

The Link Between Health and Biodiversity in Southeast Asia Through the Example of Infectious Diseases

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ABSTRACT

The link between health and environment has been acknowledged progressively in international declarations and agreements, from the Stockholm Conference of 1972 to the recent conference of the parties of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) calling for the integration of issues of livestock-wildlife-human-ecosystem health interface into the activities and resolutions of the major conservation multilateral environmental agreements (MEA). In line with the growing commitment to sustainable development, numerous international conferences and declarations and diverse legal instruments give an international legal framework to the issues related to health and biodiversity. In the meantime, as globalization is participating in the emergence or re-emergence of diseases, it appears the notion of global health governance along with the awareness that public health issues are linked with environmental factors. In this respect, international environmental law might be appropriate in fostering action at the international and regional level as it is its very nature to focus on the responsibility of the states to take into consideration their neighborhood. In Southeast Asia, the governments have become increasingly aware of the importance of the biodiversity conservation for human development and ecosystems health and the international documents are steadily translated through various paths into regional initiatives, legal instruments, and formal or informal engagements. This article aims to proceed backwards from the present to determine the main steps leading to the elaboration of the international instruments related to health and biodiversity and to present the ways they have been integrated and implemented at the regional level, in Southeast Asia.

INTRODUCTION

IN SOUTHEAST ASIA, the governments are increasingly aware of the importance of the biodiversity conservation for human development and ecosystems health, thus international documents are steadily translated into regional initiatives, engagements or legal instruments. This article aims to proceed backwards from the present to determine the main steps leading to the elaboration of the international instruments related to health and biodiversity and to present the ways they have been integrated and implemented. The point is to unravel the

milestones of the international society involvement into issues regarding interrelations between health and biodiversity and highlight how these turning points are captured by international and regional governance.

1. THE ONE HEALTH APPROACH

The “One Health” (OH) approach, defined as “the integrative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and the environment,”¹ has been presented as a necessary “paradigm shift”² in global health.

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¹Definition given by the American Veterinary Medical Association, *One Health :A New Professional Imperative*, final report, 2008, 13.

²By veterinarians and biologists such as Kaplan, 2009; Zin- taag 2009; Atlas 2010; Bousfield 2011.

An inter-ministerial conference organized in Hanoi in 2010 by the European Union (EU) and the United States in partnership with the main international organizations has been decisive for the integration of the OH concept into the international governance. The Hanoi Declaration enjoined the participants to increase efforts to review pandemic preparedness plans and strengthen jointly human and animal public health systems. It did not mention how the environment is involved into the country strategies.

The link with the environmental side of the issue appears with the concern about wildlife health through the Tenth Conference of Parties of the Convention on Conservation of Migratory Species³ which recognized the endorsement of OH approach by several international organizations and by the Scientific Task Force on Wildlife Disease.

The task force should elaborate on “evidence-based decision processes and tools that consider disease dynamics in the broader context of sustainable biodiversity/ecosystem management, agricultural production and food security, socio-economic development, environmental protection and conservation of migratory species, their habitats and migration routes.”⁴

It aims to support the major conservation multilateral environment agreements (MEA) to encompass issues of livestock-wildlife-human-ecosystem health interface into their activities and resolutions through the promotion of the OH approach.⁵

The resolutions regarding partnerships and synergies with MEAs are undoubtedly leading to strong influences between the different MEA mechanisms, movement fostered by the existence of the Liaison Group of Biodiversity-related Conventions.⁶

OH is acknowledged by instruments of international environmental law but efforts should be focused on its integration within a coordinated framework where evidence-based research informs policy strategy.⁷

In Southeast Asia, a number of conferences have highlighted the need of an integrated comprehension of the environment and health issues. The Association of Southeast Asian Nations (ASEAN) decided to target the issues linked with the animal-human-environment interface by creating the ASEAN Secretariat Working Group for One Health in charge of the coordination of diverse health-related initiatives. ASEAN is referring to an institutional coordination to maintain security in the case of pandemic but not to a comprehensive approach such as the one advocated by the OH.

2. INTERGOVERNMENTAL PLATFORM ON BIODIVERSITY AND ECOSYSTEM SERVICES (IPBES) AND THE MILLENNIUM ECOSYSTEM ASSESSMENT (MA)

The complexity of the issues related to biodiversity and ecosystem services, their cross-sectoral and cross-scale nature, need to be addressed through strong scientific knowledge generated by the collaboration of different disciplines integrating best practices and knowledge of the civil society, communities, or beneficiaries of ecosystem services.

Decision makers mentioned the difficulty to access scientific results, the issues of reliability and independence of the scientific information or the impropriety of data to decision making. Scientists, on their side, recognized their unfamiliarity with the needs and processes of policymaking and their will to produce relevant work.⁸

An intergovernmental platform to strengthen decision making on biodiversity has been created to find appropriate responses to the deterioration of biodiversity. It accompanied a shift from a conservationist approach to a holistic vision comprehending conservation and sustainable use of biodiversity and ecosystem services.⁹

The IPBES is intended to be an efficient science-policy interface mechanism able to improve policy-relevant information from all relevant sources about the state, trends, and outlooks of human-environment interactions.¹⁰ Its four main functions¹¹ are: knowledge generation; regular and timely assessments; support policy formulation and

³United Nations Environment Programme (UNEP)/Convention on Conservation of Migratory Species (CMS)/Resolution 10.22, *Wildlife Disease and Migratory Species*, Bergen, November 20–25, 2011.

⁴Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)/Resolution 16.4, *Cooperation of CITES with Other Biodiversity-related Conventions*, Bangkok, March 3–14, 2013: “Recommends that Parties further strengthen the cooperation, coordination and synergies among the focal points of the biodiversity-related conventions...”

⁵CITES/Resolution 16.4, *Cooperation of CITES with Other Biodiversity-related Conventions*, Bangkok, March 3–14, 2013: “Recommends that Parties further strengthen the cooperation, coordination and synergies among the focal points of the biodiversity-related conventions...”

⁶The Convention on Biological Diversity (CBD); CITES; CMS; the Ramsar Convention on Wetlands (Ramsar); the Convention Concerning the Protection of the World Cultural and Natural Heritage (WHC); and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Cf. *Modus Operandi for the Liaison Group of the Biodiversity-related Conventions* adopted on September 4, 2011, in Geneva.

⁷Coker R. et al., *Towards a Conceptual Framework to Support One-health Research for Policy on Emerging Zoonoses*, *Lancet Infectious Diseases*, vol. 11 (4), 2011, 326–331.

⁸Larigauderie A. and Mooney H.A., *The Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services: Moving a Step Closer to an IPCC-like Mechanism for Biodiversity*, *Current Opinion in Environmental Sustainability*, vol. 2, 2010, 13–14.

⁹Van den Hove S., Chabason L., *The Debate on an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Exploring Gaps and Needs*, *Idées pour le débat*, IDDRI, vol. 1, 2009, 7.

¹⁰Cf. UNEP and French government Concept Note, *An Intergovernmental Science-policy Platform on Biodiversity and Ecosystems Services, Building on the Global Strategy for Follow-up to the Millennium Ecosystem Assessment (MA) and the Consultative Process Towards an International Mechanism of Scientific Expertise on Biodiversity (IMoSEB)*, 2008, 2.

¹¹Cf. the “Busan outcome,” *UNEP/IPBES/3/3, Third ad hoc Intergovernmental and Multi-stakeholder Meeting on an Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services*, June 7–11, 2010, § 6.

implementation; capacity building. It relies on an international group of renowned experts which should ensure the scientific credibility and independence of the IPBES work.

The experts identified the key features which might be included into the IPBES conceptual framework¹² such as the need to integrate indigenous and local knowledge experts, policymakers, and relevant stakeholders. The existence of various temporal and geographical scales should be explicitly considered for a better understanding of the multi-scale impact of changes.

In 2013, an Asia-Pacific workshop on regional interpretation of the IPBES acknowledged that the region is expected to play an important role as it houses megabiodiversity and large populations.¹³ It proposed to create an IPBES Regional Hub to promote regional collaboration, the use of common methods, and to address assessments shortfalls. The purpose is to coordinate regional interventions to take into account trade-off dynamics, to address geographic imbalance,¹⁴ and to ensure policy coherence.

The IPBES is resulting from the follow-up of the MA¹⁵ presented in 2001 as “an international collaborative effort to map the health of our planet.” The MA assumes that a good environmental policy must be based on reliable scientific data and on comprehensive global assessment of the world’s major ecosystems to deliver the appropriate responses regarding their conservation and their sustainable use. It provides a framework that allows understanding the dynamic interactions between people and other parts of the ecosystems, the drivers of change in ecosystems, and their effects on human well-being.

Ecosystem services are the benefits people obtain from ecosystems. The MA differentiates four categories of services: provisioning services; regulatory services; cultural services; supporting services.

The general results of the MA have shown that over the previous 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time and that almost 60% of the ecosystem services it examined were being degraded or used unsustainably.

The World Health Organization (WHO) report about MA (2006) was a “call to the health sector, not only to cure the diseases that result from environmental degra-

tion but also to ensure that the benefits that the natural environment provides to human health and well-being are preserved for future generations”¹⁶ in accordance with the principle of intergenerational equity which is a key element of sustainable development and a principle of international environmental law.

The report insists on the fundamental role of ecosystem services to the well-being and health of people everywhere and on the inherent needs of human biology for food, water, clean air, shelter, and relative climatic constancy. It recognizes the health sector responsibility for informing decision makers about the health effects of ecosystem changes and potential interventions.¹⁷

3. NEW INTERNATIONAL HEALTH REGULATIONS (IHR) AND TOOLS FOR SURVEILLANCE AND ALERT

The traditional approach to international disease spread changed with the acknowledgment that globalization of trade and increased international travel accelerated the risk of worldwide propagation of infectious diseases.

In 2003, the General Assembly of the United Nations recognising the need for greater international and regional cooperation to meet new challenges to public health and to control infectious diseases urged member states to give high priority to the revision of IHR.¹⁸

The former IHR amended in 1973 covered only three diseases (yellow fever, plague, and cholera). The only obligations of the governments were to report those specific diseases to the WHO and to maintain the minimal public health capabilities at ports and borders.

The new IHR is an international legal instrument binding on all state members of the WHO giving a framework of global and integrated governance in order to achieve global health security. Its purpose is “to prevent, protect against, control and provide a public health response to the international spread of disease.” Its scope is now broadened to any extraordinary event that would constitute a public health emergency of international concern.¹⁹ It takes into account the continued

¹⁶World Health Organization (WHO), 2005, *Ecosystem Goods and Services for Health, Health Synthesis*, Millennium Ecosystem Assessment, foreword.

¹⁷Among the promising interventions to reduce ecosystem change’s pressures on health services, the report mentions the importance of an integrated action for health, making use of tools such as health impact assessment of major development projects, policies, programs, and indicators for health and sustainable development. *Ib.* 44.

¹⁸United Nations General Assembly (UNGA), Resolution 58/3, *Enhancing Capacity-building in Global Public Health*, October 27, 2003, 1 (“Underscore...”).

¹⁹Defined as an event determined to “constitute a public health risk to other States through the international spread of disease and to potentially require a coordinated international response,” cf. Art.1. In this case, each state party is required to provide notification of such an event to the WHO within 24 hours, *International Health Regulations*, 2005, 2nd ed., WHO, Geneva.

¹²IPBES/1/INF/9, Outcome of an Informal Expert Workshop on Main Issues Relating to the Development of a Conceptual Framework for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany, January 21–26, 2013.

¹³United Nations University Institute for Sustainability and Peace (UNU-ISP), *Asia-Pacific Workshop on Regional Interpretation of the IPBES Conceptual Framework and Knowledge Sharing*, September 2–4, 2013, Seoul, Republic of Korea, Preamble, 3.

¹⁴For instance, it appears that current knowledge for Western Asian biodiversity and ecosystem assessments is lacking.

¹⁵Scientists had already identified a need for an international ecosystem assessment. For a history of the MA, see *Groundswell, The Newsletter of the Millennium Assessment of Global Ecosystems*, November 1999, 1–5.

evolution of diseases and the factors determining their emergence and transmission.²⁰ The WHO has now the possibility to get information from other sources than reports from the States.

Many MEAs, whether they relates to the ozone layer, climate change, or persistent pollutants, have health implications. Thus international environmental law plays an important role in the protection of health at the international level.

According to the IHR, the WHO shall cooperate and coordinate its activities with other competent intergovernmental organizations,²¹ notably the Food and Agriculture Organization of the United Nations (FAO) and the World Organization for Animal Health (OIE). In that perspective, those organizations launched a Global Early Warning and Response System for Major Animal Diseases (GLEWS) in 2006: it builds on the added value of combining and coordinating their alert and response mechanisms for the international community, to assist in prediction, prevention, and control of animal disease threats.²² They established a cross-sectoral mechanism (GLEWS+, 2013) for conducting joint risk assessments, aimed at formulating risk management options at the human-animal-ecosystems interface. It targets health events of potential international concern affecting domestic or wild animal populations, humans, or the food chain.²³

At the regional level, different networks²⁴ are supported by these organizations. Some networks²⁵ participate in the improvement of cross-border infectious disease outbreak by sharing surveillance data and best practices in disease recognition and jointly responding to outbreaks.

4. CONVENTION ON BIODIVERSITY FRAMEWORK

Adopted in 1992, the Convention on Biodiversity (CBD) is considered as a landmark agreement in the environmental field. Its Preamble affirms that the conservation of biodiversity is a common concern of humankind. It is innovative in recognizing three levels of

diversity and in being an all-encompassing agreement on conservation and sustainable use of biodiversity and natural resources.

It defines biodiversity as: “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”²⁶

The convention sets out a framework for action with three main objectives: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

The CBD is a legally binding framework agreement requiring completion by additional international protocols. It establishes a body of flexible obligations that parties may apply through national laws and policies.²⁷

The Secretary General of the United Nations stated the collective failure²⁸ in achieving a significant reduction in the rate of biodiversity loss and underlined the higher priority to tackle biodiversity loss in all areas of decision making.²⁹

In response, the parties decided to adopt³⁰ the Strategic Plan for Biodiversity 2011–2020. This Plan includes five strategic goals subdivided into twenty targets with the commitment that “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”

At the regional level, the ASEAN Centre for Biodiversity, an intergovernmental regional institution, facilitates cooperation and coordination among the ten ASEAN member states, on the conservation and sustainable use of biological diversity, and the fair and equitable sharing of benefits.

Nevertheless, the ASEAN biodiversity Outlook of 2010 confirmed that the region has been increasingly losing biodiversity and thus did not succeed in meeting its biodiversity targets.

The ASEAN Conference, “Biodiversity in Focus: 2010 and Beyond,” aimed to discuss the key biodiversity

²⁰Foreword of the *International Health Regulations*, 2005, 2nd ed., WHO, Geneva.

²¹Art. 14, *International Health Regulations*, 2005, 2nd ed., WHO, Geneva and for the list of competent intergovernmental organizations or international bodies with which WHO is expected to cooperate and coordinate its activities, World Health Assembly (WHA) 58.3, *Revision of the International Health Regulations*, May 16–25, 2005, Geneva, § 4.

²²Definition of GLEWS, in Art. 3.2, FAO, OIE, WHO, *Global Early Warning and Response System for Major Animal Diseases (GLEWS)*, 2006, 13.

²³Food and Agriculture Organization of the United Nations (FAO), World Organization for Animal Health (OIE), and WHO, *GLEWS+, The Joint FAO–OIE–WHO Global Early Warning System for Health Threats and Emerging Risks at the Human–Animal–Ecosystems Interface*, concept note, 2013.

²⁴35th Meeting of the ASEAN Ministers on Agriculture and Forestry, § 9, September 26, 2013, Kuala Lumpur, Malaysia.

²⁵Among them, we can mention the Greater Mekong Subregion—Regional Communicable Diseases Control Project or the Information Centre on Emerging Infectious Diseases in the ASEAN Plus Three Countries.

²⁶Art. 2 of the *Convention on Biodiversity*, 1992.

²⁷On the core characteristics of the CBD (comprehensiveness, complexity, compromise), see McGraw, D.M., *The CBD—Key Characteristics and Implications for Implementation*, Review of European Community and International Environmental Law, vol. 11(1), 2002, 17–28.

²⁸CBD, COP 6, Decision VI/26, *Strategic Plan for the Convention on Biological Diversity*, The Hague, April 7–19, 2002, Annex § 11: “Parties commit themselves to a more effective and coherent implementation of the three objectives of the Convention, to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth.”

²⁹In the foreword of the *Global Biodiversity Outlook*, Secretariat of the Convention on Biological Diversity (2010) *Global Biodiversity Outlook 3*, Montréal, 5.

³⁰COP 10, Decision X/2, *Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets*, October 18–29, 2010.

issues important to the region, including gaps and challenges. It notably insisted on the need to forge the interphase between policy and science, integrating different fields, such as social sciences, biology, and economics and transdisciplinary research to form the basis for decision-making support.³¹

5. GLOBAL AND REGIONAL STRATEGIES ON HEALTH AND ENVIRONMENT

In 1992, the World Health Assembly requested the Director-General of the WHO to formulate a new global strategy for environmental health.³² A year later the WHO presented its *Global Strategy for Health and Environment* in order to “bring to the forefront the health dimension of the environmental and development crisis.”³³ Its main objectives are:

- achieving a sustainable basis for health for all;
- providing an environment that promotes health; and
- making all individuals and organizations aware of their responsibility for health and its environment basis.

The global strategy calls for broadened action for health and environment, a close cooperation with the other socio-economic development sectors, and puts health at the heart of the programs.

Meanwhile, a WHO interregional initiative has been launched to promote the involvement of the health sector in national planning for sustainable development and to prepare action plans for health and environment.³⁴

In 1993, the WHO in South-East Asia Region (SEARO) adopted a regional strategic plan for health and environment which urged an important work on promoting national action plans in countries of the Southeast Asia region.³⁵ The WHO SEARO insisted on the opportunity given to the ministries of health in preparing the World Summit (2002) to ensure that the place of health in sustainable development is fully appreciated by decision makers. In turn, it is assumed to enhance the place of health in regional and global developmental agendas.³⁶

The WHO SEARO and Asia Pacific, the United Nations Environment Programme (UNEP), and the Asian Development Bank (ADB) decided to join in order to tackle the various problems related to health and the en-

vironment in the region and they finally establish the Regional Forum on Environment and Health. The general objective is to promote the implementation of integrated environmental health strategies and regulations both at national and regional level to address the need for policies which protect and enhance the environment and to improve the living conditions and quality of life “through enforceable legislation and other legal instruments.”³⁷ It refers explicitly to the existing international environmental agreements and to international law principles such as the precautionary principle, the polluter-pays principle, and the norms of good governance.³⁸

6. SUSTAINABLE DEVELOPMENT: FROM THE UN MILLENNIUM DEVELOPMENT GOALS (MDGS) TO STOCKHOLM

The United Nations Millennium Declaration adopted unanimously in 2000 acknowledged collective responsibility of the member states to uphold the principles of human dignity, equality and equity at the global level. It called for a change in the current unsustainable patterns of production and consumption and prudence in the management of all living species and natural resources.³⁹

The MDGs were set out to translate the key objectives contained in the Declaration into action. Many of those MDGs relate to health and one is concerning the need to ensure “environmental sustainability.” However, the linkage between health and environment is not endorsed by the MDGs even though it had previously been stated that the most critical health problems in the world would not be resolved without major improvement in environmental quality.⁴⁰

The MDGs are now recognized “as the most successful global anti-poverty push in history”⁴¹ as they guided concrete actions and improved coordination.

The MDGs target a “sustainable development” notion which started to be at the core of the international environmental policy with the Rio Conference of 1992 as the apparition of new global issues led the international community to adopt a cross-sectoral consideration of the environmental questions.⁴²

³¹ ASEAN Conference on Biodiversity, October 21–23, 2009, Singapore, in ASEAN Centre for Biodiversity (2010) *ASEAN Biodiversity Outlook*, Philippines, 2010, 139–142.

³²Resolution WHA45.31, *Health and Environment*, May 14, 1992, § 1.

³³Preface of *Our Planet, Our Health: Report of the WHO Commission on Health and the Environment*, 1992, ix.

³⁴See Ozolins G., Stober J., *WHO Global Strategy for Health and Environment and Related Events*, WHO, 1994 (WHO/EOS/94.41), 9.

³⁵In *Regional Initiative on Environment and Health*, WHO, SEA/RC61/13, July 23, 2008, 1.

³⁶See *Health and Environment in National Development: Regional Progress and Preparation for Rio+ 10 Conference*, SEA/RC54/11, July 17, 2001, 10.

³⁷With a regular review to take account for new knowledge and emerging technologies, see *Charter of the Regional Forum on Environment and Health in Southeast and East Asian Countries*, August 9, 2007, Bangkok, Thailand, MF1/4, 6, VI.

³⁸“Including Civic Engagement and Participation, Efficiency, Equity, Transparency and Accountability,” *Bangkok Declaration on Environment and Health*, August 9, 2007, Bangkok, Thailand.

³⁹In conformity with the principles of justice and international law. UNGA Resolution 55/2, *United Nations Millennium Declaration*, 8 September 2000.

⁴⁰See Smith K.R. et al., *How Much Global Ill Health Is Attributable to Environmental Factors*, *Epidemiology*, 10, 1999, 582–583.

⁴¹Ban Ki-Moon, Secretary General of the United Nations, Foreword of *The Millennium Development Goals Report 2013*, United Nations, New York, June 2013, 3.

⁴²UNGA Res. 44/228. *United Nations Conference on Environment and Development*, December 22, 1989.

The Rio Conference is considered as a major environmental legal landmark⁴³ because of the CBD and the United Nations Framework Convention on Climate Change. It adopted the Forest Principles and the Agenda 21, an action program which contributed effectively to the promotion of health sector involvement in addressing health and environment issues.⁴⁴ It led to the formulation or the reaffirmation of principles of particular importance for the development of international environmental law.⁴⁵

Health is considered by the Rio Declaration in a very broad way illustrated by its first principle: "Human beings are...entitled to a healthy and productive life in harmony with nature."

The link between environment and well-being has been affirmed in 1972 by the Stockholm Declaration which states: "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being."⁴⁶ It led to the international recognition of the health dimension of environmental issues.

Considering the global extent of environmental problems and their impact on the international common realm, the Conference called for an increased cooperation among nations.⁴⁷ The texts then adopted constitute the first comprehensive statements of international concern with environmental protection and one of the founding instruments of international environmental law.

The Stockholm Conference recommended the creation of the UNEP to promote international cooperation in the field of the environment. The UNEP finally played a larger role and has been the most active UN body in the development of MEAs and of international environmental law in general.

CONCLUSIONS

From the OH approach to the Stockholm Conference, we examined the main steps of the tendency to an integrative approach linking human and animal health within their ecosystems and the evolution of international governance in the areas of health and biodiversity.

International environmental law became a tool of global public health protection⁴⁸ and advocates the integration of environmental protection as part of the development process. Since the Stockholm Declaration, the necessity of an integrated and coordinated approach to development compatible with the need to protect and improve the environment for the benefit of the population has been affirmed. More recently, the notion of well-being has been put at the core of the IPBES framework.

The IPBES is intended to follow a participatory, bottom-up approach, including the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems.⁴⁹ It should consider biodiversity and ecosystem services beyond their economic value and integrate the notions of co-viability, co-evolution, or resilience of socio-ecosystems.

Recalling that biodiversity is a common concern of humankind, the IPBES is hoped to be the appropriate framework to study the interlinkage between health and biodiversity to give shape to the notion of global environmental responsibility. It should provide findings encompassing the different dimensions of the well-being of the society in interaction with its environment which could ultimately help to address the issue of environmental justice.

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⁴³Handl, G., *Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) 1972 and the Rio Declaration on Environment and Development, 1992*, United Nations Audiovisual Library of International Law, 2012, 1.

⁴⁴WHO, *Health and Environment in Sustainable Development: Five Years after the Earth Summit*, Executive summary, WHO/EHG/97.12.E, Geneva, Switzerland, June 1997, 32.

⁴⁵Kiss A., Shelton D., *Guide to International Environmental Law*, Martinus Nijhoff Publishers, 2007, 41–42.

⁴⁶Cf. executive summary in Shelton, D., *Human Rights, Health and Environmental Protection: Linkages in Law and Practice, A Background Paper for the World Health Organization*, Health and Human Rights Working Paper Series No 1, Geneva, Switzerland, WHO, 2002, 3–4.

⁴⁷United Nations Conference on Environment and Development (UNCED), *Declaration of the United Nations Conference on the Human Environment*, 16 June 1972, Preamble, § 7.

⁴⁸Onzivu, W., *International Environmental Law, the Public's Health, and Domestic Environmental Governance in Developing Countries*, American University International Law Review 21, 2005, 611.

⁴⁹UNEP/IPBES/3/3, *Annex "Busan outcome"*, June 7–11, 2010, Busan, South Korea, § 7(d), 6.