Operationalizing the Environment-Health Nexus in Asia and the Pacific

Opportunities to enhance health, climate change, biodiversity, and food system agendas at national and regional level

Background document for the Interactive Policy dialogue on the Environment-Health Nexus in Asia and the Pacific (14 September 2022)
Co-organized by ESCAP, IISD, FAO, UNEP, and WHO

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1. Purpose of this document

The deterioration of the state of the environment in the Asia-Pacific region negatively impacts human health. There is an urgent need for actors from the health and environment sectors to develop joint agendas and work together to address the interconnected environment-health risks at the national and regional level.

This document provides background information on and makes proposals for operationalizing a One Health approach in the Asia-Pacific, including to address climate change. This work elaborates on the relevance of the environment-health nexus referenced in the 2017 Ministerial Declaration on Environment and Development for Asia and the Pacific. It also builds on regional discussions to date in the context of the Asia-Pacific Regional Forum on Health and Environment (APRFHE), established in 2004 and intended to “create greater synergy among relevant government departments to address environmental and health issues,” comprising regular ministerial and high-level official meetings, thematic working groups, a Scientific Panel and knowledge network. The 2016 Manila Declaration on Health and Environment, endorsed by 36 countries represents the most recent regional position (figure 1).

This document also seeks to contribute to the further elaboration of the One Health Joint Plan of Action at the regional level, with a focus on actions needed at the nexus of environment and health.

The need for an integrated framework has been recognized in various forums, agreements, institutions, and scales across the United Nations over many decades. However, this work has been inhibited by significant gaps in and barriers to individual and organizational capacity to tackle integrated domains or align agendas and resources.

The urgency of strengthening institutional capacity for addressing interlinked environment and health risks is growing. Health and environment crises are increasingly frequent, severe, and costly. For instance, adaptation costs to natural and biological hazards in the Asia-Pacific are estimated to be USD 270 billion annually. Massive socio-economic shocks such as extreme events due to climate change or the COVID-19 pandemic are symptoms of the same governance weakness, namely siloed management approaches and poor integration among sectoral policies. While negative co-costs of environment-health threats are increasing, coherent and expedient policies centered on risk management and delivering co-benefits of nature-based, climate-resilient development are lacking. Delays in aligning agendas are economically and socially unwise.

In resolution 78/1, ESCAP Member States recognized the value of the One Health approach, the human right to a clean, healthy, and sustainable environment, and that the well-being of humanity depends on the

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1 See Preparations for the seventh session of the Committee on Environment and Development at the Ministerial Level, Note by the ESCAP Secretariat, 4 March 2022, ESCAP/EDD/PREP/CED/7/1.
health of nature and the ability to sustainably use, restore and protect ecosystem services. In this decision Member States emphasized the need to scale up integrated investments for resilience and called on ESCAP to take a multisectoral approach. There are opportunities to strengthen support for Member States to expand collaboration across development partners and to harmonize national and regional agendas.

The One Health approach has the potential to mobilize multiple sectors, disciplines, and communities at varying levels of society to improve well-being and tackle environmental threats. At the same time, it can address the collective need for clean water and air, safe and nutritious food and more sustainable development pathways to broadly protect environmental determinants of health.

This document and associated Policy Dialogue intend to provide a space to inform and mobilize action and align agendas at the environment-health nexus in the Asia-Pacific region. With diverse actors at the table, this work intends to invite meaningful consideration of the governance and implementation challenges inhibiting the operationalization of a One Health approach, and to share country experiences on effective enabling environments for multisectoral health governance. The overall goal is to advance effective strategies and identify new opportunities, with a focus on linkages between health and climate change, biodiversity, and food systems.

Figure 1: One Health approach and the policy priorities identified in the Asia-Pacific Regional Forum on Health and Environment’s 2016 Manila Declaration on Health and Environment

2016 Manila Declaration on Health and Environment
Policy Priorities

1. Transboundary air pollution, including short-lived climate pollutants
2. Illegal transboundary shipment and dumping of waste
3. Destruction of coral reefs and marine pollution
4. Antimicrobial resistance, including from unsafe management of healthcare wastes and wastewater, the agriculture sector, and ineffective sanitation, hygiene and infection prevention measures
5. Promoting environment and health impact assessments
6. Enhancing the World Health Organization access to the Global Environment Fund and Green Climate Fund, among others

Figure 1: One Health approach and the policy priorities identified in the Asia-Pacific Regional Forum on Health and Environment’s 2016 Manila Declaration on Health and Environment

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5 May 2022, ESCAP/RES/78/1, [https://www.unescap.org/sites/default/d8files/event-documents/ESCAP_RES_78_1_E.pdf](https://www.unescap.org/sites/default/d8files/event-documents/ESCAP_RES_78_1_E.pdf)
2. Rationale: the growing environment-health footprint in the Asia-Pacific

The evidence of the strain of the environment-health footprint in the Asia-Pacific region is extensively documented. It is estimated that almost one quarter of the global environmental burden of disease arises from 14 Southeast and East Asian countries alone. Direct health risks and exacerbated health conditions arise from environmental degradation and climate change through the impacts of extreme weather events, reduced air quality, changes in the risks and spread of infectious diseases, habitat encroachment, land use changes, biodiversity loss, and unsafe and insecure food and water, among many others (figure 2). These negative trends are expected to increase due to a complex combination of ecological tipping points across ecosystems, rapid growth in regional population and urbanization, unsustainable consumption and production patterns and communities that are increasingly aged and suffering more chronic and mental health diseases.

Furthermore, regional footprints for water, energy, fine particulate matter, and greenhouse gas emissions are not only growing, but increasingly shifted from higher-income economies to lower-income economies. An outsourced health-environment footprint impacts long-term regional competitiveness and sustainability and puts countries in precarious positions and in poor health.

The costs to national and regional health systems are both heavy, and avoidable. For example, in some South and East Asian countries, just the cost of air pollution is more than 7 per cent of gross domestic product. Annual costs and lost savings resulting from just some impacts of climate change, biodiversity loss, and current food system design in the Asia-Pacific are estimated to reach over USD 7 trillion per year in the next decades. The most-impacted groups are often marginalized, vulnerable populations, including children, women, the elderly and those with pre-existing conditions, for whom environment-related health impacts can be debilitating and impoverishing.

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6 UN ESCAP. (4 March 2022). Protecting our common environment in Asia and the Pacific. [Note by the secretariat ESCAP/EDD/PREP/CED7/1] Preparatory process for the 7th session of the Committee on Environment and Development at the Ministerial Level, 18 March 2022. Bangkok.
7 WHO Regional Office for the Western Pacific. (2018). Environmental Health in Selected Asian Countries. https://iris.wpro.who.int/handle/10665.1/14203. The 14 countries are Brunei Darussalam, Cambodia, China, Indonesia, Japan, the Lao People’s Democratic Republic, Malaysia, Mongolia, Myanmar, the Philippines, the Republic of Korea, Singapore, Thailand and Viet Nam. The percentage is expected to increase if the whole Asia-Pacific region is taken into consideration.
10 The annual cost of natural and biological hazards in the Asia-Pacific is USD 780 billion (UN ESCAP Risk and Resilience Portal, https://rrp.unescap.org/economic-impacts/economic-impact); Malnutrition in all its forms, which is linked to the design and security of the food system, if addressed, would lead to gains of USD 6 trillion per year by 2050, based on percent global population of the region (calculated based on 2021 Global Nutrition Report: The state of global nutrition. Bristol, UK: Development Initiatives); As South Asia relies on pollinated crops, biodiversity loss and decline in ecosystem integrity could jeopardize USD 320 billion per year in just the agricultural sector of this sub-region based on 2030 estimations of partial ecosystem collapse (World Bank 2021 The Economic Case for Nature report, https://openknowledge.worldbank.org/bitstream/handle/10986/35882/A-Global-Earth-Economy-Model-to-Assess-Development-Policy-Pathways.pdf)
Given its importance, the environment-health nexus as a theme is rising in the political agenda of the Asia-Pacific. This includes initiatives from the Asia-Pacific One Health Quadripartite (FAO, WOAH, WHO, and UNEP) which is developing a regional action framework. The framework draws on the global plan of action for One Health, which seeks to strengthen capacity to address complex multidimensional health risks. Subregional cooperation secretariats such as Association of Southeast Asian Nations (ASEAN) have established relevant strategies and institutional mechanisms for coordination, while at the national level, some Asia-Pacific countries have moved ahead to capitalize on the policy synergies presented by the environment-health nexus. Multilateral environmental agreements such as the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change also present important opportunities to strengthen action on public and global health.

3. Operationalizing the environment-health nexus in the Asia-Pacific

An integrated and unifying approach to the environment-health nexus can guide impactful, efficient national and regional policy responses to converging health and environmental risks. Inclusive governance is a defining feature for operationalizing One Health, including addressing climate change. Prior to 2021, the One Health definition centered on infectious disease (food safety, zoonoses, microbiome diversity, and

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antibiotic resistance) and three sectors (human medicine, veterinary medicine, and livestock agriculture). To effectively and efficiently address existing and emerging environment-health risks in the region, and worldwide, countries will need to expand systems-thinking in both the environment and health domains, in line with the 2021 One Health definition.

**Box 1: One Health Definition (as of 2021)**

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of humans, animals, plants and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.

3.1 Enhance multisectoral health governance including the One Health approach

Despite One Health mainstreaming at high levels, there are opportunities to increase its cohesiveness. Notably, the environmental dimension needs to be strengthened and environmental determinants better understood by other sectors.

Non-health sectors play a key role in the effectiveness of many public and global health outcomes. Multisectoral health governance is the essential strategy for sharing responsibility for healthy people and planet, and to ensuring health equity. It is considered the framework for addressing the role of health – as a precondition, an outcome, and indicator of sustainable development - in achieving the Sustainable Development Goals. When optimized, multisectoral health governance aims to prevent unintended negative consequences on health and well-being from policies and practices in non-health sectors.

At the same time, health conditions, the health sector, and the health economy are affected by environmental degradation. Health professionals and health infrastructure need to be risk informed, and health systems should be sufficiently resilient to increasing and unpredictable threats. For instance, it is estimated that 10% of hospitals in many countries, and more than 20% in India, Vietnam, Myanmar, and Nepal, could be serving patients from biological and other health hazards related to climate change.

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12 For reference, several examples of the historical concept of One Health can be found here: https://www.onehealthcommission.org/en/resources__services/one_health_strategic_action_plans/
A foundation of work on multisectoral health governance has been done in the health sector through the Health in All Policies (HiAP) approach, which is largely focused on human health. A One Health approach should build on this foundation while incorporating the animal, plant, and environmental dimensions.

**Box 2: Health in All Policies definition:**

“Health in All Policies is an approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity. It improves accountability of policymakers for health impacts at all levels of policy making. It includes an emphasis on the consequences of public policies on health systems, determinants of health, and well-being.”

The Health in All Policies Framework for Country Action (2014) suggests supportive structures and processes for collaboration should include:

- 1) a leading ministry, office, or agency
- 2) vertical and/or horizontal integration
- 3) a supportive committee focused on intersectoral health, and
- 4) links to existing agendas and normative governance, legal, financial, rights-based, or international frameworks, and accountability mechanisms.

Other essential elements to action Health in All Policies are integrated assessments, shared indicators, and implementation science.

A proactive, preventative One Health model should address environment-health risks comprehensively, for short-term and long-term scenarios. Such a model should rely on baseline cross-sectoral collaboration and be agile enough to address targeted episodic risks, such as natural hazards or a pandemic. In this model, episodic environmental threats would trigger a specific prepared health response from public health, and preventative and emergency medicine professionals (figure 3).

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A review of national health plans, national biodiversity strategies, and climate change adaptation plans in over 12 Asia and Pacific countries indicates that multisectoral approaches are well acknowledged. However, operationalizing multisectoral governance is still in its infancy for most countries.

Case Studies:

An exceptional model of multisectoral health governance at the national level is the 1993 Affordable Health Care plan of Singapore. A cornerstone to the health system is long-standing, cross-ministerial functioning of the government, which is a design aimed at minimizing costs by preventing disease and addressing the determinants of health. The model orients around building health into all aspects of urban planning, ongoing monthly ministerial meetings, and a norm of cooperation on joint issues. Clean water, proper sanitation services, clean environment, good nutrition, and health education are all areas addressed through joint action.

The Republic of Korea’s Health Plan 2030 also strongly highlights Health in All Policies and multisectoral governance. However, challenges are noted in implementation across ministries, leading to the Republic

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of Korea’s recommendation for clear funding lines and secure links between programme elements and the National Health Promotion Fund.\textsuperscript{22}

Interesting advancements on multisectoral health governance are also evident in national environmental policies. For example, the \textit{Philippine Biodiversity Strategy and Action Plan, 2015-2028} uses a framework oriented toward a “human well-being target” that includes improved health, avoidance of natural disasters, and biodiversity-related job creation. Implementation of the Plan also relies on broad interagency collaboration including with the department of health.

\textbf{Thailand’s 20-Year National Strategic Plan for Public Health, 2017-2036} weaves the environment throughout its vision, principles, objectives, and implementation. It is addressing Health in All Policies by establishing a district health board charged with promoting multi-sectoral collaboration and engagement from all sectors having an impact on health and development, and with enforcing relevant local legislations and regulations.

As needed, WHO Country Cooperation Strategies can fill gaps in multisectoral health governance. For instance, \textit{India’s WHO Country Cooperation Strategy, 2019-2023} prioritizes environmental gap areas, including the environmental determinants of health, inter-ministerial collaboration, and evidence-building.\textsuperscript{23}

\section*{3.2 Mainstream the environment-health nexus in public policies and strengthen policy coherence}

National plans on health, climate change, biodiversity, and food systems present opportunities to mainstream the environment-health nexus. These plans are the vehicles for implementing multilateral environmental agreements, achieving the 2030 Agenda, and operationalizing One Health at country-level.

Broad alignment on the environmental determinants of health across national plans would indicate shared responsibility at the environment-health nexus. However, this has not been done systemically across the region in health, biodiversity, and climate change plans. There are opportunities to harmonize and synergize common terminology, strategic priorities, metrics or collaboration across ministries. Importantly, environmental policymaking should align with health objectives at local, national, regional and global levels.\textsuperscript{24}

Distinct and context-specific environment-health risks should be identified and reflected in national environment and health plans. However, episodic environmental threats, such as zoonoses or natural hazards, often appear as add-on components to national health and environment strategies rather than embedded in standing, cohesive plans on the environmental determinants of health. This range of policy

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inconsistencies and episodic approaches inhibit efficient, cost-effective, and expedient anticipatory action on environment-health risks.

**Box 3: Improving categorization of environmental determinants of health in national plans**

Within and across plans, and many governance reports, environmental determinants of health may fall outside a “health” category. This organization is confusing and inhibits shared responsibility. For example, water, sanitation and hygiene – a fundamental component to health and disease prevention - is often separate from “health.” This is also the case for food, which is commonly apart from “health.” In some cases, this can lead to very significant separation of objectives and outcomes, such as de-coupling food production from nutritional outcomes. Moreover, categorization influences how health is interpreted, valued, measured, and planned. Fragmented categorization is a barrier to integrated data and impact assessments, and cohesive funding. Improved categorization is a useful starting point for discussion on interministerial work and operationalizing One Health. See, for example, the format of the IPCC’s Climate Change Impacts and Risks for Asia factsheet which segregates “health,” “water,” and “food.”

3.2.1 Health strategies and plans

There is significant room to develop environmental determinants of health in national plans with context-specific detail. Across Asia-Pacific countries, water and food are determinants referenced most often, but typically with limited explanation of associated environmental degradation or health risks. Several plans list air pollution, without specifying pollutants of concern or framing them around short- and/or long-term exposures. While pollution exposure and climate change are increasingly acknowledged as significant health threats, other environmental factors including biodiversity loss, wildlife hazards, and ecosystem degradation are not sufficiently addressed in national health plans (figure 4).

It can be useful to identify a role for the environmental sector in the health strategy to enhance collaboration and shared responsibility. For example, Vietnam recognizes a role and responsibility for the ministry of environment to develop solutions to both tackle environmental pollution and its negative health outcomes and to also protect the environment from health sector activities. Further, Vietnam charges the ministry of agriculture with addressing food safety.

National health strategies should also reference concurrent environmental plans such as national adaptation plans or biodiversity strategies to ensure policy coherence. This has not been done systemically across the region.

Environmental equity needs to be addressed. The health-threatening aspects of environmental degradation are disproportionately affecting low-income, minority, and marginalized communities while health supporting and protecting elements, are generally more available and accessible in higher income areas.

National health strategies and plans provide opportunities to steer implementation at the environment-health nexus. For instance, using the health sector as communicators of environmental threats is considered a way to optimize risk reduction, such as in the case of doctors advising on heat health risks. This is not currently maximized.

How is “environment” taken up in national health strategies in Asia and the Pacific?

Based on a review of 13 countries including Australia, Cambodia, China, Fiji, India, Indonesia, Japan, Philippines, Singapore, Solomon Islands, South Korea, Thailand, and Vietnam.

- 10 countries reference the natural environment
- Only 6 countries discussed environmental determinants of health or ecological drivers of health risks (while most plans referenced the social determinants of health)
- 10 countries mention climate change
- Only 2 countries mention biodiversity (Australia and Thailand)
- Only 1 country mentions ecosystems (Fiji)

Figure 4: Reference to environment in national health strategies in selected Asia-Pacific countries

Case studies:


Thailand’s 20-Year National Strategic Plan for Public Health 2017-2036 references both social and at least 12 environmental determinants, and notes these determinants are becoming more diverse – which is a meaningful acknowledgement of the health threats posed by environmental degradation.

Fiji complements its national health strategy with a Wellness plan that defines wellness in seven dimensions, including “spiritual” and “environmental” wellness. Environmental wellness is “an understanding that the environment contributes to wellness.”

Some countries identify and highlight the importance of biodiversity and ecosystems in health strategies without using those terms. Vietnam’s National Strategy to Protect, Care, and Improve Public Health

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During 2011-2020 and the Orientation Towards 2030, includes a goal to enhance production of eastern and herbal medicines, develop traditional medicine and pharmacy in hospitals as well as models for combining traditional treatment with modern medicine. **Thailand aims to develop its traditional herbal medicine industry for the purpose of health security, health economy, and cultural identity.** Its plan incorporates Thai traditional medicine into every aspect of healthcare across districts with a goal to make herbal medicine a first-line drug at every level. In its objectives this is tied to economic growth with a target to increase the herbal medicine market economy value from USD 82 million to USD 82 billion. **Strengthening the herbal medicine industry increases the value of biodiversity and ecosystem conservation, stewardship, and associated knowledge.**

### 3.2.2 Biodiversity strategies and plans

There is significant room to integrate health into national biodiversity strategies and action plans (NBSAPs) in Asia and the Pacific (figure 5). 28 The Convention on Biological Diversity began promoting inclusion of health in national biodiversity strategies and action plans in 2000 when it invited parties to address interrelated socio-economic, cultural, and human health aspects in impact assessments (Decision V/18). In 2010, the Convention specifically called on parties to integrate health into national biodiversity strategies and action plans (Decision X/32). In 2018, the Convention invited integration of One Health policies, plans or projects, and other holistic approaches into national biodiversity strategies and action plans (Decision 14/4).

In national implementation of the Convention, governments have discretion to strengthen the national biodiversity strategy and action plan with context-specific national targets, such as on health. Generally, health components can be incorporated into a national biodiversity strategy and action plan within the outline of the value of biodiversity and ecosystem services at country-level and its contribution to human well-being, poverty reduction, and socio-economic development. It is important that these guidance documents are then integrated into cross-sectoral planning and implementation. 29 **Health ministries should be engaged in such processes.**

Many national biodiversity strategies require an update, which provides an opportunity to align them with a One Health approach. Most of the plans reviewed were created prior to 2016, with the most recent published in 2020. The 15th United Nations Biodiversity Conference in December 2022 aims to adopt the post-2020 global biodiversity framework which will outline new global biodiversity targets for 2050. This provides a new opportunity for countries to update their biodiversity strategies and plans in line with One Health, the global targets, and national public health priorities.

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**How is “health” taken up in national biodiversity strategies in Asia and the Pacific?**

Based on a review of the national biodiversity strategies and action plans (NBSAPs) submitted by 11 countries including Australia, China, Fiji, India, Indonesia, Japan, Malaysia, Papua New Guinea, Philippines, Singapore, and Thailand.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>National biodiversity targets related to health and wellbeing</td>
<td>7 countries have at least one national biodiversity target related to health and wellbeing but only 5 of those identified working with a ministry of health.</td>
</tr>
<tr>
<td>Environmental or social determinants of health in the text</td>
<td>None of the countries reflected the environmental or social determinants of health in the text.</td>
</tr>
<tr>
<td>Integrated environment-health impact assessments as a planning tool</td>
<td>None of the countries mentioned integrated environment-health impact assessments as a planning tool.</td>
</tr>
<tr>
<td>Pollution</td>
<td>All countries discussed pollution: 10 mentioned marine pollution; 4 mentioned air pollution; and 1 mentioned endocrine disrupting chemicals (Japan).</td>
</tr>
<tr>
<td>Zoonoses</td>
<td>2 countries discussed zoonoses; 1 referenced water-borne infectious disease, and 3 discussed microorganisms in the context of invasive alien species.</td>
</tr>
<tr>
<td>Link to mental health</td>
<td>Only 1 country referenced the link of biodiversity to mental health, although two others eluded to it in the text.</td>
</tr>
<tr>
<td>“WASH” and sanitation</td>
<td>Only 1 country referenced “WASH” and another 1 mentioned sanitation, while all countries discussed water quality.</td>
</tr>
<tr>
<td>Healthy or balanced diets</td>
<td>Only 2 countries referenced healthy or balanced diets, and only 1 referenced nutrition.</td>
</tr>
</tbody>
</table>

**Figure 5: Reference to health in national biodiversity strategies and action plans (NBSAPs) in selected Asia-Pacific countries**

### Case studies:

**Australia’s Strategy for Nature 2019-2030** identifies two progress measures for increasing the understanding of the value of nature, including deepening understanding of nature to human health and quantifying natural capital and its benefits, such as through environmental-economic accounts.

**Japan’s National Biodiversity Strategy 2012-2020** does not have a general health target, but its discussion of health and well-being includes a balanced relationship between nature and humans and nature for the healthy growth of children.

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30 Countries were selected based on having either comparatively high megadiversity (Indonesia, Papua New Guinea, Philippines), high income per capita (China, Japan, Singapore), significant dependency on pollinators for food crops (India), significant dependency on coastal tourism (Fiji), or high rates of deforestation (Thailand, Malaysia). Australia was added to compare alongside its environmentally robust health strategy.
Singapore’s National Biodiversity Strategy and Action Plan, 2011-2030 provides a good example of alignment with a global health guideline. It sets air pollution targets for fine particulate matter and sulfur dioxide by concentration and 24-hour and annual exposure durations that reflect the World Health Organization 2005 Air Quality Guidelines. This could be harmonized across health and climate strategies.

3.2.3 Food strategies and plans

Food security, food safety and healthy nutrition are priorities for health system adaptation to environmental and socioeconomic hazards in the Asia-Pacific. The FAO sees nutrition and diet equity as a starting point for health equity in this region. Resilient, food-safe, and nourished communities with sustainable diets, need a One Health approach that encompasses and informs several national planning tools related to food. On the other hand, One Health will not be realized without a comprehensive approach to environment-health challenges and risks associated to the food system. Governance at the environment-health nexus of food systems must harmonize a spectrum of converging needs. See figure 6.

Figure 6: Linking national objectives and outcomes at the environment-health nexus of food systems

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Food system transformation is a multisectoral governance challenge and is heavily influenced by overlapping policies on biodiversity, climate change, and health. **Many people eat unhealthy, unsafe, low diversity, carbon-intensive diets.** Dietary options are also increasingly de-coupled from local cultural traditions, which, in addition to impacting nutrition also negatively impacts well-being through lost cultural identity. In 2019, 1.9 billion people in Asia and the Pacific were unable to afford a healthy diet, while this number has likely further increased as an outcome of the COVID-19 pandemic.\(^{33}\) Cross sectoral collaboration and alignment is essential to address the determinants of safe, healthy and sustainable diets, and the negative impacts of the current food system on the environment and socio-economic resilience.

Joint action is needed to align policies on ecosystem management, food supply and value chains, food environments, and consumer behavior (figure 7). This is not done systematically across the region or within the health sector. Though, individually, a number of health and environment plans reference the environment-health nexus of food, many do not expand into action items to address context-specific environment-health risks or to safeguard priorities.

There is considerable opportunity to expand and deepen comprehensive considerations of food systems in national biodiversity strategies. Loss of biodiversity from the food system influences food security, and agrobiodiversity loss is considered a determinant of malnutrition. A Convention on Biological Diversity decision in 2006 urged integration of biodiversity, food, and nutrition considerations into national biodiversity strategies and action plans. However, despite long-standing efforts, significant gaps remain at all levels (figure 8). The FAO’s Framework for Action on Biodiversity for Food and Agriculture (2022) notes the need for cross-sectoral cooperation mechanisms to improve management of biodiversity for food and

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agriculture and the inadequate links between ministries, between researchers and policy-makers and between policy-makers and stakeholders along the value chain.36

**Health plans should promote sustainable ecosystems to ensure food security.** There is room to expand on the environmental drivers of malnutrition in health and non-communicable disease planning and identify solutions that offer co-benefits to biodiversity and nutrition, including by promoting environmentally-sound management of marine ecosystems and aquatic resources, agroecology and regenerative practices.37 It also includes promoting a shift in consumer demand for sustainable and healthy diets, such as for food crops and products that maintain biodiversity and are resilient to climate change.38 This will align with trends in public health to increase focus on prevention rather than only disease management, and to promote healthy food environments.

**Health governance would benefit from stronger linkages between biosafety risks of environmental conditions and nutritional disease outcomes at population or community level.** There is room to develop interlinkages between the projections for climate change and food systems. For example, undernutrition is expected to increase in China and India as a result of changes in fungal pathogens, locust populations, and weather-related water impacts on different crops39, which increases the risk for micronutrient deficiencies related to decreased food supply. However, specific deficiencies are often not identified in these climate projections, which limits public health planning.

**Health National Adaptation Plans (HNAPs) can be useful vehicles for integrating and expanding on the links between food and environmental risks and identifying response actions.** These plans, which are reviewed by a ministry of health, can establish interministerial monitoring of climate-sensitive risks, coordinate management of environmental determinants of health, and outline targeted actions and nature-based solutions, such as climate-smart agricultural practices. A recent global analysis indicates significant room to improve organization of nutritional health in adaptation plans, including bridging discussions on health to those on food, and detailing dietary contributions of non-communicable disease references.40

**The food dimension of nationally determined contributions can be significantly expanded to support both mitigation, adaptation and co-benefits to the health sector.** Climate change impacts the production (including nutrient content), availability, and cost of food. Elements that could be included are agricultural emissions for food consumed as well as food loss and waste, reporting on diets and nutritional outcomes, agroecological and regenerative approaches to land management, and alignment to public health planning.

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Sub-national investment in risk management of the animal-human health nexus (zoonoses point of source) is cost-effective but underdeveloped.41 Risk management guidelines for the infectious disease component to food systems (food safety, zoonotic disease, antimicrobial resistance) center on coordinated surveillance and response and can be used as a framework for broader food system action. Existing strategies promote joint risk assessment, measurement, communication, prevention/detection/control, surveillance, and advisories, as well as joint-ministerial trainings.

Connections should be strengthened between existing initiatives to mainstream One Health across the food system and the 2030 Agenda. A de-siloed approach to food systems should be carried through across national health, biodiversity, and climate change plans and through national policies on agriculture, wildlife management, ecosystem management, as well as in food trade. More effort is needed to enhance knowledge, integrated indicators, and stakeholder engagement on interlinkages between biodiversity and food security, nutrition and health, and cultural and social use.42

Case studies:

Japan’s National Biodiversity Strategy 2012-2020 emphasizes the link between a healthy hydrologic cycle and daily diet, as well between biodiversity and food systems. The plan highlights that “seafood has been a precious foodstuff which supported the diet of Japanese people. The ocean, seaweed beds and tidal flats in the coastal areas, rivers and lakes bring us blessings of nature, including numerous kinds of fish, shellfish, squid, octopi and seaweed.”

India’s National Health Policy (2017) recognizes that dietary diversity is the most desired means and long-term solution for addressing malnutrition and micronutrient deficiencies, while however noting health sector reliance on short- and medium-term fortification and nutrient supplementation for public health programming.

Bangladesh’s Health National Adaptation Plan describes the breakdown of its food system in terms of ocean acidification, temperature increases, freshwater decreases, and rainfall changes. These are linked to specific declines in fish stocks and agricultural production which are then linked to food insecurity, food safety, or a form of malnutrition.43

Australia’s National Preventive Health Strategy 2021-2030 (2021) lists “food environments” as an environmental determinant of health, and notes that these can be enhanced in the built environment by increasing proximity to supermarkets, enhancing access to urban agriculture and community gardens, and strengthening access to affordable, nutritious fresh food.

How are “food-related health issues” included in national environmental strategies in Asia and the Pacific?

**National Biodiversity Strategies and Action Plans (NBSAPs)**
- All 11 NBSAPs reviewed assessed “food” in their national context but only two plans referenced healthy or balanced diets, and only one referenced “nutrition.”

**National Adaptation Plans (NAPs)**
- 12 countries in the Asia-Pacific emphasize nutrition and food security as priority areas for health sector resilience to biological and other natural hazards. Yet, globally, less than 8 NAPs specify actions to adapt to these risks.

**Nationally Determined Contributions (NDCs)**
- As of 2019, 129 countries around the world included health concerns in their NDCs, under which vector-borne disease and food and nutrition insecurity were areas of greatest concern, 27 countries highlighted food and nutrition insecurity.

**Figure 8: Reference to food-related health issues in national environmental strategies in Asia and the Pacific**

3.2.4 Climate strategies and plans

Reporting frameworks under the United Nations Framework Convention on Climate Change, such as nationally determined contributions (Box 4), National Adaptation Plans, and Adaptation Communications have provided an opportunity for inter-agency coordination and policy coherence that has led to well-developed integration of climate change and health in the region (figure 9).

**Box 4: Case studies on nationally determined contributions**

China’s nationally determined contribution includes a section on public health which includes an impact assessment on public health that “takes into account the demand of traditional climate services and various industries including health” for responding to climate change. It also identifies the role of the National Health Commission to 1) compile technical guidelines on climate change on air pollution, emergencies from natural disasters, and infectious diseases in flood hotspots, and 2) outline research and guidelines on health risk assessment and adaptation.

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45 WHO. (2020) Health in National Adaptation Plans. [https://www.who.int/publications/i/item/9789240023604](https://www.who.int/publications/i/item/9789240023604)

46 WHO. (2020). Health in National Determined Contributions (NDCs): a WHO review. [https://www.who.int/publications/i/item/9789240000674](https://www.who.int/publications/i/item/9789240000674)

Cambodia’s updated nationally determined contribution describes a detailed range of health impacts, including specific vector-borne diseases (malaria), water-borne diseases, heat-related diseases and undernutrition. It also specifies actions targeting women, youth, the elderly and Indigenous Peoples.

India’s nationally determined contribution lists a range of pollution abatement measures that encompass a number of environmental determinants of health on air, food and water quality. For example, it lists common effluent treatment plants, fly ash utilization policy, zero liquid discharge, national air quality index, and municipal solid waste management.

Health National Adaptation Plans are a supplement to National Adaptation Plans and are an important part of multisectoral health governance (Box 5). These Plans invite inter-ministerial capacity building and collaboration and should be developed across the Asia-Pacific region.

Adaptation plans should incorporate a wide variety of climate-sensitive health risks across a spectrum of health and health sector infrastructure categories. However, the comprehensiveness of the approach to health in adaptation is variable in the region.

Box 5: Health National Adaptation Plans

These Plans are tools used by the WHO to support implementation of the United Nations Framework Convention on Climate Change objectives on adaptation and for creating a climate-resilient health sector, and can be used in party-driven work under the Convention. A notable component of these Plans is that they are reviewed by a ministry of health.

Stand-alone Health National Adaptation Plans should reference:

1) leadership, governance and enabling environments
2) cross-sectoral coordination and policy coherence through mainstreaming of health into mitigation and adaptation planning
3) comprehensive coverage of climate-sensitive health risks
4) comprehensive adaptation options to face climate-sensitive health risks
5) resourcing
6) monitoring, review and evaluation.

Vulnerability and adaptation assessments (V&As) are important components to addressing context-specific health equity and avoiding maladaptation and can be included in these Plans.

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48 Cambodia’s updated Nationally Determined Contribution (2020), at https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01787-6/fulltext#seccestitle10

Mitigation and adaptation strategies should align with multisectoral health governance as well as principles of equity, justice, poverty reduction, gender equality, and planetary health which are fundamental to climate-resilient development.50

**Box 6: Case study on adaptation**

A good example of the integration of the health sector into adaptation planning is Fiji’s Climate Change and Health Strategic Action Plan 2016-2020. Its objectives include scaling-up multi-sectoral public health prevention programmes through health-related policies in other sectors such as environment, municipalities, occupational health, transport, water supply and housing. The Plan also aims to ensure joint monitoring of environmental exposures using regulatory standards and management of health risks and to facilitate intersectoral information sharing for management of environmental health determinants.

Fiji’s National Adaptation Plan (2018) focuses on shifting existing and future development planning towards a holistic approach to climate resilience through 160 adaptation measures, and efforts to achieve Sustainable Development Goal 3 (health and well-being). The Plan incorporates ecosystem-based adaptation as an ecological approach to climate change to protect biodiversity, food and water systems, and to increase buffer zones against extreme weather events.

Climate change and health country profiles can help create baseline assessments of multisectoral governance on climate change and health. For instance, the Solomon Islands, Tuvalu, and Vanuatu profiles (2020) provide a status report on hazard projections and vulnerability and adaptation assessment, national planning and intersectoral collaboration, integrated risk monitoring and early warning and emergency preparedness, and international climate finance and funding challenges.

Formal, inter-ministerial agreements with the ministry of health can enhance and mobilize climate action. This includes agreements between ministries of health and agriculture, as well as between energy, electricity, transport, water, sanitation, and hygiene, and social services. For example, Vanuatu has a formal agreement with ministries of agriculture, water, sanitation, and hygiene, and electricity. Tuvalu has an agreement with water, sanitation, and hygiene.

Identifying a lead agency is needed in both health and climate domains to improve implementation. In some cases, ministries of environment are taking the lead on multisectoral climate-health governance. For example, the environment ministry of Japan is addressing heat stroke by raising awareness of prevention and handling methods, and providing cross-sector information on heat illness risks to departments of education, health, construction, agriculture, forestry, and fisheries and sports by operating a “Heat Stroke Alert” system nation-wide.51

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3.2.5 Nature-based solutions

Nature is health’s vital support system, providing supporting services, provisional services, regulating services and cultural services fundamental to health and wellbeing\(^5^{3}\) (figure 10).

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Figure 10: Nature’s benefits for health and well-being (adapted from WHO)\textsuperscript{54}

‘Nature-based development\textsuperscript{55} is a way to balance objectives and positive outcomes across social, environmental, and economic dimensions. Reconciling growth targets and environmental targets is a challenge that inhibits achievement of the 2030 Agenda.\textsuperscript{56} But identifying co-benefits is a way to bridge these domains and could offer a way to operationalize One Health. To this effect, nature-based solutions, which target efficiency gaps in the built environment, are rising on agendas across intergovernmental negotiations and United Nations institutions.\textsuperscript{57}

Box 7: Nature-based Solutions Definition

“Nature-based Solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.

Nature-based Solutions address societal challenges through the protection, sustainable management and restoration of both natural and modified ecosystems, benefitting both biodiversity and human well-being. Nature-based Solutions are underpinned by benefits that flow from healthy ecosystems. They target major challenges like climate change, disaster risk reduction, food and water security, biodiversity loss and human health, and are critical to sustainable economic development.\textsuperscript{58}

Nature-based solutions can be tools of multisectoral health governance and should address health-related ecosystem services. They can support effective actions on climate and health, biodiversity and health, food system transformation, and urban development. Well-designed, they can align with the Geneva Charter for Wellbeing by embodying “investments that integrate planetary, societal, community and individual health and well-being, as well as changes in social structures to support people to take control of their lives and health.”\textsuperscript{59}

Nature-based solutions should be mainstreamed and harmonized across national environment and health plans. Cross-sector coordination will be important to avoid maladaptation and exacerbation of inequities.

Nature-based Solutions focus on enhancing underutilized elements and functions of part or whole ecosystems. These actions aim to manage risks of and from natural hazards, extreme weather, and improve water availability and quality and enhance food security. Examples include 1) strategic application of diverse species for specific needs, such as trees in urban areas or salinity-tolerant seeds in flood zones, 2) support for ecosystem integrity in vulnerable areas, such as coasts, or 3) promoting specific ecosystem services, such as clean water. There are other indirect connections between nature-based solutions and wellbeing, such as promoting healthy habitats for pollinators upon whom we largely depend for crops containing essential dietary vitamins.\textsuperscript{60} Nature-based solutions also can minimize production costs, such as using agrobiodiversity to reduce the need to apply chemical inputs to soils, and they also support traditional knowledge and localized community involvement.

\textsuperscript{58} IUCN website, https://www.iucn.org/our-work/nature-based-solutions
3.3 Integrate environment and health data assessment and information management

Environment-health risk mapping is needed to build a shock-responsive and shock-prepared society which means major investment in data is needed.

**Significant opportunity exists to mainstream integrated environment-health impact assessments.** Despite long-standing calls for integrating environment-health impact assessments over the last decades, significant gaps remain. These assessments are needed to inform and improve evidence-based national strategies, and to harmonize party-driven work required across different multilateral environmental agreements. This data is also essential to rapid response to environment-health threats, such as emerging zoonotic pathogens, heat waves, and air pollutant levels. Increased understanding of the environmental burden of disease will strengthen policy decisions and action.

**Innovation and investment in measurement and monitoring of the social and environmental determinants of health are needed.** Accurate, timely, comprehensive local data collection remains a massive challenge that inhibits achievement of the 2030 Agenda, and its health-related goals and contributes to significant variability in reporting on health across the region.

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There is also a great need to build capacity for managing and interpreting information on the environmental determinants of health, building from the decades of work done on the social determinants of health. Environment-health issues invite diverse interpretations, valuation methods, and qualitative and quantitative measures, including across diverse knowledge systems, making it difficult to harmonize and compare information across borders and aggregate analyses at the regional or global level. Even when monetary and non-monetary value may be significant, this variability makes generalization of value difficult.66

Ecosystem services are environmental determinants of health and health equity, and these ideas should be integrated (figure 10). Ecosystem services underpin economic development and are the focus of assessment in national environmental planning, but also need to be reflected in health planning.

Regional institutions can facilitate country inputs into the Quadripartite Global One Health Intelligence System (GOHIS),67 which aims to reduce environment-health threats by linking and expanding existing information and alert networks and systems into one framework. An optimal intelligence framework will be based on robust national information that is sector-specific, reliable, transparent, obtained in close-to-real time, and delivered in a timely way. It should assist in the identification of emerging threats, assessing the probability and character of a threat, supporting identification of measures to mitigate risk, and facilitate comprehensive data sharing.

Box 8: Spotlight on integrated data management

India is tackling data management at the environment-health nexus in multiple dimensions. Its National Biodiversity Action Plan (2014) lists a target for enumerating and identifying safeguards for ecosystem services, especially those relating to water, human health, livelihoods and wellbeing. The Plan has impressive details, such as on pollution. Most countries reference pollution in their plans, but India stands out by identifying 8 sub-types across soil, air, and water ecosystems and urban environments. In addition, India’s WHO Country Cooperation Strategy supports surveillance mechanisms on the environmental determinants of health such as air pollution, data collection on climate-sensitive disease, and a digital health information platform that integrates non-communicable disease and environmental risk factors.

4. Enabling factors for a One Health approach

The health risks of environmental degradation are the result of a broken human relationship with nature. This is blamed on a combination of institutional (governance), structural (unsustainable economy), and

behavioral (unsustainable lifestyles, consumption and production) weaknesses.\textsuperscript{68} Institutional weaknesses - i.e., weak enforcement of existing policies, siloes in government, and lack of joint action or sense of joint responsibility – are significant barriers to adopting Health in All Policies and One Health approaches. Additional reported challenges to operationalizing One Health include difficulties adopting new conceptual thinking, lack of openness to collaboration, integrating governance at scale particularly for rapid response, long-lasting research capacity, and the need for more investment in the science-policy interface and funding frameworks.\textsuperscript{69}

Enabling factors to support good governance at the environment-health nexus include: a rights-based approach, stakeholder engagement, sustainable finance, and enhanced regional cooperation.

4.1 Promote a human rights-based approach to the environment

The United Nations General Assembly’s recent recognition of the human right to a clean, healthy and sustainable environment (A/RES/76/300) consolidates the legal foundation for the environment-health nexus. This, along with the right to water and to food, is anticipated to accelerate environment-health integration across society and sectors to pave the way for a more coherent approach to address the environmental determinants of health and to include health in all policies. The resolution also affirms that the promotion of the right to a healthy environment requires full implementation of all multilateral environmental agreements, meaning the impact of a rights-based approach can address policies at multiple scales.

Policy, planning and regulatory frameworks in the Asia-Pacific should be assessed for gaps or inconsistencies with regards to the right to a healthy environment and to their coherence and integration with health objectives.

Case studies:

Several Asia-Pacific countries, including China,\textsuperscript{70} Cambodia, Fiji,\textsuperscript{71} Indonesia\textsuperscript{72} and Thailand,\textsuperscript{73} acknowledge the right to a healthy environment as a human right, however, the degree of implementation of this concept is unclear.

Fiji’s Climate Change Act, 2021 recognizes the rights: to a clean and healthy environment, to adequate food and water, to health, of children and persons with disabilities, to housing and sanitation and to


\textsuperscript{73} Section 43 (2) Thailand’s Constitution of 2017, at https://www.constituteproject.org/constitution/Thailand_2017.pdf?lang=en
reasonable access to transportation. The rights to health and a healthy environment are also reflected in Fiji’s National Adaptation Plan.

### 4.2 Promote stakeholder engagement in the One Health approach

The urgency to create “well-being societies” was taken up in a global meeting convened by the WHO in December 2021 where participants agreed on a Geneva Charter for Well-being. The Charter emphasizes a whole-of-society approach and calls upon diverse stakeholders to engage in a “fundamental redirection of societal values and action consistent with the 2030 Agenda.” This includes valuation, respect and nurturing of the natural environment, and economic development within planetary and local ecological boundaries.

Several Asia-Pacific countries emphasize rebuilding or reinforcing the human connection to nature in their national biodiversity strategies. Malaysia’s National Policy on Biological Diversity 2016-2025 has a goal to harness broad stakeholder commitment to conserve biodiversity, in which it views recognition of linkages between “healthy biodiversity and healthy living” as an important cross-sector mobilizer. A goal in Australia’s Strategy for Nature 2019-2030 is connection with nature as “essential” to long-term mental and physical health, economic prosperity and national identity,” with emphasis that this is a central tenet to local indigenous culture. The vision of the Philippines Biodiversity and Strategy Action Plan 2015-2028 emphasizes “maintaining ecosystem services to sustain healthy, resilient Filipino communities and delivering benefits to all.”

Stakeholder involvement is broadly recognized in climate change policies and plans of the Asia-Pacific. For example, Cambodia’s Climate Change Strategic Plan (2014-2023) aims to provide a national framework for engaging the private sector, civil society organizations, and development partners in a participatory process for responding to climate change and supporting sustainable development.

Integrated education frameworks, such as the Planetary Health Education Framework, should be an integral part of national plans and policy frameworks. A good example of this is the Sunway University in Malaysia, which is mainstreaming planetary health across its curriculums and requires all students to complete a community service course for planetary health.

### 4.3 Finance a healthier, greener, and fairer future

Integrated environment-health funding streams that are organized, coherent, and long-lasting are essential to operationalizing a One Health approach. De-siloing government budgets might take the form of top-

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74 See section 65 (a) to (f), The Republic of Fiji’s Climate Change Act (2021)
77 Cambodia’s Climate Change Strategic Plan (2014-2023), at https://www4.unfccc.int/sites/NAPC/Documents/Parties/Cambodia_CCCSP.pdf
78 https://www.planetaryhealthalliance.org/education-framework
down approaches through ministries of finance, or by aligning individual budgets contributions around inter-ministerial objectives. This requires coordination and elevation of environment-health nexus issues to the top of government leadership.

**Greater attention is needed to link funding for disaster risk to integrated measures that address economic, environmental, and health factors and their underlying drivers.** For example, significant opportunity existed to integrate COVID-19 funding across sectors and domains in the Asia-Pacific using an environment-health nexus approach, however this was not generally reflected in country recovery planning.79

### 4.4 Regional collaboration

Regional cooperation could assist in addressing gaps and deficiencies at the national level including through technical support, normative and regulatory framework analysis, data and statistical capabilities and improved and harmonized One Health tools.

**There is significant opportunity to foster greater coherence between the global and national levels on the environment-health nexus, including through the One Health approach.** Regional institutions and mechanisms could facilitate the sharing of experiences and ideas, project a cohesive voice from the region to the global level, aggregate country strategies and reflect them in regional portfolios, lead region-wide monitoring, evaluation and learning efforts, and serve as regional facilitators for periodic assessment and learning among peers and partners.

A coordinated regional approach and stronger regional collaboration will be needed to govern the environment-health nexus, building on existing regional initiatives. For instance, the reports of the Association of Southeast Asian Nations (ASEAN) on the state of climate change, and on strengthening the science-policy interface, could incorporate regional health considerations.80 The Asia-Pacific Climate Change Information Platform (AP-PLAT)81 for climate-risk informed decision-making and action could also be used to support countries in integrating health into their climate change adaptation and mitigation efforts.

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5. Conclusion

A regional operational framework for One Health can de-silo the approach to, and enhance, achievement of the 2030 Agenda for Sustainable Development at national, regional, and global levels. Transforming environment-health governance in the Asia-Pacific is a complex undertaking. Systems thinking is needed to enhance existing multisectoral governance frameworks on health and nutrition, and their links with climate change and biodiversity loss. Lessons on integrated management and funding allocations used in COVID-19 pandemic response can provide meaningful insight. Operationalizing the environment-health approach is a way to manage increasing, converging risks that cut across borders, sectors, and society.

<table>
<thead>
<tr>
<th>Recommendations on operationalizing the environment-health nexus in Asia and the Pacific</th>
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| Enhance multisectoral health governance | • Use Health in All Policies as a foundation for One Health  
                                   • Normalize joint-action between sectors |
| Mainstream environment-health policies | • Align national plans on health, biodiversity, and climate change  
                                   • Invest in nature-based solutions and ensure they incorporate a health perspective |
| Integrate environment and health data assessment | • Strengthen integrated data collection and mainstream integrated environment-health impact assessments |

**Enabling Factors:** promoting a rights-based approach, enhancing stakeholder engagement, aligning and securing long-term finance, and strengthening regional collaboration.

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