



Convention on Biological Diversity

Distr.
GENERAL

CBD/COP/14/9/Add.2
10 November 2018

ORIGINAL: ENGLISH

CONFERENCE OF THE PARTIES TO THE
CONVENTION ON BIOLOGICAL DIVERSITY
Fourteenth meeting
Sharm El-Sheikh, Egypt, 17-29 November 2018
Item 17 of the provisional agenda*

APPROACHES TO LIVING IN HARMONY WITH NATURE AND PREPARATION: BACKGROUND DOCUMENT FOR THE INTERACTIVE DIALOGUE

Note by the Executive Secretary

INTRODUCTION

1. According to the multi-year programme of work of the Conference of the Parties, adopted in decision XII/31, the Conference of the Parties will consider, at its fourteenth meeting, among other things, “the long-term strategic directions to the 2050 Vision for Biodiversity, as well as approaches to living in harmony with nature”. At its thirteenth meeting, the Conference of the Parties requested the Executive Secretary, when preparing documentation for the agenda item “approaches to living in harmony with nature”, to take into account the outcomes of the interactive dialogue on this topic convened at the thirteenth meeting of the Conference of the Parties in response to decision XII/2 C as well as information provided by Parties, other Governments, indigenous peoples and local communities, and relevant organizations.
2. The present document reviews in section I, the concept of “living in harmony with nature” under the Convention and related processes. Section II provides a methodology for conducting the interactive dialogue at the fourteenth meeting of the Conference of the Parties. Section III lists relevant resource material. The annex considers new developments in international law and related topics, including nature jurisprudence, and human rights and biodiversity (with a special focus on children) as well as nature and culture, including a case study on nature and culture from Sri Lanka and a contribution from China on the concept of an ecological civilization.

I. BACKGROUND: LIVING IN HARMONY WITH NATURE

3. The Strategic Plan for Biodiversity 2011-2020 includes the vision of a world of “living in harmony with nature” where “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”.
4. The Subsidiary Body on Scientific, Technical and Technological Advice, at its twenty-first meeting, noted that the 2050 Vision of the Strategic Plan remains relevant and should be considered in any follow-up to the Strategic Plan for Biodiversity 2011-2020. The Subsidiary Body concluded that the 2050 Vision contains elements that could be translated into a long-term goal for biodiversity and provide context for discussions on possible biodiversity targets for 2030 as part of the post-2020 global biodiversity framework. Moreover, the Subsidiary Body on Implementation, at its second meeting, concluded that the

* CBD/COP/14/1.

post-2020 global biodiversity framework needed to be commensurate with the challenges in achieving the transformational change required to achieve the 2050 Vision.

5. “Living in harmony with nature” means that humanity lives within ecological limits and that the biodiversity of Earth continues to be available for future generations.

6. In considering approaches to achieve this Vision, the following may be taken into account:

(a) The ecosystem approach, adopted as the primary framework for actions under the Convention, the ecosystem approach, in decision V/6;

(b) The goals, targets and supporting measures of the Strategic Plan for Biodiversity 2011-2020, adopted in decision X/2;

(c) The 2030 Agenda for Sustainable Development;

(d) The views and perspectives, including worldviews, of various Parties, indigenous peoples and local communities, and stakeholders.

7. Parties, indigenous peoples and local communities, and stakeholders have drawn attention to a number of approaches. The theme of the Vision of the Strategic Plan “Living in harmony with nature” was based on proposals made by Japan (host of the tenth meeting of the Conference of the Parties) during the consultations on the development of the Strategic Plan. For example, some Parties and indigenous peoples have highlighted the importance of respecting “Mother Earth” with a view to living in harmony with nature. For example, the outcome document of the United Nations Conference on Sustainable Development (2012), entitled “The future we want”,¹ states: “We recognize that planet Earth and its ecosystems are our home and that “Mother Earth” is a common expression in a number of countries and regions, and we note that some countries recognize the rights of nature in the context of the promotion of sustainable development.”

II. THE DIALOGUE

8. It is proposed that the methodology of the dialogue should involve presentations by a panel of experts in plenary, followed by an interactive dialogue with meeting participants, chaired by a representative of the Bureau or the Executive Secretary. At least one hour will be allocated to the interactive dialogue.

9. The Executive Secretary will invite a geographically and gender-balanced group of experts to present a series of diverse views on “living in harmony with nature”. Expert panellists may be drawn from Parties, indigenous peoples and local communities, and the scientific community. The following experts have agreed to contribute to the dialogue at this meeting:

(a) Ms. Anne Nuorgam an independent expert and Vice-Chairperson of the United Nations Permanent Forum on Indigenous Issues, from the Arctic Region (Finland), who will speak on human rights and biodiversity;

(b) Professor Paul Leadley, an expert on scientific models to study the impacts of global change on biodiversity and ecosystem functioning, from the University of Paris-Sud, France, and contributor to IPBES, IPCC and GBO, who will speak on pathways towards the 2050 Vision;

(c) Ms. Josefa Tauli, an indigenous youth expert from the Philippines, who will give a perspective from youth;

(d) Professor Fuwen Weil, an expert on animal ecology and conservation biology at the Institute of Zoology, Chinese Academy of Sciences, China, who will speak on the concept of ecological civilization.

¹ See General Assembly resolution 66/288.

10. The panellists may address questions such as the following:
- (a) How can different and diverse worldviews inform actions to achieve the 2050 Vision of the Strategic Plan for Biodiversity 2011-2020 and the 2030 Agenda for Sustainable Development?
 - (b) What actions can be taken at different levels to bring about a rapprochement of nature and cultures in the post-2020 era?
 - (c) How can rights-based approaches and other legal approaches promote living in harmony with nature, considering multiple and/or diverse views?
 - (d) How can science, together with traditional knowledge, inform approaches to living in harmony with nature?
11. Following the statements from experts, there will be opportunity for questions and answers and an interactive discussion. In keeping with established practice, a summary report on the dialogue will be annexed to the report of the Conference of the Parties on its fourteenth meeting.
12. The outcome of the dialogue may inform preparations for the fifteenth meeting of the Conference of the Parties, including those on the development of the post-2020 biodiversity framework.

III. RESOURCE MATERIAL

13. The following material provides useful background for this topic:
- (a) The outcomes of the interactive dialogue at the thirteenth meeting of the Conference of the Parties;²
 - (b) The reports of a series of dialogues under the General Assembly on living in harmony with nature;³
 - (c) The conclusions of the twenty-first meeting of the Subsidiary Body on Scientific, Technical and Technological Advice on scenarios for the 2050 Vision;⁴
 - (d) Further background material provided in the annex below.

² See CBD/COP/13/9 for the pre-session document and CBD/COP/13/25, annex III, for the report on the dialogue.

³ The reports on the dialogue sessions and resolutions are available at: <http://www.harmonywithnatureun.org/documents.html>.

⁴ See the annex to recommendation XXI/1 reproduced in the compilation of draft decisions (CBD/COP/14/2).

*Annex***I. DEVELOPMENTS IN INTERNATIONAL LAW AND RELATED TOPICS****A. Human rights and biodiversity***Human right to a safe, clean, healthy and sustainable environment*

1. In March 2012, the United Nations Human Rights Council established the mandate of an Independent Expert to study the human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment and to identify and promote best practices.⁵ John H. Knox was appointed as an Independent Expert in 2012 and then as a Special Rapporteur on the same issue from 2015 to 2018.

2. Through research and consultations, the Independent Expert has mapped the human rights obligations relating to the environment and identified good practices. To facilitate implementation, the Special Rapporteur developed, in his final report, 16 framework principles on human rights and the environment with associated commentaries.⁶ The first two principles clearly express the interdependence of human rights and the environment:

Framework principle 1: States should ensure a safe, clean, healthy and sustainable environment in order to respect, protect and fulfil human rights.

Framework principle 2: States should respect, protect and fulfil human rights in order to ensure a safe, clean, healthy and sustainable environment.⁷

3. The right to life, to the highest attainable standard of physical and mental health, to an adequate standard of living, to adequate food, to safe drinking water and sanitation, to housing, to participation in cultural life, and in development, are all examples of human rights which depend on a safe, clean, healthy and sustainable environment, to be fully enjoyed. Conversely, human rights such as rights to freedom of expression and association, to education and information, and to participation and effective remedies are necessary to effectively protect the environment.⁸ These cluster of rights dependant on the environment allude to what “living in harmony with nature” might look like from a human rights perspective.

4. In other words, a healthy environment supports human rights, and respecting human rights allows for protecting nature. Living in harmony with nature therefore needs to be based on the promotion of both the rights to nature and of human rights, as these rights are complementary and interdependent. The recognition of the human right to a safe, clean, healthy and sustainable environment consolidates this complementarity. To do so, the Special Rapporteur recommended, in his last report, recognizing the human right to a healthy environment in a global instrument.⁹

5. The human right to a healthy environment has global resonance, as environmental degradation has human rights implications for everyone, worldwide. Nonetheless, as stated in framework principle 14, some groups are more vulnerable to or at risk from environmental harm than others. The report identified women, children, persons living in poverty, members of indigenous peoples and local communities, older persons, persons with disabilities, ethnic, racial or other minorities, and displaced persons as vulnerable groups in relation to environmental harm. Additional measures and considerations are therefore needed to protect the human rights of those groups.¹⁰

⁵ Human Rights Council resolution 19/10.

⁶ A/HRC/37/59.

⁷ Ibid., p. 7.

⁸ A/HRC/37/59.

⁹ Ibid.

¹⁰ Ibid.

B. Children's rights and nature

6. Children's rights to a healthy environment are of relevance to the Convention on Biological Diversity's vision that, by 2050, humanity will be living in harmony with nature, as many of today's children will be middle-aged by 2050. Additionally, environmental harm impacts on children's ability to enjoy their human rights both in the present and in the future. As stated above, children are particularly vulnerable to the effects of environmental harm, with possible long-lasting repercussions. The World Health Organization (WHO) estimated that, in 2015, 26 per cent of the 5.9 million deaths of children under 5 years old and 25 per cent of the total disease burden for the same age group were attributable to environmental exposures.¹¹ On the long run, exposure can also lead to physical and cognitive development disruptions and impairments, which can prevent children from enjoying their human rights in the future.

7. Air and water pollution, climate change, chemical waste, and the loss of biodiversity and access to nature, negatively impact on children's rights to life, health and development, to an adequate standard of living, and to play and recreation.¹² Due to the smaller size of their bodies and organs, and to their still-developing immune systems, children are more susceptible to the impacts of airborne and waterborne toxins, chemicals and infections. In addition to their immediate threat to life and health, some intestinal and parasitic infections impede nutrients absorption, with negative impacts on children's growth and physical and intellectual development.¹³

8. Children are also more vulnerable to the effects of climate change, from extreme weather events to food insecurity, and of the loss of biodiversity and access to nature. For example, microbial diversity loss has negative consequences on the development of healthy immune systems, and lack of exposure to nature has negative repercussions on mental health.¹⁴ Both climate change and biodiversity loss are long-term environmental issues that have cumulative effects; for that reason, children will be more affected than adults by decisions taken today on these matters.¹⁵ Children therefore have a particularly high stake in the development of a harmonious relationship with nature.

9. In this context, the human rights obligations of States in relation to children and the environment are particularly important. Children need to have access to environmental education and information in order to help preserve nature in the long run. It is also important, when assessing environmental impacts, to include the effects of such impacts on children. As children have high stakes in the environment, their participation in environmental decision-making should be facilitated, and their views considered. Children should also have access to justice for environmental harm to the enjoyment of their human rights, notably by allowing for collective suits.¹⁶

10. In summary, framing humanity's relationship with nature through a human-rights approach, which includes special consideration for the rights of children, would promote living in harmony with nature in the present and in the future. While not specifically considering future generations, the respect and protection of children's human rights in relation to the environment would contribute to efforts toward sustainable development.

C. Indigenous rights and biodiversity conservation

11. The interdependence of human rights and the environment also relate to the conservation and sustainable use of biodiversity. The full enjoyment of the human rights mentioned above, such as the rights to health, to adequate food, and to development, depends on healthy ecosystems providing ecosystem

¹¹ WHO, "Don't pollute my future! The impact of the environment on children's health" (Geneva, 2017).

¹² A/HRC/37/58.

¹³ World Health Organization, *Inheriting a sustainable world? Atlas on children's health and the environment* (Geneva, 2017).

¹⁴ Paul Sandifer, Ariana Sutton-Grier and Bethney Ward, "Exploring connections among nature, biodiversity, ecosystem services, and human health and well-being: opportunities to enhance health and biodiversity conservation", *Ecosystem Services*, vol. 12 (April 2015).

¹⁵ A/HRC/37/58.

¹⁶ Ibid.

services, which are supported by biodiversity.¹⁷ As such, preserving biodiversity also means protecting the human rights of the people relying on those services. As with avoiding environmental harm, protecting biodiversity requires the exercise of human rights, such as rights to information and participation.¹⁸ Human rights and biodiversity conservation are therefore intrinsically linked.

12. In that sense, the human-rights approach to biodiversity conservation, similarly to the ecosystem approach, recognizes the interdependence between humans and ecosystems. Indigenous peoples and local communities maintain a particularly close relationship with nature, as they directly rely on natural ecosystems directly for their material, cultural and spiritual survival. For this reason, indigenous peoples and local communities are identified as a vulnerable group in relation to environmental harm.¹⁹

13. Nonetheless, human rights need to be considered not only in relation to environmental harm, but also to environmental conservation. Indeed, as identified by the Special Rapporteur on the rights of indigenous peoples, Victoria Tauli-Corpuz, past conservation measures have had negative consequences on the human rights of indigenous peoples.²⁰ A salient example of this was the forced displacement of indigenous peoples from their traditional territories for the establishment of protected areas. Forced displacement led to loss of livelihoods, poverty, food insecurity, and marginalization, among others, without proper access to justice and remedy.²¹

14. Since the adoption of the Durban Accord and Action Plan in 2003, the “new conservation paradigm” recognizes the rights of indigenous peoples and local communities in relation to natural resources management and biodiversity conservation, particularly through ensuring participation in and benefit-sharing from the establishment of protected areas. In practice, however, the effective and wide-ranging implementation of the new paradigm has yet to be fully realized.²²

15. In order to effectively respect and protect the human rights of indigenous peoples and local communities in relation to nature, the Special Rapporteur on the rights of indigenous peoples makes similar recommendations to the Special Rapporteur on human rights and the environment. The latter maintains, in framework principle 15, that States should comply with their obligations to protect the rights of indigenous peoples by, among other things:

(a) Recognizing and protecting their rights to the lands, territories and resources that they have traditionally owned, occupied or used;

(b) Consulting with them and obtaining their free, prior and informed consent before relocating them or taking or approving any other measures that may affect their lands, territories or resources;

(c) Respecting and protecting their traditional knowledge and practices in relation to the conservation and sustainable use of their lands, territories and resources;

(d) Ensuring that they fairly and equitably share the benefits from activities relating to their lands, territories or resources.²³

16. Measures for lands, territories and resources rights recognition, for consultation, for requiring free, prior and informed consent to access to traditional knowledge and benefit-sharing should respect and foster the harmonious relationship that indigenous peoples and local communities have developed and

¹⁷ A/HRC/34/49.

¹⁸ Ibid.

¹⁹ A/HRC/37/58.

²⁰ A/71/229.

²¹ Ibid.

²² Ibid.

²³ A/HRC/37/58, p. 18.

maintained with their ecosystems. Special consideration should be paid to the human rights of children from indigenous peoples and local communities, as to other members of overlapping vulnerable groups.

Conclusion

17. Supporting the recognition of the human right to a safe, clean, healthy and sustainable environment, particularly regarding children's rights, would be an important step in recognizing the interdependence of humans and nature. This interdependence, including with biodiversity, explains why human rights and the rights to nature are not necessarily contradictory, but can be mutually reinforcing. One poignant example is how the protection of environmental human rights defenders from threat, harassment, intimidation and violence is necessary to allow them to actively defend the environment on which human rights depend.²⁴ Hence, respect for both human rights and the rights to nature are needed to live in harmony with nature.

D. The Earth jurisprudence approach

18. The experts who participated to the dialogues on Earth jurisprudence at the General Assembly have recognized the intrinsic value of nature and declared that humanity needs to change its attitudes, behaviours and perception of nature from a human-centred perspective to an Earth-centred perspective.

19. In the current perception of nature that modern societies have, the human-centred view, Earth is perceived as property and a source of raw materials. These materials are available to be commercialized, exploited, modified, altered and privatized.

20. In the Earth-centred perspective, the planet is considered to be alive and to be the common home of all humans. Therefore, the health of the planet, a living organism, is subject to dangers and illnesses. To achieve an Earth-centred approach, the experts agreed support from laws, ethics, institutions, policies and practices is necessary.

21. Four main principles are found behind the Earth jurisprudence approach:²⁵

- (a) Subjectivity: the universe is a whole whose components are indivisible. It has rights and values;
- (b) Community: everything coexists with everything else;
- (c) Lawfulness and order: organizational patterns exist in the universe and in the Earth community. We can detect them and understand them;
- (d) Wildness: the lawfulness and the order of the universe are dynamic, mysterious and unpredictable.

22. These principles should be deeply explored and well understood before proceeding to a perception change. To live in harmony with nature, humankind cannot simply wait for the creation of laws. Humanity needs to change how it perceives nature, following the four main principles previously mentioned.

23. The main goal followed by this approach is to reconnect humankind's practices and thoughts with nature's capacities. This perception is in line with traditional indigenous conceptions of the world. This holistic perception removes any barriers between nature and humans, where to love nature is to love oneself.

24. In the experts' view, "Earth jurisprudence" should not be a synonym for "environmental law". Instead, Earth jurisprudence is a complete vision whereby the only way to protect nature is by strictly applying laws and by conducting ourselves in a respectful way toward the Earth.²⁶

25. The experts also recommend the adoption of the Universal Declaration of the Rights of Mother Earth,²⁷ which grants rights to the Earth. For instance, article 2 of the Universal Declaration mentions: the

²⁴ A/HRC/37/59.

²⁵ A/71/266.

²⁶ A/72/175.

right of Earth to life and to exist, to integral health, to water as a source of life, to clean air, to be free from contamination, pollution and toxic or radioactive waste, and to be respected.

1. *The Earth's trusteeship*

26. To fully implement the ecosystem approach, some experts have put forward this idea to have nation-States acting as trustees for the Earth. When looking into politics and law, the State acts as a fiduciary towards its citizens since it acts for and on behalf of them. The fiduciary obligations of the State are recognized in public law, exist with some differences in the civil law and in the common law systems, and are also known in international law. The State's fiduciary obligations can also be described as a trusteeship function.²⁸

27. States need to realize their role as environmental trustees, as part of their duties towards their human population. It should be an indivisible function of the government, like any other constitutional obligation.

28. The derogation to this obligation should trigger the courts' jurisdiction to invoke a mandatory trusteeship. For instance, the Government of Germany has the specific trusteeship obligation to protect the environment for future generation, as stated in the German Constitution, Article 20A of which states:²⁹

“Protection of the natural foundations of life and animals:

Mindful also of its responsibility toward future generations, the State shall protect the natural foundations of life and animals by legislation and, in accordance with law and justice, by executive and judicial action, all within the framework of the constitutional order.”

29. Furthermore, over 100 countries have integrated constitutional environmental protection mechanisms, while 50 of them have incorporated environmental protections in their law system. The constitutions of 14 members of the European Union and all of Eastern Europe's contain express environmental provisions.³⁰

2. *The shifting paradigm of nature law*

30. The rights of nature are emerging and challenging environmental law. Many states or organizations have started to grant standing to environment components such as rivers, lakes, trees, and forests. For instance, some countries have adopted policies, laws and regulations to achieve *Living in Harmony with Nature* and to grant a legal protection to the Earth's biodiversity. In addition, four rivers in the world have been granted a legal status: the Whanganui River in New Zealand, the Ganges and Yamuna Rivers in India, and the Rio Atrato River in Colombia.

31. From this perspective, anyone can defend the rights of the environment. The after-the-fact law principle whereby a case can only be brought to court following a harm is shifted to a process whereby anyone, when a harm is done or as a preventive measure, can bring a case on behalf of the environment. The need to be individually affected by the harm caused to the environment is therefore obsolete according to the Earth jurisprudence approach. In this Earth-centred shift, damages would be directly issued to the environment instead of issuing them to the plaintiff – who is usually an individual.

32. Some argue that nature's legal protection and recognition should pursue two objectives: the protection of human rights and the protection of ecosystems.³¹ The first approach considers the right to life, the right to physical integrity and the right to property. This paradigm does not grant a status to nature. However, if nature is destroyed or polluted in such a way as to affect the previously mentioned human

²⁷ <https://pwcce.wordpress.com/programa/>

²⁸ Klaus Bosselmann, *Earth Governance: Trusteeship of the Global Commons*, Collection of Law, 2015.

²⁹ Basic Law for the Republic of Germany <https://www.btg-bestellservice.de/pdf/80201000.pdf>

³⁰ Klaus Bosselmann, *Earth Governance: Trusteeship of the Global Commons*, Collection of Law, 2015.

³¹ Jens Kersten, “Who Needs Rights of Nature?” in *Can Nature Have Rights?*

rights, the person who was harmed has the right to be protected against that harm and will indirectly protect nature as well. The second approach considers nature as a separate entity, as a legal person of its own standing, who has subjective rights, where anyone can bring a case to protect the environment. The second objective could be at the centre of “living in harmony with nature”.

3. Conclusion

33. Humankind may need to transition from a self-centred paradigm to an Earth-centred approach to find sustainable pathways for its future development. By acting now to make its approach more holistic and natural (nature-based solutions), the Earth’s population will be on track to live in harmony with nature by its 2050 Vision, and be able to maintain ecosystem services, sustain a healthy planet and deliver benefits essential for all people. These changes start with a perception shift at a societal level and at a government level. Adopting law on its own will not be enough to stop the degradation of Earth. Humankind needs to change its relationship with nature by placing nature’s needs foremost when it takes action on matters of daily lives.

II. NATURE AND CULTURE: A CASE STUDY FROM SRI LANKA³²

34. Nature conservation efforts in most countries have achieved only limited success, despite heavy investments. This suggests that some of the more commonly adopted and exclusively scientific, political, economic, or legislative strategies for nature conservation and environmental protection are not proved adequately effective. What is missing from the equation? Is it culture? In this context, the usefulness of culture-based approaches in dealing with issues of environmental management is explored here in the context of living in harmony with nature.

35. The argument focuses on Sri Lanka as a case study — a country where people’s traditional ways of interacting with and comprehending their natural environment remains strong. It delves into a vast body of traditional knowledge that underpins some aspects of local agriculture, health care, food preparation, education and environmental conservation. Some recent attempts to links biodiversity and cultural traits are also briefly examined.

36. More specifically, the objective of this study is broadly threefold. It seeks to contribute to the fascinating and expanding field of biocultural diversity for further investigation through a study of culture and biodiversity (in the Sri Lankan context). It attempts to identify some of the main fields of traditional knowledge where ecological information is still preserved in some form (e.g. folklore, folk poetry, literature, place names, etc.) or applied (e.g. traditional medicine and traditional agricultural methods) in rural Sri Lanka. It also explores the possible implications of the link between culture and biodiversity for policymakers involved in biodiversity conservation and the boarder considerations for living in harmony with nature, by 2050.

37. Sri Lanka, as an Island located towards the southern tip of India and the Asian continent and on the northern shores of the Indian Ocean, and in the core area of the South Asian monsoon, which has developed its own unique natural character after long periods of natural evolution in geological history. The culture of the island was primarily fed by influences from the Indian sub-continent. However, due to its insular nature, it has also developed its own unique forms of indigenous language, medicines, foods, customs, attire, architecture and culture. Sri Lanka is a land rich in nature and culture. Its five great natural endowments are: oceanic resources; land resources; water resources; biotic resources;³³ and human resources.

³² This case study was provided by Professor C.M Madduma Bandara, Emeritus Professor, University of Peradeniya, Sri Lanka, and is based on his keynote address delivered at the Asian Regional Training Workshop on National Arrangements on Traditional Knowledge, in Kandy, Sri Lanka, on 27 July 2018.

³³ Sri Lanka has the highest biodiversity per unit area in Asia in respect of certain species of fauna and flora.

38. Sri Lanka with a recorded history of over 2,500 years and a prehistory of several millennia, had acquired an accumulated wisdom for managing and conserving its natural resources and its rich biodiversity.

A. Ecosystem diversity: traditional classifications

39. The traditional knowledge systems seem to have had an in-depth perception of ecosystem diversity (especially of the terrestrial environment) in Sri Lanka. This is evidenced by the indigenous terminology which identifies a greater number of ecosystems or habitats (especially boundary or transitional ecosystems) than found in the modern classification systems. Such “subsystems” seem to have been identified or classified on the basis of a variety of factors, such as physiognomy, functioning and successional stage, geomorphic setting and hydrological regime as well as human use and conservation status.

Ecosystem Type	Sub Type
Forest	<i>Bedda, Kelaya, Vanaya, Adaviya, Aramba, Mookalana, Gonna, Golla, Badawetiya, Digiliya, Pelessa, Kadolkele, Gomuwa, Ketiya,</i>
Grassland and Savanna	<i>Patana, Eliya, Talawa, Damana, Villu</i>
Wetlands/ Inland Waters	<i>Wagura, Villu, Oya, Ara, Ganga, Kandura, Hela, Wewa, Kulama, Pokuna, Wila, Owita, Pothaana, Degambada, Kadolaana, Heba, Ebe</i>
Maritime Landforms	<i>Boku, Kalapu, Moya, Wella, Tuduwa, Kadolaana, Helawa, Kala, Duwa,</i>
Inland Landforms	<i>Hinna, Ulla, Tenna, Vinna, Kanda, Ovilla,,Pitiya, Galla, Pane, Goda, Deniya, Kinda, Bokka, Muduna, Munna, Waka</i>
Caves	<i>Lena, Dena, Guhawa Muhudu guhawa, Hummanaya</i>
Traditional Agro-ecosystems	<i>Gewatte, Gangoda, Yaya, Kumbura, Hena, Kanathu, Ath-danduwawa, Helmalu Ruppawa</i>

40. Ecosystems also display some interesting cultural dimensions. With regard to mountain ecosystems, a hierarchy of nomenclature can be seen. They range from termite mounds to high mountains as can be seen in the many very specific local names, such as Tumbasa (ant hill), Goda (Highland), Hela (Hill), Wetiya or Heenna (low ranges or spurs), Kanda (mountain), Tenna (plateau), Hela (Escarpment), Giri or Gira (high mountain). Folk poetry has also assigned a different status to different mountains among which Samanala Kanda (Adams Peak) is assumed to be the leader of all mountains in Sri Lanka. Evidence of a knowledge of the soil catena is also reflected in village names along the slope from the mountain crest to the stream valley below, as in the case of Ovilikanda, Ovilla, Tenna, Deniya, Ovita and Kandura.

41. Traditional hydraulic (water) knowledge and practices in the Dry Zone were carried to the hill country with necessary innovations. Traditional knowledge informs the local peoples that mountains must to be treated as reservoirs so that water is available for irrigation systems. The local streams are identified through traditional knowledge with different levels of hierarchy. Ganga is usually a perennial river (Eg. Mahaweli Ganga, Kalu Ganga, Kelani Ganga) without a pronounced seasonal regime, as opposed to an Oya in the dry zone which is characterized by a seasonal regime (e.g. Malvatu Oya, Yan Oya). Oya in the wet and intermediate zones may also mean a tributary of a major river (e.g. Badulu Oya, Kurundu Oya and Ritigaha Oya. Types of creeks are differentiated by using such terms as Ara, Dola and Kandura.

B. Toponymy and biodiversity

42. Toponymy describes the place names, including villages, townships and administrative divisions. These names often reflect the richness of culture as well as that of nature. In countries such as Sri Lanka, with a long human history and high biodiversity, toponymy tends to reflect the richness of both. Most

village names have been derived from characteristic flora or fauna in their vicinity. However, during colonization, many names were replaced with foreign names. Modern property developers are continuing to introduce foreign place names in place of native names, obviously following the colonial tradition, to the detriment of local communities' connection to their local ecosystems.

C. Culture and biodiversity

43. Sri Lankan culture and religious iconology are rich in animal and plant life and closely related to biodiversity. In particular, birds and butterflies enriched folk lore, sculpture, painting and poetry. Additionally, all provinces have emblematic endemic flowers.

D. Ecosystem-related village names

44. Many villages had their names derived from the mountains, valleys, streams, flora and fauna. These, in turn, had become personal names among both monks and the laity. In contrast to the names around Colombo ending with the suffix “goda”, (for example Pagoda, Poogoda, Meegoda and Nugegoda), names in the hill country ended with “deniya” (as in the case of Peradeniya, Aladeniya and Guru Deniya).

E. Reviving an ailing agricultural system

45. Sri Lanka's traditional rural agricultural sector is now showing signs of deterioration and lack of profitability. This was a decline initially triggered by the abolition of the traditional system of land tenure (Rajakariya) during early British colonial rule. It was greatly accelerated by the so-called “green revolution” since the 1960s. The latter's main goal was to eliminate food shortages in the face of population growth. It depended on the use of irrigation, chemical fertilizers, pesticides, hybrid seeds and mechanization. Its focus on high-yield cultivation led to remarkably increased yields of certain types of rice but exacted heavy costs on the environment. It also led to serious problems of human health, such as leptospirosis. The use of artificial fertilizer created a toxic environment for soil organisms, hampering natural soil fertility in the long run, as did pest management practices that used biological, chemical or physical methods. As a result, a strong organic movement has taken root in Sri Lankan society in recent times. Traditional agriculture, which had originally raised many drought-resistant crops, millets and pulses, and animals, lost much of its biodiversity. The lack of sustainability of modern agriculture has resulted in a deep reconsideration of traditional and sustainable methods of agriculture, as well as traditional diverse crop varieties. For instance, the British introduced a species of potato (*Solanum tuberosum* L.) originated in Andean highlands of Peru, and Europeans who settled in hilly areas introduced it to Sri Lanka in the 1850s for commercial production. However, Sri Lanka was already a centre of tuber diversity, with more than 27 different varieties of indigenous yams³⁴ available and in use before colonization.

F. What does biocultural diversity mean for policymakers?

1. A return to traditional calendars

46. A judicious revival of the traditional crop calendar and extensive reforms, such as a return to diverse traditional crops and a move away from chemical fertilizers and pesticides, may have a significant potential for improving productivity in the agricultural sector without exacting high environmental costs and ensuring long-term sustainability.

2. Restoration of traditional crops and practices

47. Traditional practices relating to crop agriculture where appropriate could also be usefully restored. The use of animal and green manure as natural fertilizers is one example: plants selected for green manure are high in nutrients and release them through decomposition at different rates. The restoration of biological systems that once played an effective role in controlling natural parasites and predators without harming ecosystems are showing signs of return. This could be achieved by promoting the use of mechanical methods and natural chemicals in place of synthetic chemicals. The government may need to take a more active role in these restorative efforts.

³⁴ Refer to <http://bfinsrilanka.org/index.php/root-tubers/local-yams>

3. Applying traditional ecological conservation – pest control

48. Kurulu paluwa (or the bird damage area) is another important component of man-made traditional agro-ecosystems. This refers to a strip of cultivated rice land adjacent to a highland forest primarily dedicated to birds. Although its exact function is not clear, it is probably left without harvesting for birds to feed on to reduce overall bird damage to crops. This would have somewhat minimized avian crop damage in the main tracts. It would have also have minimized rice plant pests as birds feed on them as well. This is a fine example that shows how the traditional societies knew through experience the importance of biodiversity and how to harness it while conserving it.

4. The revival and use of indigenous place names

49. In recent times, creation of new settlements and attempts by property developers to give them monotonous, exotic or even esoteric names have had a diluting and swarming effect on the traditional system of naming villages and settlements. Any attempt to encourage, retain and promote the use of biodiversity related natural place names may prove beneficial not only to the cause of biodiversity conservation but also to maintain the cultural diversity and the very identity of the nation.

50. Property developers appear to be increasingly replacing natural place names, as it happened during the expansion of plantation agriculture. In this context, establishment of an official naming authority, as is evident in some countries may prove helpful.

51. Recently, the Ministry of Environment has facilitated the fostering and harnessing of people's traditional modes of interacting with and comprehending their natural environment in the interest of biodiversity conservation. The national symbol, the lion, as depicted on the Sri Lankan flag, inspired the government to declare *na* (ironwood) the national tree, *wali kukula* (jungle fowl) the national bird and *nil manel* (blue water lily) the national flower. The selection of these symbols was based on the degree of endemism they possess and the degree of national sentiment each was presumed to evoke, as evaluated by an official committee appointed for the purpose.

52. Other action taken by the Biodiversity Secretariat of the Ministry of Environment included efforts to encourage Provinces to adopt a symbolic provincial flower that asserts a regional identity and the image of the Province. The flowers chosen included *attaria* (orange jasmine), adopted by Wayamba Province; *guruluraja* (foxtail orchid), adopted by the Uva region; *ehela* (golden rain), adopted by the North Central Province; *maharatmal* (rhododendron), adopted by the Central Province; *wesakmal* (*Dendrobium macarthuriae*), adopted by Sabaragamuwa Province; *vishnukranthiya* (dwarf morning glory), adopted by the Eastern Province; *heen bovitiya* (*Osbeckia octandra*) adopted by the Southern Province and *sudu nelum* (white lotus), adopted by the Western Province.

53. The national Government issued a series of postage stamps to commemorate these provincial flowers. The stamps, along with the selection of provincial flowers and the national tree, bird and flower, are a simple way to revive an understanding in the minds of the Sri Lankan people of the links between nature and culture and the rich biodiversity of their island. While it is impossible to measure the direct effect of these initiatives, their premise that nature conservation efforts are best backed by a sense of belonging and deep commitment offers great promise for Sri Lanka, given the country's bio-culturally diverse heritage.

G. Conclusion

54. There is clearly a great deal of scope for cross-cultural comparisons and more comprehensive studies on the links between nature and culture than is possible within the remit of this address. It is to be hoped, however, that the approach outlined here may suggest useful directions for policymakers involved in biodiversity conservation in most countries. It is particularly relevant to Asian countries with long histories of civilization, where strong links between nature and culture existed and still exist.

III. CHINA AND AN ECOLOGICAL CIVILIZATION

55. There are several national approaches to rethinking and restructuring the human relationship with nature. One such approach is the concept of an "ecological civilization". The concept, spearheaded by the

Government of China, has gained momentum over the last decade. In a discourse delivered at the 19th National Congress of the Communist Party of China, 18 October 2017, the President of China, Mr. Xi Jinping, expressed the core tenets of ecological civilization:

Man and nature form a community of life; we, as human beings, must respect nature, follow its ways, and protect it. Only by observing the laws of nature can mankind avoid costly blunders in its exploitation. [...]

The modernization that we pursue is one characterized by harmonious coexistence between man and nature.³⁵

56. The respect, accommodation and protection of nature are central to the concept of an ecological civilization.³⁶ An ecological civilization strives for a form of development which promotes a harmonious relationship between human societies and the natural world. This harmonious relationship has material, spiritual and organizational components.³⁷ Ecological civilization is therefore an ideology and a strategy to guide society toward sustainability. It has indeed been adopted and institutionalized as the national strategy by the Chinese Communist Party since 2012.³⁸

57. Ecological civilization advocates sustainable production and consumption. It calls for a reduction, among other things, of waste, energy use and resource consumption. One way to achieve this is through the promotion and adoption of modest and low-carbon lifestyles. Indeed, in his 2017 address, President Jinping stated that “we encourage simple, moderate, green, and low-carbon ways of life, and oppose extravagance and excessive consumption.”³⁹ In that sense, ecological civilization questions conventional models of modernization and development, associated with increased production and consumption of goods.

58. An ecological civilization encourages the implementation of growth models which are not destructive of nature. China indeed strives for increased production and higher standards of living, but also for healthy ecosystems.⁴⁰ It views economic development and environmental protection as mutually reinforcing.⁴¹ The objective is to support, through a legal and policy framework, the development of a circular and low-carbon economy.⁴² An ecological civilization therefore strives to enhance human well-being by being more in tune with natural processes.

59. Building an ecological civilization also involves implementing environmental protection measures. Indeed, the establishment of protected areas, the development of ecosystem restoration schemes, and the prevention of urban sprawl are means of protecting ecosystems from harm or helping them recover from destruction. Considering the transboundary nature of many environmental issues, an ecological civilization also depends on environmental action at the global level. For that reason, engagement in international cooperation on environmental issues is an important component of building an ecological civilization.⁴³

³⁵ Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era*. Delivered at the 19th National Congress of the Communist Party of China, p. 45.

³⁶ Guangyao, Z. (2016, March). Ecological Civilization; A national strategy for innovative, concerted, green, open and inclusive development. *Our Planet*. Available at <http://web.unep.org/ourplanet/march-2016/articles/ecological-civilization>

³⁷ Guangyao, Z. (2016, March). Ecological Civilization.

³⁸ Guangyao, Z. (2016, March). Ecological Civilization.

³⁹ Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society*, p. 46.

⁴⁰ Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society*.

⁴¹ Guangyao, Z. (2016, March). Ecological Civilization.

⁴² Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society*.

⁴³ Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society*.

60. In the vision of the Government of China, advancing toward an ecological civilization requires establishing an environmental governance system based on the leadership of government, corporate responsibility and public participation.

61. A central component of building an ecological civilization is cultivating an ecological culture and value system.⁴⁴ A cultural shift is therefore at the core of the movement towards an ecological civilization. This shows the paramount importance of the nexus of nature and culture to the maintenance of a harmonious coexistence between humans and nature.

62. Finally, the concept of ecological civilization adopts a long-term vision, similarly to the concept of sustainable development. In his 2017 address, the President of China expressed how developing an ecological civilization would benefit generations to come:

What we are doing today to build an ecological civilization will benefit generations to come. We should have a strong commitment to socialist ecological civilization and work to develop a new model of modernization with humans developing in harmony with nature. We must do our generation's share to protect the environment.⁴⁵

⁴⁴ Guangyao, Z. (2016, March). Ecological Civilization.

⁴⁵ Jinping, X. (2017, October 18). *Secure a Decisive Victory in Building a Moderately Prosperous Society*, p. 47.