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Post-2015 Sustainable Development Agenda, Sustainable Development Goals and Environmental Sustainability in Asia Pacific

**The role of the environment in delivering on the SDGs and the post-2015
development agenda in Asia Pacific**

Discussion Document -- Not for quotation or citation. The purpose of this document is to facilitate discussions during the First Forum of Ministers and Environment Authorities of Asia Pacific, 19-20 May 2015, Bangkok. Comments are welcome and should be sent to uneproap@un.org. The document will be revised to reflect all verbal and written comments received no later than 31 May 2015.

I. Introduction

1. The General Assembly's Open Working Group (OWG) on Sustainable Development Goals produced a set of 17 Sustainable Development Goals (SDGs) and 169 targets that are currently being discussed through an intergovernmental negotiation process. The SDGs reflect the need to incorporate the three dimensions of sustainable development: social, economic and environment in a coherent, holistic, comprehensive and balanced manner, as well as the need for transformational and integrated approaches highlighting interconnections and linkages across goals and targets. Although environment is addressed through specific SDGs, it is also true that the environment is integral to all the SDGs. The objective of this document is to illustrate the role of the environment in delivering on all the SDGs and the post-2015 development agenda in the Asia Pacific region. Section II reviews and provides evidence of the contribution of the environment to each SDG. Section III presents options for action to support SDG readiness, implementation and monitoring in Asia Pacific.

II. Environment in the SDGs

2. This section highlights evidence to demonstrate the importance and centrality of environment to all the SDGs. The bulleted points for each SDG in this section represent scientific data and analysis that make the case for the environment in Asia Pacific.

SDG1: End poverty in all its forms everywhere

3. A sustainably managed environment is a prerequisite for socio-economic development and poverty reduction. The natural environment supplies ecosystem goods and services that provide income, support job creation, poverty alleviation, and contribute to safety nets and reduce inequity.

- 1 billion people world-wide depend, to varying degrees, on forest-based assets for their livelihoods. In a global study including 11 Asian locations, the environmental income from forestlands represents 27.5 per cent of total household income, only marginally less than crop income (28.7 per cent) (Angelsen et al. 2014);
- Environmental income reduces the Gini coefficient by an average of 4.7 percentage points, suggesting that access to natural resources might reduce inequity (Angelsen 2014);
- Asia Pacific is the world's most densely populated region and home to 66 per cent of the world's poor. In this region, the fishery and aquaculture sector makes significant contribution to national poverty reduction and agricultural GDP: representing 23 per cent in Cambodia, 20 per cent in the Philippines, 24 per cent in Bangladesh, and 13 per cent in Indonesia (Allison 2011);
- Poorer households are more dependent on fisheries for income and food security than better off groups. In the Stung Treng Ramsar Site in Cambodia, the capture and consumption of fish provides USD650 per year to the poorer households, 3.3 times more than for better off groups (Allen et al. 2008);
- Improving the management of water resources also contributes to poverty alleviation. In a study covering six Asian countries: Bangladesh, China, India,

Indonesia, Pakistan and Viet Nam, the poverty incidence is 20-30 per cent less in settings with irrigation compared to those without irrigation (Hussain and Wijerathna 2004).

SDG 2 End hunger, achieve food security and improve nutrition and promote sustainable agriculture

4. Nature provides direct sources of food and a series of ecosystem services (e.g. pollination, soil formation, nutrient cycling, and water regulation) that contribute to food security and nutrition, supporting agricultural activities.

5. Increasing world population and changes in consumption patterns put pressure on the environment creating the need to produce food for an additional two billion people by 2030, while preserving and enhancing the natural resource base upon which the well-being of present and future generations depends. This is extremely important considering that unsustainable expansion of agriculture has created serious environmental problems:

- Soil erosion due to inappropriate management practices is responsible for about 40 per cent of the world land degradation, causing USD 10 billion losses to South Asian countries (Kohr 1999);
- Fresh water is essential for agricultural production but 20 per cent of irrigated land is affected by waterlogging or salinity. Extended use of agrochemicals has polluted water sources, and high levels of nutrients are found in 50 per cent of the Asian rivers creating eutrophication problems and health issues (ESCAP 2005);
- Agriculture accounts for 14 per cent of global Greenhouse Gas Emissions (GHG) of which Asia Pacific accounts for almost half (47 per cent) (FAO 2015).

6. Sustainable Agriculture practices are currently applied on some 155 million hectares of arable land across many different agro-ecosystems in all continents, but only in 10.3 million hectares in Asia due to insufficient promotion and a lack of supportive policy and institutional environments (Kassam et al. 2014).

SDG 3: Ensure healthy lives and promote well-being for all at all the ages

7. A clean environment is essential for human health and well-being. However, the interactions between the environment and human health are highly complex.

- In Southeast Asia and Western Pacific regions, indoor air pollution was responsible for 3.3 million deaths, while another 2.6 million were linked to outdoor air pollution during 2012 only (WHO 2014);
- The estimated health benefits of the air quality management plan in the Republic of Korea evaluated as prevention of premature mortality might represent about USD 900 million (Chae and Park 2011);
- The air pollution costs are high, representing USD 300 billion a year for China (WB & DRCS PRC 2014) or around 5 per cent of the GDP in developing countries (UNEP 2005);

- Water related diseases are associated with environmental pollution and lack of access to safe drinking water and sanitation;
- In Pakistan alone around 250,000 children under five years old die each year from diarrhoea related diseases (Azizullah et al 2011);
- In many Pacific Islands, groundwater supplies are contaminated by human and animal wastes. Inadequate sanitation contributes to pollution of the near shore coastal environment resulting in bioaccumulation of bacteria on important food sources such as fish and shellfish;
- In South Tarawa, Kiribati's main urban centre, the total annual economic costs associated with poor water, sanitation, and hygiene conditions represents between 3.7- 7.3 million per year (ADB 2014);
- The management of hazardous materials including electronic waste is becoming a major health and environmental problem in the region, due to their heavy metal content and the improper methods used to recover the gold, platinum, palladium and other rare metals. The inadequate recycling practices in many cases pollute the land, air and water;

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

8. The environment provides land, construction material and the energy required for building and maintaining educational infrastructure. However, there is increasing need for designing and implementing processes to perform life cycle assessments and reduce environmental impacts of educational infrastructure and materials to promote sustainable learning.

- There is evidence that learners influence their environment;
- An additional year of education might have economically and environmental significance representing between 4 and 21.5 per cent less annual area of old growth forest cut per household, about 6 per cent more agricultural productivity and a shift towards renewable sources (Howe 2009);
- Formal and informal education, including, public awareness and training are critical for promoting sustainable development and improving the capacity of the people and countries to address environmental and development issues and to create green and decent jobs and industries.

SDG 5: Achieve gender equality and empower all women and girls

9. Understanding the links between gender inequality and environmental degradation, and taking responsive actions, can accelerate positive dynamics and promote sustainable development outcomes. Enhancing property rights and access to land and natural resources to women can contribute to reduce gender inequalities, improve their livelihood options and poverty status.

- If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 per cent. These gains in agricultural production could lift some 100–150 million people out of hunger (FAO 2011);

- Natural environment provides goods and services that are essential for rural households (e.g. water and fuel). In most Pacific Islands, women and girls are responsible for collecting traditional fuels;
- Women can spend up to three hours a day collecting fuel, with an additional six hours spent collecting water for daily needs and preparing food (UN Inter-Agency Task Force Fact Sheet on Rural Women Rural Women 2011);
- Spending time on laborious tasks reduces the time women have available for income generation and education, thereby limiting opportunities to reach their full potential and those of their daughters (UN Women 2014).

SDG 6: Ensure availability and sustainable management of water and sanitation for all

10. Sustainable management of water resources and access to safe water and sanitation are the keys to unlocking economic growth and productivity, and provide significant leverage for existing investments in health and education. A 0.3 per cent increase in investment in safe water has been associated with 1 per cent increase in GDP, and the benefits of investing in water management and the avoided costs are significant:

- River-basin floods in Asia Pacific represented economic losses of USD 26 billion during 2014, including 18 billion losses from transboundary floods in India-Pakistan (UNESCAP 2014.);
- When added to storms and droughts, the cost of water related disasters exceeds USD 52 billion, affecting over 82 million people (UNESCAP 2014);
- Adapting infrastructure for coastal protection would cost East Asian countries USD 4.2 billion a year (Westphal et al. 2013).

11. Natural environment e.g. forests, soils and wetlands contributes to management and regulation of water availability and water quality, strengthening the resilience of watersheds and complementing investments in physical infrastructure and institutional and regulatory arrangements for water access, use and disaster preparedness.

- The average value of mangrove forest to protect against flooding, storms, coastal erosion and strong waves is about USD 4,185 per hectare per year (Brander et al. 2012).

12. The Asia Pacific region is home to 60 per cent of the world's population but it has only 36 per cent of its water resources. Per capita water availability is the lowest in the world (WWAP 2012). Across Asia, water shortages undercut food security and the incomes of rural farmers since approximately 70 per cent of water is used in agriculture. Improving water management makes national economies, the agriculture and food sectors more resilient to rainfall variability and able to fulfil the needs of growing population.

- Recent estimates indicate that three quarters of the additional food supply by 2050 can be met by just improving the productivity of existing irrigated areas (Mukherji et al. 2009);
- Asia's irrigation systems need to be revamped keeping in mind that future irrigation systems will need to be efficient and flexible enough to meet the

demands of many sectors, including farming, fishing, domestic use and energy supply.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

13. The environment provides a series of renewable and non-renewable energy sources i.e. solar, wind, hydropower, geothermal, biofuels, natural gas, coal, petroleum, uranium.

- The use of fossil fuels is predominant in the Asia Pacific region, with hydro-electricity, renewables and nuclear energy typically accounting for less than 20 per cent of overall energy use. Coal constitutes more than 20 per cent of overall energy use in the majority of Asia-Pacific economies (GEO 5 2012).

14. Lack of access to energy supplies and transformation systems is a constraint to human and economic development:

- A 0.6 per cent increase in primary energy consumption has been associated with 1 per cent increase in world GDP;
- Sustainable and modern forms of energy are necessary for increasing the productivity of labour and agriculture; improving health, education, and social welfare; lowering transportation and transaction costs; providing greater opportunities for employment and income-generation; and connecting communities to economic, trade, and information networks (UNDP 2013).

15. Energy use patterns in Asia Pacific are characterized by wide contrasts between different regional economies, with most countries and households showing high levels of dependence on traditional fuels consisting of wood, dung, and crop residues for their basic cooking, lighting, and heating needs:

- 72 per cent of Asians depend on traditional energy sources and 70 per cent of Pacific Island households do not have electricity (Dornan 2014);
- Extensive use of firewood might lead to unsustainable levels of biomass harvesting, denudation of vegetative cover and acceleration of deforestation, land and soil degradation, silting of water resources and flooding, and disturbance to the ecological balance (Masud et al. 2007);
- The diversion of crop residues and animal waste for burning rather than soil conditioning or feeding animals can reduce the fertility of land and livestock on which rural livelihoods depend.

16. Asia currently accounts for 34 per cent of world energy consumption, but increased use of fossil fuels without actions to mitigate greenhouse gases might have global climate change implications.

SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

17. The natural environment plays an important role in supporting economic activities. It contributes directly, by providing resources and raw materials such as water, timber and minerals that are required as inputs for the production of goods and services;

and indirectly, through services provided by ecosystems including carbon sequestration, water purification, managing flood risks, and nutrient cycling. Greening the economy not only generates growth, and in particular gains in natural capital, but it also produces a higher growth in Gross Domestic Product (GDP) and GDP per capita. Under the green economy modelling exercise, a green investment scenario achieves higher annual growth rates than a business as usual scenario within 5-10 years. This economic growth is characterized by a significant decoupling from environmental impacts with the global ecological footprint to bio capacity ratio projected to decline from a current level of 1.5 to less than 1.2 by 2050 – much closer to a sustainable threshold value of 1 – as opposed to rising beyond a level of 2 under business as usual (UNEP 2011, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication).

18. The decline in the ecological health and economic productivity can be reversed by shifting to a greener, more sustainable paradigm in which human well-being and social equity are improved and greener jobs are created.

- The transition of the global agriculture sector towards more sustainable practices is projected to create over 200 million full time green jobs in 2050 across the entire food production system, increase the agricultural GDP to over 20 per cent above business as usual, improve the quality and quantity of food supplies, reduce GHG emissions from deforestation and mineral fertilizers, curb the excessive use of natural resources such as fresh water and gradually replace inorganic inputs with ecologically sourced alternatives (Herren et al. 2011).

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

19. Large-scale infrastructure development requires inputs from the environment and can have impact on it. Resilient infrastructure is crucial for delivering energy, transport, water and sanitation, and for facilitating information and communication technology services to people. Improving infrastructure is in many cases critical to reach several SDGs e.g. poverty reduction, ensuring healthy lives, inclusive and equitable education, water management, access to energy, human settlements, and climate change. In Asia Pacific, there is still room for improving material flows and also to mitigate indirect effects of construction at larger spatial scales and their social impacts.

- In India, it is estimated that development projects have displaced about 60 million people in over 50 years, while about 70 million have been displaced in China (Perera 2014).

20. Constructing new greener infrastructures and retrofitting or reconfiguring existing infrastructure systems are cost-effective and resilient approaches to address issues such as water security, energy security, food security or flood resilience, and exploit the potential of smart technologies to reduce environmental impacts and increase efficiency in the use of natural resources. Reviewing the building codes and standards is a starting point towards reducing vulnerability and promoting better performing commercial and residential buildings with reduced energy and water consumption, as well as with lower waste and greenhouse gas emissions.

- In Beijing, China, water supply pressures led to the implementation of new legislation that made it compulsory for all new hotels and public buildings

over a certain size to install on-site water treatment systems so that waste water could be re-used for non-potable applications like irrigation and toilet flushing, saving about 50,000 – 60,000 cubic meter per day;

21. Countries traditionally rely on engineered infrastructure that can become obsolete in the context of rapid urban growth and climate change, but there is now awareness and support towards institutionalizing more systemic approaches taking into consideration the capacity of environmental assets to cost effectively contribute to social goals, for example by complementing investments in embankments and pipes with wetland restoration to control flooding.

- In Vientiane, Lao PDR, the wetlands provide flood protection and water treatment services valued at USD 2 million per year, saving over USD 18 million in damage costs (SIWI 2005).

SDG 10: Reduce inequality within and among countries

22. Environment can contribute to the reduction of inequity. For example, forests provide a variety of economic benefits to the poor, contributing to poverty alleviation and reduction of inequity.

- In Pakistan, the environmental income from forest sources might represent between 26 and 57 per cent of total household income, having also a strong equalizing effect, reducing the Gini coefficient from 0.45 to 0.25 (Rabbi 2010).

23. Improving environmental management practices and tackling gendered differences in capacity to cope with natural disasters and to access information and early warnings might reduce inequity and the disproportionately large effect that natural disasters have on women and children:

- In the 2004 Asian tsunami, women in many villages in Aceh, Indonesia and in parts of India accounted for over 70 per cent of the dead (Habtezion 2013).

24. Sound management of natural resources and critical ecosystems, as well as supporting institutional arrangements regarding the use and access to natural resources are required to adapt and cope with environmental change and the negative consequence of population displacement and to reduce inequity among nations.

- Forced migration and environmental refugees are growing problems in the region. In Asia Pacific, it is estimated that over 42 million people were displaced in 2010 and 2011, mostly by floods, droughts, soil degradation, typhoons and cyclones (ADB 2012);
- Small Island States are among those most affected by natural hazards. In Vanuatu and Tonga, the average annualized losses represent 6.6 per cent and 4.4 per cent of the GDP respectively (Jha et al. 2013).

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

25. There is a strong link between quality of life in cities and how cities draw on and manage the natural resources available to them. Resource efficient cities combine greater productivity and innovation with lower costs and reduced environmental impacts,

while providing increased opportunities for consumer choices and sustainable lifestyles. In addition, ‘urban mining’, the reduction of influx of resources by making better use of the existing stocks of materials available in the urban environment through increased recycling rates, is a strategy that can scale up these benefits. Resource efficiency is key for cities to contribute to local and global sustainability and offer at the same time high potential for financial savings.

- South and South-West Asia had the fastest urban population growth rate of all the Asian and Pacific subregions at an average of 2.4 per cent per year during 2005-2010 (GEO 5 2012);
- Although cities only occupy 2 per cent of the earth’s land surface, 75 per cent of all natural resources are consumed within cities, 60-80 per cent of the energy consumption and 75 per cent of carbon emissions (UNEP 2013);
- From 1980 to 2010, Asia added more than one billion people to its cities—more than all other regions combined—and another billion dwellers will live in cities by 2040 (Jha 2013);
- Currently, more than 40 per cent of Asia’s population resides in urban areas, and by 2050, two thirds of Asia’s population will be urban and most of the world’s megacities will be Asian (UN DESA 2014).

26. To date, the trend towards urbanization has been accompanied by increased pressure on the environment and accelerated demand for basic services, infrastructure, jobs, land, and affordable housing, particularly for the nearly 1 billion urban poor who live in informal settlements.

- Informal settlements are growing at a much faster pace than cities themselves. Across Asia Pacific, the slum population might exceed 520 million (equivalent to the combined population of Indonesia, Bangladesh and Philippines). In absolute terms, Asia is home to more than half the world’s slum population (UN Habitat 2006).

27. In many Asian cities, the investment to replace decaying infrastructure and to keep pace with rapid urban growth is generally too high and millions of urban dwellers usually lack the provision of basic services such as electricity, water, sanitation and solid waste management. However, some initiatives show that the benefits of rehabilitating infrastructure might outweigh the costs as illustrated by The Ho Chi Minh City Environmental Sanitation (Nhieu Loc-Thi Nghe Basin) Project.

- Rehabilitating a canal is having a transformational impact on the city directly benefitting over 1.2 million people with improved sanitation (waste water collection) and 400,000 people with reduced flooding (World Bank 2013 Viet Nam).

28. Developing sustainable urban infrastructure benefits not just the environment, but can also boost economic growth and social stability.

SDG 12: Ensure sustainable consumption and production patterns

29. One of the greatest global challenges is to integrate environmental sustainability with economic growth and welfare by decoupling environmental degradation from economic growth and doing more with less. Resource decoupling and impact decoupling

are needed to promote sustainable consumption and production patterns and to make a transition towards a greener and more socially inclusive global economy. The average per capita resource consumption around the world is was over ten tons per annum in 2010, about 28 kg per person per day; however, while the average European extract 37 and the North Americans 81 kg per day, in the Asia-Pacific Region the per capita extraction per day is 26 kg per day per person – ranging from 120 kg in Australia to 5 kg in Bangladesh. Nevertheless, because of its population size, the Asia-Pacific has the largest share of the global natural resource extraction at 53 per cent (UNEP 2015).

30. Economies in the Asia Pacific region have significantly improved their resource efficiency in the past decades. However, absolute levels of resource use are still growing rapidly.

- At the beginning of the 21st century, the Asia Pacific region overtook the rest of the world to become the single largest user of natural resources (UNEP 2015);
- Over the last two decades, growth in material use has outpaced GDP growth, leading to a deteriorating trend in materials efficiency overall from 2 kg per US\$ in 1990 to 2.8 kg per USD in 2010. Counter-intuitively, materials efficiency has improved in almost all countries, and this overall worsening simply reflects the increasing dominance of less efficient, but rapidly improving countries, such as China (from 39 per cent of the region's total in 1990 to 64 per cent in 2010), and the decreasing dominance of more materials efficient countries like Japan (from 13 per cent in 1990 down to 3 per cent in 2010). China improved from 9 kg per USD in 1990 to 6 kg per USD in 2010, and Japan improved from 0.4 kg per USD to 0.26 kg per USD (UNEP 2015);
- The wide range of material efficiencies in the region demonstrate the huge scope for improvement potential through intra-regional lessons sharing. Materials efficiency in developing countries in the Asia Pacific region is improving at a rate of 1.5 per cent per year, translating to a 45 per cent improvement between 1970 and 2010. However the developing countries in the region still use ten times as many resources per dollar as the industrialised countries in the region. (UNEP 2015).

31. The Asia Pacific region was the first to agree on a regional roadmap for implementation of the 10YFP, which has established a foundation to mobilise technical and financial resources for implementation, and has put in place momentum for the political will power to develop and implement sectoral SCP policies. Through regional programmes such as SWITCH-Asia, many developing countries in the region have scaled up their implementation of SCP policies such as Sustainable Public Procurement, Consumer information, Sustainable Tourism, Education for Sustainable Lifestyles and Sustainable Buildings. Industrialised countries in the region have had a longer history in these policy domains, and there is significant scope to scale up intra-regional cooperation.

SDG 13: Take urgent action to combat climate change and its impacts

32. Asia-Pacific is the fastest growing source of greenhouse gas emissions globally although on a per capita basis, emissions remain lower than the global average. Rapid economic growth over the past 20 years, particularly in the larger economies, has been accompanied by increasing emissions of greenhouse gases and degradation of natural capital. A business as usual scenario suggests that the region will contribute around 45 per cent of global energy-related CO₂ emissions by 2030 and an estimated 60 per cent of

global emissions by 2100. Meanwhile, transport-related emissions are expected to increase by 57 per cent worldwide between 2005 and 2030, with China and India accounting for more than half (GEO 5 2012).

33. Of the ten countries in the world that are most at risk from climate change impacts, six are in Asia Pacific - including low-lying Pacific island countries, which may eventually disappear due to sea level rise and extreme weather events. The priority concern for these countries is to build resilience to climate change impacts, especially across the most vulnerable communities. Asia Pacific is one of the most vulnerable regions to climate change due to its long coastlines, high population density and heavy reliance on very sensitive sectors and economic activities such as agriculture, forestry, natural resources and tourism (ADB 2009).

- Climate change is increasing the frequency and intensity of extreme weather events such as heat waves, droughts, floods and tropical cyclones, aggravating water management problems, reducing agricultural production and food security, increasing health risks, and damaging critical infrastructure for the provision of water and sanitation, energy and transport services (ADB 2009);
- Greater rainfall, combined with warmer temperatures, is likely to make provision of clean water and adequate sanitation more complex and costly, and expand the vectors for waterborne communicable diseases, including malaria and dengue fever. The adaptation cost in the health sector has been estimated between USD 2 billion and USD 14 billion over the period 2010–2030 with Asia Pacific projected to account for approximately 50 per cent of this estimated amount (ADB 2011 Health and CC);
- In the Lower Mekong Basin climate change could damage USD 18 billion worth of infrastructure representing between 14 per cent and 61 per cent of rural GDP, without taking into consideration around USD 1.2 billion impacts on the provision of key ecosystem services (Talberth and Reyta 2014).

34. Developing countries require massive additional investment in their transition towards low-carbon and climate-resilient development paths. Mitigation in developing countries could cost between USD 140 billion and USD 175 billion per year during 2010–2030, (World Development Report 2010) while the adaptation costs for developing countries in Asia Pacific during 2010–2050 are estimated at USD 40 billion per year (USAID 2012). Ecosystem based adaptation has been proposed as part of National Adaptation Programmes of Action, since restoring natural ecosystems can be more cost-effective than engineered solutions:

- In the Philippines, the benefit-cost ratio for protecting the city of Angeles from flooding was calculated as 30:1 for rain forestation farming, 14.7:1 for bamboo plantations, and 3.5:1 for river channel improvement;
- In Viet Nam, planning and protection of 12,000 hectares of mangroves cost USD 1.1 million, but the benefits of reducing the cost of dike maintenance represent over USD 7 million per year since mangroves reduce wave height by as much as 66 per cent over 100 meters of forest (Jha et al. 2013).

SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

35. The oceans cover more than 70 per cent of the surface of our planet and play a key role in supporting life on earth. They are the most diverse and important ecosystem, and contribute to global and regional elemental cycling. Oceans regulate climate, and through climate, habitats are shaped that allowed humans to thrive and develop our societies. They provide us with natural resources such as food, materials, substances, and energy. Furthermore, they are essential for international trade, recreational and cultural activities.

- When the total direct, indirect and induced economic effects arising from marine fish populations in the world economy are accounted for, the contribution of the sector to global economic output is found to amount to some USD 235 billion per year (UNEP 2011 GER);
- About 85.5 per cent of fishers and fish farmers are in Asia. China is the country with the highest number of fishers and fish farmers, representing nearly one-third of the world total (Allison 2011);
- Fisheries and aquaculture sectors are major contributors to food security, income and livelihoods in the region with some 90 per cent of fishers/fish farmers being small scale. The region produces 51 per cent of global capture fishery production (FAO 2014).

36. Marine Protected Areas contribute to poverty reduction by increasing fish catches and income, creating new jobs, improving health, empowering women. Even small investments in conservation can double the income of beneficiaries (Leisher et al. 2007).

- Benefits of coral reef conservation exceed costs by ratios between 1.3 and 5. In Indonesia, unsustainable fish capture might generate private income of around USD 33,000 per square kilometre of reef but at a total cost of up to USD 750,000 (Gallizi and Herklotz 2008).

37. Increasing levels of debris in the world's seas and oceans is having a major and growing economic impact. In 2008, marine debris was estimated to have directly cost the 21 Asia Pacific Economic Cooperation (APEC) member economies approximately USD 1.265 billion (McIlgorm et al. 2008).

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

38. Terrestrial ecosystems provide a series of goods, raw materials (e.g. wood fire, timber) for construction and energy, food (e.g. edible fruits, game), but also provide a series of ecosystem services including the capture of carbon, maintenance of soil quality, provision of habitat for biodiversity, maintenance of water quality, as well as regulation of water flow and erosion control, therefore contributing to reduce the risks of natural disasters such as floods and landslides, regulate climate and maintain the productivity of agricultural systems. The region's wealth in biological diversity and associated traditional knowledge is evidenced by the fact that 5 of the 17 members of the group known as the

Like-minded Mega-diverse Countries are from this region: China, India, Indonesia, Malaysia and the Philippines.

- It is estimated that continuing on a business as usual path for mangroves and coral reefs in Southeast Asia would result in an economic loss of USD 2.2 billion and USD 5.6 billion annually by 2050 (GIZ, ACB 2012);
- Despite their importance, there is evidence that about 60 per cent of the earth's ecosystem services are degraded and the cost of land-based ecosystems degradation could amount to USD 66 billion per year (Nkonya et al. 2011).

39. Forests cover an estimated 740 million hectares in Asia Pacific, or more than one-quarter (26 per cent) of the total land surface. However, on a per capita basis, Asia Pacific is the least-forested region of the world, with only 0.2 hectares of forest per person. In several countries e.g. Bhutan, Malaysia, New Zealand, Papua New Guinea and Solomon Islands, the forestry sector makes significant contribution to the GDP, and play a significant role as safety nets providing households with a great variety of goods including fruits, leaves, gum, nuts, timber, and wood for fuel (FAO 2010). However, deforestation is a serious problem in the Asia Pacific region.

- Indonesia is the world's third-largest producer of greenhouse gases behind China and the US, with 85 per cent of its emissions coming from forest destruction and degradation;
- In 2012, the country lost 840,000 hectares of primary forest, the most lost by any country (Margono et al. 2014);
- Illegal logging costs up to USD 4 billion a year (EIA Telepak 2007).

SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

40. A better understanding of the links between environment and human security is vital for effective conflict prevention, post-conflict reconstruction and promotion of peaceful and inclusive societies. In the past 60 years, 40 per cent of conflicts have been tied to natural resources and these are twice as likely to relapse into conflict within the first five years.

- East Asia and the Pacific has the second largest number of fragile and conflict stricken states and regions after Africa. Several countries in the region have high rates of poverty, struggle to overcome the legacy of conflict and/or face ongoing risks of political insecurity and weak governance (Jha et al. 2013).

41. As the global population continues to rise, and the demand for resources continues to grow, there is significant potential for conflicts over natural resources to intensify, especially if there are failures in institutions, policies and laws to resolve these conflicts and create equitable access to essential resources such as land and water and tackling corruption in the environmental sector.

- The costs of water infrastructure are increased by corruption by as much as 40 per cent making it more expensive to provide worldwide safe drinking water and sanitation (Plummer and Cross 2006);

- During 2010, the illicit sale of elephant ivory, rhino horn and tiger parts in Asia represented about USD 75 million and the trade in illegal timber from South-East Asia to the European Union and Asia was worth an estimated USD 3.5 billion (UNODC 2012).

SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

42. Stronger partnerships will contribute to sustainable development by mobilizing resources, sharing knowledge, promoting the creation and transfer of environmentally sound technologies, and building capacity.

43. There is tremendous scope for making the existing financial system more sustainable by integrating the environment dimension. Official development assistance from Organisation for Economic Co-operation and Development (OECD) countries reached a record high of USD 134.8 billion in 2013 but this is only a small part of the finance needed.

- Resources are shifting away from the poorest countries towards the Far East and South and Central Asia, primarily China, India, Indonesia, Pakistan, Sri Lanka, Uzbekistan and Viet Nam (OECD 2013).

44. There is increasing cooperation among multilateral organizations, donors and private sector to provide developing countries and beneficiaries with technologies that increase efficiency in the use of natural resources, generate low waste, treat the generated pollution and mitigate climate change.

- As part of the Poznan Strategic Programme on Technology Transfer, the regional project “Pilot Asia-Pacific Climate Technology Network and Finance Center” is being implemented in collaboration with the Asian Development Bank (ADB) and UNEP to address key barriers to climate technology transfer and deployment in Asia Pacific and create enabling conditions to leapfrog conventional development paths and jump straight to cutting edge technologies in the region (ADB 2012 Pilot).

45. Transfer of environmentally sound technologies include goods, services, and equipment but also building capacity on know-how, as well as in organizational and managerial procedures.

- Pacific regional organizations and country members are working together to build capacity to improve regional monitoring services to ensure access to quality and timely data to reduce the risk of disaster, develop targeted responses to climate change and promote regional cooperation to address primary hazards such as tropical cyclones and typhoons, drought and flash floods, storm surges, earthquakes, and tsunamis (SPREP 2012).

III. Options for Action

46. This section presents options for action to support SDG readiness, implementation and monitoring.

47. Asia Pacific is not a homogeneous region and there are major differences in the capacity of their countries to implement the SDGs. However, there are some common actions related to building capacity for data management, strengthened governance, an integrated approach to policy and programmes, and a more sustainable financial system that could support SDG readiness and implementation in the region.

A. Promoting a more sustainable financial system by advocating for and integrating the environment

48. There is tremendous scope for making the existing financial system more sustainable by integrating the environment dimension. The UNEP Inquiry into the Design of a Sustainable System has identified innovations to promote a more sustainable financial system. Recommendations where Ministries of Environment can potentially play an advocacy and advisory role in partnership with Central Banks, Ministries of Finance and the private sector include *inter alia*:

- i. **Sustainable banking:** Bangladesh, China and Indonesia have demonstrated the potential of establishing 'green credit' risk management and reporting requirements, offering green fiscal incentives and considering variations in capital weightings to account for mispriced environmental risks and broader policy needs;
- ii. **Green bonds:** with under-developed but fast growing bond markets, the region has the opportunity to lead in green bond issuance and benefit from their associated use of proceeds for green infrastructure and enterprise development;
- iii. **Stock exchanges:** the Stock Exchanges of Thailand, Singapore and others have led in the region in requiring listed companies to provide investors with material information about their social and environmental performance;
- iv. **Green budget tax reform:** allows governments to influence market prices through public policy and internalise the costs of environmental degradation. This can be done either directly, through the national accounts, or indirectly, through fiscal policy.
- v. **Reducing fossil fuel subsidies:** Reducing these subsidies can free up funding for sustainable development and promote low carbon growth.
- vi. **Mainstreaming environment into national budgeting processes:** There is potential to mainstream climate change and environment into national budgets and budgeting in order to assess and potentially reallocate spending to achieve national environmental and climate change priorities. Examples include carbon emissions tagging systems in the national budget as developed by the Ministry of Finance in Indonesia, sustainable public procurement and Climate Public Expenditure and Institutional Reviews (CPEIRs) used to assess current environment related expenditures and institutional arrangements.

B. Adopting an integrated approach to SDG implementation

49. A key issue in the post-2015 deliberations is integration. Given that environment was previously the weakest of the three sustainable development pillars, there is a need to ensure that policies reflect the relevance of the environment to the social and economic dimensions of sustainable development. Integrated policies and programmes that contribute towards economic growth and poverty reduction while sustainably managing the natural resource base should be prioritised and are more likely to attract appropriate financing. In practice, integrated policies and programmes could be defined as those that contribute towards achieving multiple SDG targets from two or more SDG goals. Some key policy examples of integrated policies and programmes can be seen in Box 1 below.

Box 1: Examples of integrated policies and programmes

Eradicating extreme poverty and inequality and providing decent employment through an inclusive green economy An integrated approach to addressing poverty challenges should increase the human development index while carefully managing the ecological footprint.

A combination of nationally appropriate green economy measures at macro, meso and microeconomic levels (e.g., macroeconomic reforms, correcting misallocation of capital, increasing trade opportunities for the poor through appropriate policy measures, use of economic instruments, triple bottom line reporting for corporations, use of sustainability standards for supply chains, investing in natural capital, use of sustainability principles for other investments and insurance, etc.) and social policy tools (e.g., safety nets, access to productive assets, to justice and security, and investing in skill-building, education, health and other social sectors) offers a viable pathway for reducing extreme poverty, increasing inclusiveness and addressing environmental and economic risks. **Public and private investments in green and decent jobs will provide the foundation for sustainability.** Today, “green and decent jobs” are one of the fastest growing sectors in the global economy.¹ These include jobs related to nature-based activities, environmental technologies for sanitation, energy, ecological restoration and waste-recycling activities that provide good working conditions, are meaningful and socially protected. But it is also necessary to invest in improving the sustainability of agriculture, fisheries, forestry and animal husbandry so as to protect existing jobs, reduce rural to urban migration, and protect the ecological foundation of our societies.

Mainstreaming the environment into national planning and economic policies and decision making. The UNDP-UNEP Poverty Environment Initiative (PEI) offers policy options to governments on how sustainable use of natural resources can help reduce poverty and maintain economic growth. PEI in Asia Pacific works with nine countries to mainstream pro-poor natural resource management into economic policies, budgeting and decision making to achieve more inclusive green economies. For example in the Philippines, the PEI has been working with the National Government to strengthen laws and provide technical assistance in promoting responsible mining practices, putting in place systems and processes that help manage and utilize financial resources in better ways. PEI supported The Electronic Tax Revenue Assessment and Collection and a computerized system for the Mines and Geoscience Bureau to properly document and monitor fees, taxes and royalties paid by mining companies and other stakeholders in the mining process, as well as promoted mechanisms for their public disclosure providing citizens with access to information about how these funds were reallocated, therefore fostering transparency and accountability in public institutions and processes involved in the management of the environment and natural resources.

Correcting market failures by including ecosystem goods and services. Payments for

¹ UNEP Post-2015 Note No. 4, “Green and decent jobs for poverty eradication”. Available from www.unep.org/post2015/Publications/UNEPPost-2015Note4/tabid/133133/Default.aspx.

ecosystem services (PES) are cost effective instruments to correct the market failures involved where the ecosystem services are ‘public goods’ or where changes in ecosystem services are ‘externalities’ of market production. PES ensures the provision of ecosystem goods and services, providing monetary or in-kind incentives to landholders to fulfil some conditionalities regarding the management of their land. For the beneficiary households, regular and predictable PES payments might represent a significant portion of household income and become part of their risk management strategies. Moreover, there is evidence that households can invest money from PES in subjects covered by other SDG e.g. health and education. The positive effect of some PES schemes on the livelihoods of beneficiaries has been the starting point to explore the potential of PES as a poverty reduction tool a concept that has attracted the attention of donors interested in the pro-poor effects of the payments, not just in their positive environmental impacts. Multi country PES initiatives covering Indonesia, India, Nepal, Viet Nam and Philippines have been implemented, providing inputs to the preparation of several policy documents including the Indonesian National RES Protocol, and the operational document of Law 32/2009 on Environmental Management and Protection, the Indian National Environment Policy, the Philippines Climate Change Act and the 2008 Sustainable Forest Management Act (Leimona et al. 2013).

Reducing Emissions from Deforestation and Forest Degradation (REDD) to combat climate change and improve livelihoods. REDD+ is an effort to reduce emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (COP decision 1/CP.13). It has become increasingly apparent that REDD+ as a NAMA also contributes to sustainable development in the context of climate change. Some countries have launched ambitious climate change and green development action plans, in which REDD+ is a major component of the effort to transform natural resource management and tackle poverty. As a result, there is increasing interest to explore the potential of REDD+ in enhancing livelihoods, overcoming gender barriers and strengthening environmental governance. A global study including 8 Asia Pacific locations [Cambodia (1), China (3), India (1), Papua New Guinea (1), Philippines (2)] suggests that the greatest contributions to poverty alleviation of REDD projects may be through enhancing land tenure, securing access to forest resources, and improving the capacity of local communities to manage forests, beside the evidence that REDDs might provide modest but tangible economic benefits for communities — ranging from jobs to payments to in-kind contributions such as electrification projects or roads (Lawlor et al. 2013)

C. Strengthening science based policy making

50. There is scope for further strengthening and sharing scientific and technical knowledge and capacity of Asia Pacific countries on science related to challenges which are prevalent in the region including rapid urbanization, food and water security, ecosystem services, the vulnerability of coastal communities and ecosystems, contribution of indigenous knowledge, the green and blue economies and mountain ecosystems. An option to consider is the undertaking a regional scientific knowledge gap analysis focused on Asia Pacific priorities and policy requirements in the context of the environment issues in all the SDGs.

D. Strengthening environmental data and data management

51. Relevant national and regional SDG indicators and accompanying metrics need to be developed and available, adequate monitoring protocols and data collection modalities agreed, and sufficient resources mobilized to address data capacity gaps. There is a need to identify and develop a set of environment related national indicators to report against the SDGs and targets that also reflect national MEA commitments where feasible. Undertaking national SDG data assessments to identify nationally relevant potential SDG indicators from existing and new data sources and identify data gaps could

contribute to national SDG readiness and planning. National SDG assessments can also draw on thematic and sectoral indicators supported by national and international development partners including for example UNEP's framework of indicators for Sustainable Consumption and Production for 22 countries in Asia and the Pacific.

E. Mainstreaming SDGs in national planning and governance structures

52. Mainstreaming SDGs into national planning will require initial support with raising awareness in government ministries and identifying the key entry points into development planning process e.g. national development plans, sectoral plans, Ministry work plans etc. To strengthen and develop appropriate national governance structures for SDG implementation and promote accountability there is a need to assess, develop and identify:

- The roles and responsibilities of the key stakeholders for each of the SDGs, targets and indicators;
- The laws, regulations and policies needed to support achieving of SDG targets together with associated financing needs;
- A national reporting structure, most probably National SDG reports, prepared by governments, with the participation of civil society and drawing on technical assistance from development partners e.g. UNEP Live.

53. SDG mainstreaming and governance planning could initially be addressed through national and regional level SDG mainstreaming workshops for national planning officials and other relevant civil society stakeholders.

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