91.38 per cent (2004); Turkmenistan, 94.31 per cent (2004); Viet Nam, 94.78 per cent (2005). Food and Agriculture Organization of the United Nations (FAO), Main Database, AQUASTAT. Available from [www.fao.org/nr/water/aquastat/data/query/index.html?lang=en](http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en) (accessed 23 January 2017).

<sup>10</sup> ESCAP, ESCAP Statistical Online Database. Available from <http://data.unescap.org> (accessed 11 November 2016). The regional total is less than the South-East Asia loss because of the gains in North and Central Asia and in South and South-West Asia. These figures were calculated by ESCAP from the data from FAO on total forest area minus planted forest (FAO, *Global Forest Resources Assessment 2015: How Are the World's Forests Changing?*, 2nd ed. (Rome, 2016); available from [www.fao.org/3/a-i4793e.pdf](http://www.fao.org/3/a-i4793e.pdf)). Care should be taken when interpreting the numbers because there is a problem with comparability of forest statistics across countries.

not compensate for the losses in biodiversity and ecosystem services caused by the destruction of primary forests.

13. Both protected marine and terrestrial areas in the region are expanding, although still below the world average. Many countries in the region have taken steps to protect large expanses of their coastal and oceanic waters, most notably in Palau, where the Palau National Marine Sanctuary Act was recently enacted, declaring 80 per cent of its waters as a no-take zone. Overall, the number and geographic extent of marine protected areas have increased over time, but this coverage still falls below Sustainable Development Goal target 14.5. Although the effort is commendable, there is also a concern that most marine protected areas are largely “paper parks” with non-existent management plans and, where these exist, implementation is hampered by lack of funds.

14. Terrestrial protected areas are also expanding but progress is slow, and capacity to sustainably manage these areas may not be keeping up. In 2014, almost half of the region – 24 countries<sup>11</sup> – had protected terrestrial areas totalling almost 3 million square kilometres and accounting for 13.9 per cent of the land in these countries, although this is still lower than the global average.<sup>12</sup> The region’s total area under protection is far below the 17 per cent global Aichi Biodiversity Targets (within the Convention on Biological Diversity). For both marine and terrestrial protection areas, Governments need to demonstrate concrete efforts to allay the concern of some sectors that these conservation efforts are inconsistent with rights of access by marginalized groups, notably indigenous peoples.

15. Agricultural production systems in the region are characterized by high chemical inputs. The region has the world’s highest rates of mineral fertilizer use. North-East Asia followed by South Asia are the heaviest users of fertilizers, at 445 kilograms and 150.4 kilograms per hectare respectively. The high volume of chemical inputs in food production has damaging impacts on the health of consumers in the region and abroad. These impacts are not yet widely understood because it takes longer time for the problems to manifest.

16. Greenhouse gas emissions are on the rise, despite per capita emissions remaining below global averages and decreasing emissions intensity. Total greenhouse gas emissions of economies in Asia and the Pacific have also more than doubled between 2000 and 2012, with an average annual increase of around 4 per cent.<sup>13</sup> This is happening despite decreasing emissions intensity, by 44 per cent (2003-2011). The fact that the emissions intensity is still above the global average suggests that there is much scope to do more with available technologies. It also underscores the need to upgrade infrastructure to make it efficient and sustainable and to ensure that future infrastructure investments contribute towards the decoupling of economic growth from emissions.

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<sup>11</sup> Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, the Democratic People’s Republic of Korea, India, Indonesia, Japan, the Lao People’s Democratic Republic, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, the Republic of Korea, Singapore, Sri Lanka, Thailand, Timor-Leste and Viet Nam.

<sup>12</sup> UNEP World Conservation Monitoring Centre, *Asia Protected Planet Report 2014: Tracking Progress towards Targets for Protected Areas in Asia* (Cambridge, United Kingdom, 2014).

<sup>13</sup> ESCAP, ESCAP Statistical Online Database. Available from <http://data.unescap.org/> (accessed 10 February 2017).

Broadly, there is an urgent need to align infrastructure and physical planning processes with climate change mitigation and resilience strategies.

### **III. Strategic opportunities to strengthen the environmental dimension**

17. While the challenges are formidable, the region has strategic opportunities to make progress on the environmental dimension of the 2030 Agenda.

18. The 2030 Agenda is creating both a global and national push towards investments in improving water efficiency and water reuse. A recent study highlighted the growth in investments in water purification and wastewater and sanitation infrastructure from \$50 billion in 2007 to more than \$120 billion in 2016.<sup>14</sup> Investments in wastewater and sanitation in China constitute 20 per cent of the regional total, while the wastewater investment market in India is the fastest growing. The Republic of Korea and Japan are leading investors in wastewater management infrastructure in a number of least developed countries, landlocked developing countries and small island developing States in the region, providing capacity development support and new technologies and supporting sustainable innovations in the receiving countries.

19. The region can look forward to good progress on improving resource efficiency. Aided by technological improvements, material use trends show improving efficiency. A relative decoupling<sup>15</sup> between total primary energy supply and GDP growth can be observed in the region as a result of various factors, including changes in economic structure and energy-efficiency improvements in such areas as lighting, appliances and buildings. As a result, the region's energy intensity has steadily declined since the mid-1990s. Given that developing economies have much higher energy intensity than industrialized countries, the highest potential for further resource-efficiency gains exists in these developing economies.

20. The ongoing rapid urbanization in the region offers a leverage point in achieving many sustainable development targets owing to their capacity to innovate and ongoing infrastructure development. Cities offer opportunities to modify patterns of resource use. Against the backdrop of rapid urbanization, holistic policies can tap into cities' potential to concentrate economic activity and attract infrastructure investment and innovation while decreasing environmental footprints. Such policies, however, need to place inclusiveness at their core in order to address current inequalities in terms of access to opportunities and basic services, and ensure that no one is left behind.

21. The region has the potential to lead the promotion of technologies and solutions to increase efficiency gains and address environmental pollution. Many countries in the region are leaders in environment-related technologies: Japan accounted for approximately 22 per cent of environment-related technologies developed worldwide as of 2012, with Australia, China, India, Indonesia, New Zealand, the Republic of Korea, the Russian Federation and Turkey accounting for approximately 15 per cent.<sup>16</sup> The market for waste

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<sup>14</sup> ESCAP, "Water markets in Asia and the Pacific: An overview of trends, opportunities, risks and policies – working paper" (Bangkok, 2016). Available from <https://sustdev.unescap.org/Files/resource/b1aa511f760b5c4afb6782f1c32acbf9.pdf>.

<sup>15</sup> Decoupling is an indicator referring to the ability of economies to grow without a corresponding increase in energy consumption.

<sup>16</sup> Organization for Economic Cooperation and Development, Green Growth Indicators

management and recycling activities in the region can be enlarged to be worth \$35 billion by 2020.<sup>17</sup> The 2030 Agenda offers a new opportunity to facilitate the diffusion, dissemination and uptake of such technologies, through technology cooperation as well as through increased trade of environmental goods and services (Sustainable Development Goal 17).

22. Policy and institutional arrangements to deal with critical environmental challenges have already been established. With conducive policy environments and technological availability, more improvements are possible than previously expected. The environment dominated the decisions made by the Commission at its seventy-second session, in 2016, with a record number of agreements forged on such issues as climate change, sand and dust storms, and the sustainable use of oceans, seas and marine resources. These decisions signal a good start for strengthening the environmental dimension of the 2030 Agenda. Several economies in the region have established policies that link the quality of growth to better environmental performance, such as green growth, and have recognized environmental thresholds in policymaking. Local solutions for wastewater treatment, such as decentralized wastewater-treatment systems, are emerging at the technical and policy levels in South and South-East Asia. Singapore holds the distinction of being the first – and, so far, the only – country in the region that has achieved 100 per cent of wastewater treatment.

23. The region can build on regional and global momentum to take more ambitious actions on climate change. As of March 2017, 39 ESCAP member countries had ratified the Paris Agreement and submitted their nationally determined contributions containing their climate change agendas and priorities.<sup>18</sup> Progress on Sustainable Development Goal 13 will be boosted by the entry into force of the Paris Agreement, along with efforts to scale up financial resources and technological innovation. However, although the Paris Agreement creates a framework in which all countries commit to action on climate, collective pledges are far short of achieving the reductions in greenhouse gas emissions required to keep global warming below 2 degrees Celsius (targeting 1.5 degrees Celsius). This means that further iterations of the nationally determined contributions need to be much more ambitious. Given the high growth of greenhouse gas emissions in the region and the high levels of human and economic vulnerability to climate change impacts, the urgency of increasing mitigation and adaptation action cannot be overestimated. Many countries in the region have the potential to lead more ambitious mitigation action globally. Ensuring the predictability of finance and other means of implementation will be key to sustaining the momentum of international cooperation on environmental issues.

24. With respect to achieving Sustainable Development Goal 14, there is currently no comprehensive global regime for conserving the marine ecosystems of the high seas, but rather a patchwork of regional agreements on fisheries and specific frameworks that address some threats to marine biodiversity, such as marine pollution. Discussions on a new global treaty to protect marine biodiversity, called for at the Conference on Sustainable

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database. Available from  
[http://stats.oecd.org/Index.aspx?DataSetCode=GREEN\\_GROWTH](http://stats.oecd.org/Index.aspx?DataSetCode=GREEN_GROWTH) (accessed 5 January 2016).

<sup>17</sup> ESCAP, “Resource efficiency for green and resilient urban development in the Asia-Pacific region: The case of water”, December 2015. Available from [www.unescap.org/sites/default/files/ResEff-UrbanWater.pdf](http://www.unescap.org/sites/default/files/ResEff-UrbanWater.pdf).

<sup>18</sup> See [http://unfccc.int/paris\\_agreement/items/9444.php](http://unfccc.int/paris_agreement/items/9444.php).

Development, represent a significant opportunity to address this gap. Strengthening the United Nations Convention on the Law of the Sea and negotiating a new global treaty for the conservation of oceans and seas presents an opportunity to address current gaps in ocean governance. At the same time, support for country compliance with existing regional and global multilateral agreements provides a framework for achieving the Sustainable Development Goal targets. The management and regulation of deep seabed mining in line with the precautionary principle is a critical emerging issue for international cooperation, as domestic environmental management in developing countries currently appears inadequate to ensure the protection of marine ecosystems.

#### **IV. An integrated approach to the implementation of the Sustainable Development Goals: frameworks and tools**

25. The achievement of several of the Sustainable Development Goals and targets will, to a large extent, depend on the success of addressing environmental challenges. For example, agriculture depends on the sustainable management of the genetic diversity of crops, breeds and trees and the vibrancy of terrestrial and aquatic ecosystems as a whole. But biodiversity is being threatened throughout the region by extensive agriculture, oil palm and rubber plantations and unsustainable aquaculture. The proportion of threatened native mammal and plant species increased by more than 10 per cent and 18 per cent respectively in the past decade. Degradation of biota and ecosystems affects the livelihoods of 50 to 80 per cent of people in rural areas.<sup>19</sup>

26. Progress on fostering environmental sustainability will also influence the extent to which the region delivers on reducing inequality (Goal 10) and leaving no one behind, which is an overarching aspiration of the 2030 Agenda. As resources become constrained and degraded, access to them will increasingly become a matter of social justice.<sup>20</sup> Access to and the sharing of benefits from terrestrial ecosystems (target 15.6) is likely to become increasingly inequitable if the increased demand for ecosystem services and the constrained natural resource base are not addressed. Impacts of environmental degradation, such as air pollution and climate change, disproportionately affect poor people's health and livelihoods.<sup>20</sup> It is well documented that environmental degradation further increases the burden on women in poor households. With fisheries as the employer of last resort in the region, the viability of livelihoods of millions of small-scale fisherfolk in the region, many of them poor, will hinge on the continued availability of fisheries and marine resources.

27. The rapid growth of small and medium-sized cities in the region is exceeding the capacity of Governments to provide for water and sanitation infrastructure, resulting in deficits in water provision and massive growth in the amount of untreated wastewater being discharged into rivers. Pressure on water resources will make it difficult to achieve the goals of agricultural diversification and water security. The growth in investments related to water and sanitation, as discussed earlier, therefore constitutes important leverage not

<sup>19</sup> UNEP, *Global Environment Outlook: GEO-6 – Regional Assessment for Asia and the Pacific* (Nairobi, 2016). Available from [http://uneplive.unep.org/media/docs/assessments/GEO\\_ASSESSMENT\\_REPORT\\_ASIA\\_Wam.pdf](http://uneplive.unep.org/media/docs/assessments/GEO_ASSESSMENT_REPORT_ASIA_Wam.pdf).

<sup>20</sup> *Transformations for Sustainable Development: Promoting Environmental Sustainability in Asia and the Pacific* (United Nations publication, Sales No. E.16.II.F.5).



only for achieving Goal 6 but also for driving agricultural diversification and food security (Goal 2), improvement of health and well-being (Goal 3) and sustainable urban development (Goal 11). It can also spur the creation of new jobs (Goal 8).

28. The integrated nature of the Sustainable Development Goals is best dealt with through dynamic and holistic frameworks that bring out the interactions across the Goals and targets and that allow meaningful dialogues among diverse stakeholders. To assist member States in integrated planning and implementation for the Sustainable Development Goals, in the past couple of years ESCAP has evolved frameworks, tools and approaches to facilitate integration in policymaking. Since the elaboration of an integrated framework for balancing the three dimensions of sustainable development in the theme study for the seventy-first session of the Commission,<sup>21</sup> ESCAP has been developing and testing tools based on a systems-thinking framework at the national level.

29. Systems thinking is a way of approaching complex problems as one whole system by applying systems dynamics to understand the connections between the components of the system – whether environmental, social, economic or policy-related – and understanding the behaviour or interests that these connections generate.

30. The value of systems-based tools in planning and implementing the Sustainable Development Goals is immense. First, by understanding the complementarities and interlinkages across the Sustainable Development Goals, countries will be able to devise implementation strategies that harness and eliminate trade-offs and hence uphold the indivisibility of the 17 Sustainable Development Goals as envisioned by member States. Second, the framework also allows Governments to engage a wide diversity of stakeholders to jointly define problems and develop effective solutions. Unlike many conventional policymaking models, which assume that economic and social systems are based on hierarchies, the systems framework is able to describe the reality where networks and self-organization are the predominant features of a system's organization. When stakeholders are involved, there is a greater chance of stronger cross-sectoral cooperation and collaboration in implementation. Lastly, systems thinking allows the identification of leverage points for action that has high impacts and coherent policies that will assist Governments in attracting the required investments for implementing the 2030 Agenda.

31. As a planning and decision-making tool, the systems approach allows the identification of linkages right from the beginning of the process. It helps participants in a planning process to visualize how improvements in one area of the system can either positively or adversely affect another area of the system, and how to turn trade-offs into opportunities for the benefit of the whole system. The systems framework also allows a departure from conventional policy- and decision-making, which tend to be linear and often siloed. While many quantitative decision-making tools assume that systems operate under equilibrium conditions, the systems approach allows for non-equilibrium conditions, which are much closer to the actual situation in which policies are made.

32. In *Integrating the Three Dimensions of Sustainable Development: A Framework and Tools*, two complementary tools for integration were

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<sup>21</sup> See E/ESCAP/71/38.

elaborated. The first is a scenario-building tool, which is a qualitative method and process that can support stakeholder learning, dialogue and social innovation by visualizing possible futures. Scenario-building allows stakeholders to imagine plural and dynamic descriptions of pathways of societal change, not just a static vision of the future. This tool is particularly relevant when dealing with substantial uncertainty and complexity in policymaking. The second tool is input-output analysis, which is useful for linking the economic, social and environmental dimensions of investment, trade and related economic activities. This quantitative tool is suitable for exploring links between resources and impacts associated with the use of resources in various sectors and across the supply chain. It can quantify the carbon, biodiversity and material footprints in the context of global trade. Social impacts, such as inequality and labour, could be also added.

33. The practical application of the systems-thinking framework is being tested through ongoing pilot applications in Fiji, Sri Lanka and Tajikistan using Goal 6 on water and sanitation planning as the entry point. The pilot application toolkit consists of the following: (a) a matrix for identifying direct and indirect linkages among the Sustainable Development Goals and targets; (b) an online web-based systems diagramming tool called Kumu ([www.kumu.io](http://www.kumu.io)) for visually mapping out the linkages between targets; and (c) a tool for identifying and classifying high-impact leverage points,<sup>22</sup> based on academic literature on leverage points for system change.<sup>23</sup>

34. The three pilot projects are at varying stages of implementation, with the one in Fiji at its initial phase of implementation. Tailoring the tool for national-level applications in these countries involved contending with significant gaps in nationally appropriate indicators and data. Despite these challenges, the practical value of a systems-based framework of integrated modelling has thus far been illustrated in Sri Lanka, which used the systems framework in the process of assigning responsibilities for implementing the Sustainable Development Goals across the entire government system. By applying the framework, national partners identified Goal targets 6.1 to 6.3 among the high-impact leverage points, and developed a systems map of stakeholders to trace common development mandates and capacities across its 51 ministries and 425 line agencies, including civil society and businesses.

35. At the high-level political forum on sustainable development in 2016, the Sri Lankan delegation highlighted its partnership with ESCAP in applying the systems framework to map out the government institutions responsible for the implementation of each of the 17 Sustainable Development Goals, as well as for the Goal 6 targets.<sup>24</sup> Similarly, Tajikistan applied the framework for Goal 6 and went a step further by expanding the application of the model to

<sup>22</sup> Leverage points are places within a complex system (such as a corporation, an economy, a living body, a city or an ecosystem) where a small shift in one element can produce big changes in everything. See Donella H. Meadows, “Places to intervene in a system”, *Whole Earth* (Winter 1997). Available from [https://center.sustainability.duke.edu/sites/default/files/documents/system\\_intervention.pdf](https://center.sustainability.duke.edu/sites/default/files/documents/system_intervention.pdf).

<sup>23</sup> Donella H. Meadows, “Leverage points: places to intervene in a system”, *Solutions*, vol. 1, No. 1 (January 2010), pp. 41-49. Available from [www.thesolutionsjournal.com/article/leverage-points-places-to-intervene-in-a-system/](http://www.thesolutionsjournal.com/article/leverage-points-places-to-intervene-in-a-system/).

<sup>24</sup> Uchita de Zoysa, Chief Negotiator for Sri Lanka, “Mainstreaming SDGs into national policies, plans and strategies and integrating the three dimensions of sustainable development”, statement to the high-level political forum on sustainable development, New York, 13 July 2016. Available from [https://sustainabledevelopment.un.org/content/documents/21634sri-lanka%20\(1\).pdf](https://sustainabledevelopment.un.org/content/documents/21634sri-lanka%20(1).pdf).

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Goal 5. The modelling in Fiji started with defining the interlinkages between the national sustainable development strategy and its green growth road map, and matching the relevant Goal targets with the previously identified development priorities.

36. Overall, the experience from the pilot projects shows that there are intangible yet important impacts of the systems-thinking tools, including consensus-building on leverage points and agreed priorities, better communication and more opportunities for dialogue among stakeholders, leading to greater collaboration in implementing agreed follow-up actions.

## V. Conclusion

37. The Sustainable Development Goals provide the opportunity to deal with the environment in a more holistic way than ever before. This is urgently needed in a region where the environment is degrading fast and undermining the prospects of achieving the 2030 Agenda.

38. Dealing with environmental problems provides opportunities for Asia-Pacific countries in areas such as promoting green technologies and green jobs and growing markets for water and sanitation, while at the same time addressing social and economic challenges.

39. The greatest return will come not from sectoral approaches, but from multisectoral approaches and systems thinking. While the indirect benefits may be difficult to quantify, countries need to consider the multiple benefits of action across sustainable development.

40. Practical methods, tools and indicators to capture links such as the nexus between climate, land use, energy and water must be developed and operationalized at the country level. They should be designed to treat the Sustainable Development Goals as a complex adaptive system.

41. Regional collaboration towards supporting the further refinement of systems-thinking tools and scaling up their application, within the context of broader support for strengthening the implementation of the 2030 Agenda, may be considered.