China Council for International Cooperation on Environment and Development (CCICED)

Special Policy Study (SPS) on

Post-2020 Global Biodiversity Conservation

BUILDING MOMENTUM FOR A SUCCESSFUL CBD COP 15

2019 Policy Recommendation Report

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Post-2020 Global Biodiversity Conservation

BUILDING MOMENTUM FOR CBD COP 15

I. INTRODUCTION

World attention is focusing on the emerging and worsening global 'environmental emergency' that will affect present and future generations. The 2015 Paris Agreement on Climate Change is designed to address one key driver of the emergency. In addition, scientists have made a strong case that ecosystem destruction, with loss of biodiversity and ecological services threaten planetary and human health and well being in unprecedented ways (see IPBES Summary Report for Decision Makers released in May 2019).

Accelerated actions under the Global Convention on Biological Diversity (CBD) require levels of public attention comparable to those of the Paris Agreement on Climate Change. Furthermore, there is great need for seeking synergy in implementation action under the various global environmental regimes. The UN 2030 Sustainable Development Goals (UNSDGs) incorporate clear goals and target action on environmental matters, and a timeline to 2030 for meeting the most urgent needs. One important area of progress during the first years of the UNSDGs has been the increased attention regarding the plight of global ocean environment, ecosystems and biodiversity; and the important role of the oceans in climate change.

2020 to 2030 is a critical period for 'turning the curve' towards sustainable resource use, conservation, and ecological restoration. Full return to a healthy planet and living within 'Planetary Boundaries', and an acceptable 'Ecological Footprint' for all people and nations will take longer. Milestones are needed for the two decades after 2030, and also for the longer term to 2100. For Climate Change, limiting global temperature rise to no more than 1.5 to 2 degrees C is commonly cited as a single target. Setting a single target for biodiversity conservation is very difficult. One approach is to consider a target global number for protected land, freshwater and ocean protected areas. More broadly, is the building momentum in many circles for 'A New Global Deal for Nature' (NGDN). Such initiatives will require comprehensive action to respect, protect and enhance biodiversity and ecosystems. It is an idea that is compatible with Chinese concept of 'People Living in Harmony with Nature' and new concepts such as 'Ecological Civilization'.

The CCICED Task Force on Global Governance addresses climate change, biodiversity conservation, and ocean sustainable use via three Special Policy Studies. The Task Force has highlighted cross-impacts and synergies among the three topics and their links to the UNSDGs. 2020 is a particularly important milestone globally and within China for this Task Force since major assessments will take place for

each topic, reviewing progress, and in the case of the CBD, setting new targets for 2020-2030 and possibly beyond to at least 2050.

China will host the 15th Conference of Parties to the CBD (COP 15) in Kunming in October 2020. COP 15 is an important opportunity for China to engage and accelerate global progress on protecting nature, and to showcase its own progress. It is also an opportunity to consider how synergies can be improved among the key subject areas, and with other topics such as the Belt and Road Initiative (BRI), green supply chains and China's War on Pollution.

The Post-2020 Global Biodiversity Conservation SPS began its work in 2018, focusing on three main topics:

- Analysis and proposals for the Post 2020 Framework;
- Political mobilization for global leadership and green diplomacy as the host to ensure agreement of ambitious, practical post-2020 framework in Kunming; and
- Showcasing via case studies China's own progress and needs including Ecological Civilization, institutional reform, performance management / implementation, ecological redlining, the new National Park System as the basis for its expanded conservation system, and perhaps other examples such as eco-compensation.

This CCICED SPS will continue to work closely with the international community as the approach to COP 15 evolves and gains momentum, and with the organizing body and others within China. Initial recommendations from the SPS were provided in its initial report to the CCICED Annual General Meeting in November 2018. The current progress report provides further recommendations, including some initial suggestions on the role of Biodiversity conservation in the 14th Five Year Plan. It is anticipated that work will need to continue over the coming year leading to COP 15, and perhaps beyond. Participation in various international forums will take place.

The first of these was a well-attended Side Event sponsored by the SPS seeking advice from stakeholders at the November 2018 CBD COP 14 in Sharm El-Sheikh in Egypt. The COP 14 theme was *investing in Biodiversity for People and Planet.*

A second initiative was attendance by our SPS member Harvey Locke and SPS Team Leader Li Lin at an April 2019 international meeting held in Montreal to catalyze formation of a 'Coalition of Champions' for protection of Nature. As Canadian Minister of Environment and Climate Change, Catherine McKenna arranged this international gathering. It followed directly from the CCICED Open Forum on Post-2020 Biodiversity Conservation held at the 2018 AGM.

In addition, there has been extensive contact of SPS team leaders with the CBD Secretariat, various stakeholder bodies such as WWF, IUCN, World Economic Forum, and various countries including Germany, Canada, France, Norway, plus several developing countries and civil society bodies within and outside China. It will be important to provide further inputs to decision-makers inside China, and possibly to international bodies as well, at various points later in 2019 and 2020.

Our work must take into account real time decision-making in the lead-up to COP 15.

From our experience in the months since COP 14, we have learned there is still a great gap between high expectations on the part of scientists and others alarmed at the rapid global ecological damage and biodiversity loss, and existing political will nationally and globally to take sufficient action to guarantee a sustainable future. It is a question of global political will to ensure that COP 15 is highly successful. Also, increasing the level of public interest throughout the world, commitments of enterprises and the financial sector, will make difference. In 2015 this happened for climate change, and over the last two years also for attention on oceans, particularly on reduction of plastic wastes.

This SPS recommendation document places emphasis on building momentum towards political commitment for CBD COP 15, consideration of China's efforts to adopt best practices, and raising understanding of the need for societal commitment to protecting and conserving nature. We use the term *nature* intentionally, as that is the term people and decision makers understand and value intuitively, even though many scientists and policy makers are comfortable with terms such as *biodiversity and ecosystems.*

A longer SPS report will be issued later this summer or early fall. It will further address various points currently under study by the SPS.

2. BUILDING MOMENTUM

Over the past 20 years, global targets for Biodiversity have not been fully achieved. The latest global *Strategic Plan for Biodiversity (2011-2020)*, set 20 targets ('Aichi Biodiversity Targets'). The Strategic Plan provided a roadmap and schedule for global biodiversity sustainable use and benefit sharing. It provided a flexible framework for setting national targets and a 2050 long-range target: 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." Most of these Aichi Targets will be missed, even though there are encouraging results in various countries and regions.

Leading up to COP 14, there were various assessments of progress on the individual 20 goals so that reasons for slow progress are reasonably well understood. At CBD COP 14 an Inter-sessional Working Group was approved to help in the formulation of a suitable framework for the COP 15 meeting. The idea is this effort might serve as the basis for a new action plan covering 2021-2030 targets and for options that extend well beyond the next decade, perhaps to 2050.

Directly related to future practical needs, Egypt and China, in collaboration with the CBD, launched the '*Sharm El-Sheikh to Beijing Action Agenda for Nature and People*' at COP 14. As noted by IISD coverage of the conference, "the action agenda has three main objectives: to raise public awareness about the urgent need to stem biodiversity loss and restore biodiversity health for both humanity and the global ecosystem; to inspire and implement nature-based solutions to meet key global

challenges; and to catalyze cooperative initiatives in support of global biodiversity goals. The action agenda will be hosted on an online platform that will receive and showcase commitments and contributions to biodiversity from stakeholders across all sectors in advance of COP 15…This platform will enable the mapping of global biodiversity efforts, and help to identify key gaps and estimate impact." By early April 2019 the platform was launched on the CBD website, and will allow for the "the full commitment and engagement" of the global community.

More recently still, at the May 2019 meeting of the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), the Summary Report for Policymakers of the 2019 Assessment was released. This document sent shockwaves as it noted that as many as a million species could be lost in coming times. The summary report is based on finding from a very comprehensive IPBES report to be released in late 2019.

3. POLITICAL ENGAGEMENT

3.1 Addressing Key Challenges

Many challenges have held back progress on CBD goals and targets, including those noted below.

- Despite some inspiring progress at national and local levels of various countries, global efforts to reverse nature loss still lack sufficient political urgency, commitment and effective delivery. Implementation of individual multilateral environmental agreements is sub-optimal, and together the efforts lack alignment and accountability. Climate change, ecologically sustainable land and water use, ocean sustainability, and biodiversity loss present what should be *one integrated challenge that requires unified responses.* Yet such an approach generally has not happened.
- Loss of natural capital and ecosystem services remains relatively low on political, public and private sector agendas. Companies and financial institutions are not yet playing significant enough roles in safeguarding nature; and space for civil society interventions is shrinking in some parts of the world.
- Scientists addressing biodiversity often have significant differences in how they feel issues should be presented and addressed. The extent to which economy and ecology should be co-promoted in addressing ecological goods and services is a frequently mentioned example.

Driving transformational change in order to reverse trends in nature loss by 2030 and setting a path towards restoration by 2050 will require a much more urgent, coherent and integrated response at local, national and global levels during the coming decade. Effective political champions are needed, especially in the preparations for COP 15 and in the immediate years after.

Momentum on climate change and the UN SDGs before and since 2015 suggests progress on ecosystem restoration is possible–as long as the two key ingredients that made the Paris climate negotiations successful are replicated: that non-state actors and business take significant and meaningful action in advance of COP 15 and shape key UN negotiations; and that countries hosting COPs and other summits conduct

professional and inclusive diplomacy designed to deliver flexible and accessible high quality policy frameworks.

No single organization, sector or even country can face these challenges alone. The political mobilization should reach out as widely as possible, and across all the countries. The time from now to the 2020 CBD COP 15 in China is critical for building needed political engagement and mobilization.

3.2 Realizing Opportunities

Among countries demonstrating a degree of elevated political willingness and leadership are Canada, Costa Rica, Egypt, France, Germany, Kenya, Norway and others are emerging. In addition, UN leadership is emerging via bodies such as UNEP, UNDP and FAO. IUCN, WWF, the World Economic Forum and other independent organizations are prepared to take on leadership roles. The opportunity for China is to mobilize support from these and additional leaders for building ambition and action on protecting Nature at national and global levels. This can be done in a staged fashion taking advantage of forums and initiatives already being planned.

For example, with the success of the Paris Agreement, the French government has continued to show leadership on Nature by tabling the Global Pact for Environment at the UN High Level Political Forum in July 2017 and will host the IUCN World Conservation Congress in mid-2020. The French Development Agency is working with the financial community worldwide to enhance green growth investment, with implications for both Climate Change and Biodiversity Conservation. The recent G7 Environment Ministers Meeting in Metz, France, which emphasized 'Natural Solutions', for example in addressing some aspects of Climate Change.

In late April 2019, Canada hosted a *Nature Champions* meeting in Montreal attended by Environment Ministers and leaders from various organizations to begin global mobilization for "placing nature's needs at the heart of all global agendas." This *call to action* includes an emphasis on 'Nature-based Solutions' and other matters noted below:

- *recognizing the fundamental link between nature, a stable climate, human wellbeing, and sustainable development for all;*
- *uniting nature conservation objectives with addressing climate change and developing nature-based solutions that are effective for both;*
- *promoting an ambitious set of new targets for the UN Convention on Biodiversity (CBD) that has clear and measurable objectives for 2030 and effectively enables the world to reach the 2050 Vision of Living in Harmony with Nature;*
- *widening the participation in the Convention on Biological Diversity Strategic Plan beyond governments to include commitments and actions by a wide range of actors;*
- *addressing nature's needs by increasing the proportion of land and ocean that we protect and conserve around the world and improve the way we manage and restore it;*
- *addressing the key drivers of nature loss across the world by enhancing concrete action on:*

    - *reducing habitat-loss and deforestation;*
    - *curbing terrestrial and marine pollution; and*
    - *developing and strengthening sustainable supply and value chain management;*
- *embracing nature-based decision-making in all key political, economic, cultural, and social decisions;*
- *increasing investment in nature conservation and leveraging existing commitments to mobilize new resources; and*
- *recognizing and enhancing the role of subnational governments, cities and other local authorities as well as of Indigenous peoples, local communities, women and youth in the protection of nature.*

The Canadian political call to action meeting will be followed by other such gatherings, for example, the Conference on Biodiversity in Trondheim, Norway, 3-5 July 2019. That meeting will focus on establishing dialogue on how to achieve an "ambitious outcome" from COP 15. It will also focus on green supply chains to address matters such as deforestation. The UN General Assembly high-level segment this September, COP 25 on Climate Change in December 2019, the June 2020 Oceans Conference, and the June 2020 IUCN World Conservation Conference are examples of other venues where Nature Champions can meet and their numbers expanded.

What is most important, however, is not to focus only on those who are already engaged. If nature conservation and biodiversity are to become mainstreamed to the extent already achieved for Climate Change, it is necessary to broaden support within the major business drivers of the economy, in the decisions of consumers, and in the value systems of society. This implies the need for a much broader outreach across many sectors, and into investment and trade practices for example. It will be necessary to deepen dialogues established in recent years at Davos forums, and in many other meetings and mechanisms. The big opportunity is to make the CBD COP15 a turning point for Nature in the same way that the Paris Agreement was for Climate Change. All these created a space where China can play a convening and leadership role.

3.3 Potential Chinese Responses and Political Engagement Possibilities

China can be at the center of the game to ensure momentum builds for COP 15. Also, China can liaise with various countries to build on the strength of each other. Similarly, via cooperation with international organizations, enterprises, and others, China can amplify their impact. China also can lead by showcasing the progress it is making towards mainstreaming its approach to Ecological Civilization and specific efforts to conserve and protect Nature. Below are several important ways for China to engage with others in the drive for a robust outcome to COP 15.

Only being a good host for the CBD COP15 is not enough. With all the warning signs that Nature is in a state of emergency throughout our planet, 2020 becomes the historical moment when China can and should take the most meaningful actions possible. Three outcomes are possible: A: agreement on an ambitious framework

for 2020-2030 that the world will hail, such as that of the Paris Agreement, that the world will put all its efforts to achieve, and that will be remembered in history; B: agreement on a mediocre agreement based on lowest common denominator with perhaps more than half of the world not satisfied and perhaps with criticism targeted towards China for not playing a sufficient leadership role; or C: facing immediate failure by reaching no agreement, with long-term negative implications. Outcome C is a no-go. Clearly, Plan B should clearly be avoided. China should strive vigorously for Plan A. But China acting alone will not bring success. Mobilizing support for Nature Champions—who collectively can form a formidable force for desired action—should be the approach China takes.

Mobilize and enable action by Champions for Nature. The entire government of China and other organizations should tackle the nature agenda with determination and high political will. All related ministries, and others should proactively engage with like-minded peers and stakeholders inside and outside of China, to create a movement in the lead up to 2020. All mechanisms need and can be explored: official diplomatic channels, track 1.5 and track 2 diplomacy, bilateral dialogues, multilateral discussions, multi-stakeholder exchanges, and public education and communications, academic connections, business engagements. This is a tall order but necessary and China is not alone on this as more and more champions for nature are emerging.

Utilize green diplomacy to break through geopolitical uncertainties. It is an opportune time for China to use green diplomacy to open new ground—a common high moral ground—to discuss global common issues, particularly reversing the loss of nature, and the economic gains from enhancing ecological services to gain new allies. This is also the time for China to explain to the world the essence of concepts nurtured by China, including *Ecological Civilization* and *A Community with a Shared Future for Humanity*.

Take leadership roles in promoting a 'New Deal for Nature and People'. The movement now taking shape for a *New Deal for Nature and People*, ("By 2020 a strong endorsement and commitment by Heads of State to substantially strengthen global targets and mechanisms of the CBD, in order to reverse the loss of Nature and to protect and restore Nature by 2030, in support of and underpinned by the SDGs and the Paris Agreement.") The essence of the New Deal for Nature and People is to have highest commitment in countries and, at the global level, by the UN Secretary General and, for Heads of States to reverse the loss and restore Nature throughout agendas of the government as a whole, beyond the ministries of environment. This will be supported by the mobilization of other ministries that are critical to the economic development, health, and wellbeing of the citizen, as well as business, financers and general public all over the globe.

China's ecological effort domestically is already becoming a path consistent with a New Deal. Examples include President Xi's 2005 thoughts that "clear waters and green mountains are as valuable as mountains of gold and silver"; Ecological Civilization, initiated in 2007 and now recognized in China's Constitution; the 5-in-1 approach that promotes economic, political, cultural, social, and ecological progress—proposed in 2012 and now a key policy goal; championing of

environmental protection along the Yangtze River Economic Belt (YREB) in 2017; the ban of all ivory trade in 2017; the elevation of Ecological and Environment Ministry in 2018; a newly established natural resources and ecological environment department under the Ministry of Finance in 2018; plus many more pilots and experiments on natural resource asset audits, enhanced environmental protection, including a focus on ecosystems, and particularly on the War on Pollution.

The top level design on environmental and ecological issues with the highest political will is critical to making a new deal with Nature. It is the right time for China to expand its green initiatives to all walks of life in China, and to China's overseas operations. It is also time for China to work with like-minded countries and players to have the whole world involved in formulation of a robust new deal with Nature. The CBD COP15 in China, in the year of realizing China's goal of a moderately well off society, provides China a great opportunity to make this a new deal for Nature and its own people.

China should become a beacon for the world through its march towards Ecological Civilization. It is time for China to reflect on the progress and development of thinking and practices, domestically and internationally, regarding ecological civilization. China is valuable to the world's sustainable development efforts, especially to those countries that may be entering a development stage similar to China's efforts in past decades. This approach could be tied to the efforts for a Green Belt and Road Initiative.

One more issue needs China's attention. Ecological Civilization is far reaching into the future, and explicitly addresses the relationship between development and ecological constraints However, due to culture, ideology and language barriers, the world is not able to fully understand China's thoughts and practices in the way Chinese understand them. It is important for China to enlist and engage like-minded allies to build understanding and join force with others outside of China in support of this endeavor.

With countries such as France, China can join force to engage at the Heads of State level (HoS) to jointly call for other HoS to be champions for Nature, to work with the UN Secretary General to champion an ecological agenda together. China can also engage closely with French teams of diplomacy and organization that have made Paris a success for UNFCCC, to learn from their successes and failures;

With countries such as Germany, China can join force to mobilize resources, to turn 'Merkle Millions' (From 2006 to 2017, Germany's contribution to international biodiversity financing has increased from 75 million euros per year to 537 million euros). Such investments levels per year must shift on the part of others to become equivalent to 'Billions for Nature';

With countries such as Kenya and many other African countries, China can build on some China-Africa efforts in the past two decades to elevate sustainable development practices towards ecological civilization joint initiatives, especially in the context of the UNSDGs;

By cooperating with many other countries, China can explore and be the glue for a common agenda, in order to secure systems of 'Natural Solutions' for our collective thriving future. Starting with France and bringing in EU, Germany, the UK, Canada, Rwanda, Uganda, Egypt, Chile, Mexico, Costa Rica, Colombia, Peru, Seychelles, Norway and others, there can be a gradual build up of interest in high quality outcomes from COP 15. The UNGA Climate Summit in 2019 is an important opportunity to bring out new ideas especially to address synergies among global agreements. In general, China can and should build on the domestic drive of Champion countries to generate political mobilization in national capitols. Also, to enlist support from these governments to help build popular, national and commercial action, and the political space to agree and deliver a 'New deal for Nature and People' through UN and international forums in 2020.

Demonstrating the essential role of Nature in peace and security, key forums such as the G7 and G20 also can be utilized to seek to introduce a Nature agenda and make Nature loss relevant to financial, peace, security and international justice. These bodies and some others are essential bodies for follow-up after 2020.

There are many other opportunities that can be taken on the part of Chinese organizations in the time leading up to COP 15. Obviously, these should be undertaken in a coordinated fashion and generally involve a number of partners, for example in the following three suggestions:

- Utilizing the opportunity presented with New Zealand and China co-leading the Nature-based Solutions work stream for the UNGA 2019 Climate Summit, the climate department and ecological units within China's MEE in should closely liaise with each other, so that the maximum gain for both biodiversity and climate change action can be achieved already at the 2019 UNGA Climate Summit;
- Accelerating learning from the success of the Paris Agreement on Climate Change. This should focus on two fronts: (1) within China: the biodiversity community should learn from the climate change community to gain the insights on engaging at global context, playing a more active and proactive role; and (2) with France: get more intensive and detailed exchanges with prominent leaders who have made Paris a success, by having open and honest dialogues to deep dive on how to play a leading role as a host country;
- Actively joining the newly emerged initiatives that aiming to generate collation of nature champions, such as the April 2019 Montreal Nature Summit that was inspired via the CCICED AGM in 2018. China should consider organizing such a gathering of Nature Champions soon, either later in 2019 or in early 2020. This way, China can utilize the spring-board effect created by other similar initiatives, and at the same time push for greater momentum leading to Kunming.

4. GOOD PRACTICES FOR BIODIVERSITY CONSERVATION RELATED TO CHINA

The Post-2020 Biodiversity Conservation SPS is interested in practices and case studies related to China's domestic situation and to activities relevant to China's relationships outside of the country, for example in the Belt and Road Initiative (BRI) countries. Showcasing China's experience is important as part of the global dialogue about what is feasible, pitfalls to be avoided, and what constitutes cost-effective Natural Solutions. As one of the most significant cases among the world's mega-biodiversity countries, the struggle to improve and restore Nature in China is a story of global significance. Good practices have emerged, and will be of particular value to other developing nations.

This section of our SPS 2019 Summary Report covers key points from draft material on Good Practices for Biodiversity Conservation in China. We will be publishing a more complete document later in 2019 as input to preparations for the CBD COP 15. The summarized points noted here form the basis for some SPS current recommendations, including considerations about higher quality development and also as preliminary ideas that might inform thinking regarding the 14th Five Year Plan (2021-2025) formulation.

Annex 1 is a brief regarding bamboo as an example of emerging Natural Solutions for sustainable development—bridging several important needs including poverty reduction, ecological services, low carbon economy, and biodiversity enhancement. This brief was prepared by a CCICED research partner, the China-based International Bamboo and Rattan Organization (INBAR). The case demonstrates the remarkably high potential value of bamboo both within China and in many other countries.

Over coming months we anticipate highlighting various other China-related cases which may be valuable to other countries and which might be considered at the time of the COP 15 (i.e., 'showcasing Chinese experience'.) There is particular value for ecological and conservation experience for the greening of China's signature partnerships under the Belt and Road Initiative. An example is Pakistan's interest in extensive reforestation ('10 billion trees program') and ecologically based water management. Pakistan wishes to draw upon China's experience.

4.1 Institutional Reform

4.1.1 Implementing institutional reform for ecology and biodiversity

China's State Council has a long-standing role in establishing and monitoring the *China Biodiversity Conservation Strategy and Action Plan (2011-2030)* and the National Committee for Biodiversity Conservation is chaired by the Vice Premier in charge of environmental matters. At the most recent meeting of the National Committee in February 2019, Vice Premier Han Zheng emphasized that strengthening biodiversity conservation is an important part of ecological civilization construction and an important starting point for promoting high-quality development. Certainly over this past decade, and even before, the topic has received high-level attention from Chinese leaders, especially President Xi Jinping.

In 2018, the Chinese government issued the "Deepening Party and State Institutional Reform Plan", in which the re-organized Ministry of Ecology and Environment is responsible for establishing and improving the basic system of ecological environment, supervising and managing environmental pollution prevention, guiding coordination and supervision of ecological protection and restoration, carrying out ecological environment monitoring, implementing ecological environmental supervision and law enforcement. The newly established Ministry of Natural Resources is responsible for conducting unified management of the development, utilization and protection of natural resources, and establishing a system for compensated use of natural resources. The National Forestry and Grassland Administration integrates the management responsibilities of nature reserves, scenic spots, natural heritage, and geological parks previously managed by various departments, and attaches the National Park Administration brand to establish a protected area system with national parks as the main body. The reform of the above-mentioned institutional functions has laid an important foundation for strengthening the protection of biodiversity.

4.1.2 Implementing a balance sheet system for natural resources

The scope for natural resources balance sheets should include both natural resources that can be used for economic systems in the accounting area, as well as those related to the ecological environment and ecological services of vital significance to survival of life on the planet. As an important part of ecological environmental protection, biodiversity is reflected in the protection of ecosystem diversity in the natural resources balance sheet mainly through the establishment of land, forest resources and water resources accounts. The basis of biodiversity conservation is the protection of the living environment of animals and plants. For the improvement of habitat quality, there are mainly natural forests, lakes and rivers accounting in the natural resources balance sheet. This accounting system is very much a work in progress and incomplete, for example in addressing the oceans. In 2015, the General Office of the State Council launched pilot work in several locations. The next step will include establishment of a unified framework and standards for a unified natural resources balance sheet. This information will also be used in a performance appraisal mechanism, for reasonably establishing the reward and punishment performance appraisal mechanism, and for construction of eco-civilization and green development.

4.1.3 Implementing the Departure Audit System for the Natural Resource Assets of Leading Cadres

The departure audit of leading cadres' natural resources assets refers to the accounting of the land, water, forests and other natural resource assets in the jurisdiction of the auditing department after the departure of leading party and government leading cadres. This system is to prevent leading cadres from paying attention to economic development but not taking into account environmental protection. The purpose is to promote leading cadres to better fulfill their natural resource asset management responsibilities and ecological environmental protection responsibilities. At an institutional level, it is a means to ensure leading cadres approach their ecological construction work with enthusiasm and initiative.

Therefore, it is often referred to as ‘ecological audit.’ This is part of a lifelong accountability system regarding ecological environmental damage liability on the part of officials.

4.2 Guiding principles of eco-civilization and green development

At the 19th National Congress of the Communist Party in 2017, the grand goal of “accelerating the reform of the eco-civilization system and building a beautiful China” was put forward. The main tasks to achieve this goal include: implementing major projects of important ecosystem protection and restoration, optimizing the ecological security barrier system, building the ecological corridor and biodiversity conservation networks to improve the quality and stability of ecosystems and establish the natural protected area system with national parks as the main body.

Xi Jinping's eco-civilization thoughts are rich in content and systematic, and deeply demonstrate the reasons, goals and pathways in eco-civilization construction. They are concentrated in the "eight adherences", that is, adhere to the theory of “civilization will flourish when ecology prospers”, adhere to the harmonious coexistence between man and nature, “lucid waters and lush mountains are invaluable assets”, adhere to a good ecological environment is the most inclusive benefit of people's livelihood, “mountains, rivers, forests, farmlands, lakes and grass forming a community of life”, adhere to protecting the ecological environment with the strictest system and law, adhere to the national actions of constructing ‘Beautiful China’, and persist in collaborating on the construction of global eco-civilization.

In 2016, the Chinese government issued the “Notice on Promoting the Ecological Protection and Restoration of mountains, rivers, forests, farmlands, lakes”, This Notice pointed out that, “Accelerate the ecological protection and restoration of rare and endangered animal and plant habitat areas, restore the damaged trans-regional ecological corridors to ensure connectivity and integrity, build a biodiversity conservation network, promote the overall restoration of ecological space, and promoting ecosystem function improvement."

4.3 Mainstreaming China’s Strategy for Biodiversity Conservation

In order to implement the Convention on Biological Diversity and effectively address new problems and challenges in biodiversity conservation in China, the Chinese government has continuously improved the organization and institutional construction of biodiversity conservation, integrated biodiversity conservation into ecological civilization construction, promoted the implementation of the mainstreaming strategy for biodiversity conservation, innovated and delineated the Ecological Conservation Redline (ECR), undertaken reform of the natural protected area system, with national parks as the centerpiece, and conservation and utilization of biological resources through ecological compensation and the creation of various economic benefits. These measures are starting to produce good results and accumulate successful experiences, which is of great significance for national and international biodiversity conservation and sustainable use of biological resources. In addition, China is seeking to introduce ecological and conservation concerns into

its relationships with neighboring countries as well as other interested countries, especially via the Belt and Road Initiative (BRI).

4.3.1 Formulating China's Biodiversity Conservation Strategy and Action Plan

The 2011-2030 Biodiversity Conservation Strategy and Action Plan defined the strategic objectives, strategic tasks, and priority action plans. At the same time, the action plans proposed priority areas for biodiversity conservation with well-defined boundaries for the first time in China, which have identified 32 inland and 3 marine biodiversity conservation priority areas in China, of which the 32 inland biodiversity conservation priority areas involve 885 areas in 27 provinces, accounting for about 24% of China's land area.

4.3.2 Integrating biodiversity conservation into the Five-Year Plans

In 2015, China issued the "13th Five-Year Plan" and clearly stated that "insisting on giving priority to conservation and natural restoration, promoting the protection and restoration of natural ecosystems, building ecological corridors and biodiversity conservation networks, and comprehensively improving the stability and ecosystem services of all types of natural ecosystems, in order to build an ecological security barrier."

During the "14th Five-Year Plan" (2021-2025), it is anticipated that China might further increase the importance and protection of biodiversity, re-formulate and implement the 2020-2030 Biodiversity Conservation Action Plan, accelerate the development of national legislation on biodiversity conservation, conduct regular biodiversity surveys and assessments, and continue to implement ecological protection and restoration in accordance with the concept of "mountains, rivers, forests, farmlands, lakes and grass form a community of life". By promoting the sustainable use of biological resources and improving the ecological compensation mechanism, it will be important to consolidate and enhance the production and living standards of people in poverty-stricken areas, while maintaining and improving the level of biodiversity conservation.

4.3.3 Implementing the National Plan for Major Functional Zones

In 2010, the State Council issued the "National Plan for Major Functional Zones". It is a strategic, basic and binding plan for the development of national land space. It divides the national land space into four categories: optimized development zones, key development zones, restricted development zones and forbidden development zones. The forbidden development zones refer to representative natural ecosystems, natural concentrated distribution of rare and endangered wildlife species, and natural heritage sites or cultural sites with special values. The plan determines a total of 1,443 national forbidden development zones with a total area of about 1.2 million square kilometers, accounting for 12.5% of the China's land area. Among them, the national nature reserve accounts for 9.67% of China's land area, where biodiversity conservation are given priority.

The "National Plan for Major Functional Zones" has identified 25 key ecological functional areas with a total area of 3.86 million square kilometers, accounting for 40.2% of the national land area. The national key ecological functions are divided into four types: water conservation, soil and water conservation, wind and sand

fixation, and biodiversity conservation. Among them, there are 7 biodiversity conservation zones.

4.3.4 National Land Planning Outline (2016-2030)

In 2017, the State Council issued the "National Land Planning Outline (2016-2030)". The Outline adheres to the principle of giving priority to conservation and natural restoration, and focuses on improving environmental quality. According to the control requirements of land development intensity in different regions, the comprehensive land protection should be promoted by classification and level.

4.3.5 Nature in the development plan for the Yangtze River Economic Belt (YREB)

In 2016, the state issued the outline of the development plan for the Yangtze River economic belt. It put forward improving the ecological environment as the top of the development strategy of the Yangtze River economic belt. The outline emphasizes the restoration of the ecological environment of the Yangtze River, respects the laws of nature and river evolution, and protects and improves the ecosystem services function of the river basin. It requires that the water environment and water ecology quality must achieve overall improvement in 2030, and put forward the specific objectives of ecological environment construction such as excellent water quality (reach or exceed Ⅲ) proportion (more than 75% in 2020), and the forest coverage rate (43% in 2020). Based on the principle of eco-priority, the outline stresses that the relationship between rivers and lakes should be properly handled, the protection of aquatic biodiversity should be strengthened, and forest protection and ecological restoration along the river should be reinforced.

4.4 Eco-compensation

The implementation of eco-compensation is an important means to mobilize the enthusiasm of all parties and protect the ecological environment. Over the past decade, the central government and local governments have actively promoted eco-compensation, and pushed forward the construction of a compensation mechanism for ecological protection orderly. However, on the whole, the scope of eco-compensation is still relatively too small and the standard is relatively too low, and the mechanisms between the protector and the beneficiary are not perfect, which affects the effect of ecological environmental protection measures. In order to further improve the eco-compensation mechanism, in 2016, the Chinese government put forward that "by 2020, a complete coverage of important regional eco-compensation such as forest, grassland, wetland, desert, sea, river, farmland and other key areas and prohibited development areas, key ecological function areas, will be implemented. Compensation level will adapt to economic and social development, and cross-regional and cross river compensation pilot demonstration will achieve significant progress".

The compensation system related to biodiversity protection includes: public welfare forest compensation; rewards for stopping commercial logging of natural forests; rewards for returning grazing land to grassland; subsidies for grazing prohibition and rewards for balancing grazing and livestock; important wetland eco-compensation; pilot project of land closure protection and compensation for

desertification; subsidies for the breeding, releasing and ecological environment restoration of aquaculture; compensation of aquatic germplasm resources reserve; compensation for ecological protection in national marine nature reserves and marine special reserves. Various compensatory measures have been promoted in an orderly manner by different authorities and have played an important role in the protection of biodiversity.

The establishment of upstream and downstream eco-compensation mechanisms not only ensure the water environment quality of the downstream regions, but also promote the protection of vegetation and habitat environment in the upstream regions. In 2012, the Ministry of Finance and the Ministry of Environmental Protection coordinated Anhui and Zhejiang provinces to jointly implement the cross-provincial eco-compensation mechanism for the Xinan River. On the basis of the success of the first three-year pilot program, the second pilot program was launched in 2015, with a total investment of 700 million RMB for the ecological and environmental protection of the Xinan River. In 2018, the provincial finance department, the provincial environmental protection department, the provincial development and reform commission and the provincial water resources department jointly issued the implementation opinions on the establishment of a horizontal (‘same level’) ecological protection compensation mechanism for upstream and downstream river basins in Zhejiang province, making Zhejiang the first province to implement a horizontal ecological protection compensation mechanism for river basins in China.

Eco-compensation, also could be used to strengthen the breeding research of wild resources, innovate the technology of biological resources development and utilization, and reduce the utilization of wild resources according to the principle of "protection first and sustainable utilization". Through the sustainable utilization of biological resources, the development and utilization of biological diversity resources will become a new growth point of economic development and a new means for residents to get rid of poverty.

4.5 Ecological Conservation Redline (ECR)

Delineating ECR is a major decision of the Chinese government. Compared with existing protected areas at home and abroad, the ECR system is based on ecological service supply, disaster mitigation control, and biodiversity conservation. It integrates existing types of protected areas and supplements the regions where the function of ecological services is extremely important or the ecological environment is extremely sensitive and fragile, so the composition is more comprehensive, the distribution pattern is more scientific, the regional functions are more prominent, and the control constraints are more rigid. It is a major improvement and innovation in the construction of the protected areas system. By delineating and strictly managing the ECR, it not only effectively protects biodiversity and important natural landscapes, but also plays an important role in purifying the atmosphere and expanding the water environment capacity. At the same time, the ECR is also the control line for the development of land space, which maintain the green water and

green mountains on which the sustainable development of the Chinese nation depends, it also provide a strong guarantee for safeguarding national ecological security and promoting sustainable economic and social development. Therefore, the ECR is sometimes called China's “another lifeline after the farmland redline”.

In February 2017, the General Office of the CPC Central Committee and the General Office of the State Council issued "Several opinions on delineating and strictly managing the ecological conservation redline", which clarified the overall requirements and specific tasks of ECR. In June 2018, the "Opinions of the Central Committee of the Communist Party of China on Strengthening Ecological Environment Protection and Resolutely Doing a Good Job in Pollution Prevention and Control" further proposed that the goal of the area of ECR should account for 25% of China's total land area.

Currently, China has made the following progress in delimiting ECR:

- Establishing a coordination mechanism. MEE has taken the lead in setting up a leading group for inter-ministerial coordination of ECR.
- Developing guidance documents. Documents such as the guidelines for the ECR delimitation, opinions and suggestions on the distribution of ECR in provinces (districts and cities), and technical regulations on ECR demarcation (pilot) have been issued to guide the orderly ECR delimitation in various regions.
- Building a regulatory system. The integrated monitoring network has been improved, an ECR regulatory platform has been launched and organized for operation. The platform is expected to be complete by the end of 2020.
- Intensifying efforts to publicize ECR. An ECR logo has been released. The ECR publicity video has been planned and produced. The useful experience of ECR demarcation has been summarized, the media has been invited to follow up the publicity, and the publicity of popular science knowledge of ECR has been strengthened. An ECR demarcation toolkit has been developed by cooperation with IUCN, and Chinese experience in ecological protection has been promoted to the international community.
- Positive progress has been made in ECR delineation. In February 2018, the State Council approved the plan of ECR delimitation in 15 provinces, including the Beijing-Tianjin-Hebei Region, the Yangtze River Economic Belt and Ningxia Autonomous Region, covering about 25% of the area. ECR delimitation of all the 15 provinces have been issued and implemented by provincial governments. At present, the 15 provinces are carrying out the pilot work of ECR demarcating. The other 16 provinces have formed preliminary plans for ECR delimitating, which will be revised and improved according to the opinions of the ministry and submitted to the State Council for approval.

In the next step, all localities will carry out ECR demarcation in accordance with the delimitation plan approved by the State Council. Combined with land space planning, protection land system construction and other work, the precise implementation of ECR will be promoted, and the more refined ecological supervision will be implemented. At the same time, the Chinese government will formulate and promulgate measures for ECR management, which will clarify the management principles, management and control of human activities, conservation

and restoration, ecological compensation, regulatory assessment and other requirements. And ECR legislation will be promoted on the basis of local management practices.

4.6 National Park as the core of a Protected Area System in China

After several years of consultation of discussion and planning, in September 2017, the General Office of the CPC Central Committee and the General Office of the State Council together issued the 'Overall Plan for Establishing a National Park System', which, based on a clear definition of the concept of national park, provides explicit description regarding how to build China's national parks from seven aspects. These are: overall requirements, scientific definition of the content of national parks, establishing a unified administrative power and tiered management system, establishing a system of funding guarantee, improving the system of natural ecosystem protection, building a coordinated community-development system and implementation support. The National Parks System will be the core for a broader network of protected areas, including many areas now designated as nature reserves or with other designations such as geo parks.

In less than five years, China has taken the opportunity of the national park system development and made significant milestone progress in comprehensively deepening the reform of the protected natural area system, laying a solid foundation for the realization of ecological civilization and the national strategy of building a beautiful China.

National parks will be state approved and managed—specific terrestrial or marine areas that have clear boundaries with an aim primarily to protect nationally representative, natural ecosystems, and to achieve scientific conservation and rational use of natural resources. The primary aim is to protect large-area ecosystems and large-scale ecological processes, underlining the need for preservation of the authenticity and integrity of ecosystems. They are clearly categorized as development prohibited zones in the national main functional area planning to achieve ecological red line management and the strictest protection. National parks adhere to the features of national representation and inheritance from generation to generation, inspiring national pride and leaving a precious natural legacy for future generations. They adhere to public welfare of the whole people, provide environmental education and recreation opportunities for the citizens and encourage the sense of identification for the protection of nature among the people.

Ten national park system pilot areas have been established in 12 provinces so far including Sanjiangyuan, giant panda, Siberian tiger and leopard and Qilian Mountain, to explore the protection of large-scale ecosystems and ecological processes in representative areas and promote deep institutional and system reform for protected natural area management.

In order to better implement the guidelines of "establishing a system of protected natural areas with national parks as the core", we put forward six recommendations as follows:

1. Solidifying the three cornerstones of "ecological protection first, national representation, and public welfare for the people" to achieve the core status of national parks in the system of protected natural areas by having the central government exercise the administrative power of national parks, while strictly controlling the access threshold and the total number of national parks.

"Ecological protection first, national representation, and public welfare for the people" are the overall requirement for the development of China's national park system in the new era of ecological civilization, and a distinctive feature of China's national park development, thus solidifying these three cornerstones of the development of China's national park system is the top priority.

To this end, we recommend classifying all national terrestrial and marine areas into different biogeographic units based on the characteristics of ecosystems and ecological processes. Within each unit, the most representative, authentic and complete areas should be selected as potential sites for national park construction to be included in the tentative list of national parks. When determining the national park sites and areas, attention should be paid to the function of the national park as an ecological corridor, establishing a spatial relationship between the existing protected natural areas with the national park as the core. In order to realize "administrative power by central government" and "the strictest protection" for all national parks, it is recommended that the central government strictly control the access threshold and number of national parks. The central government may organize multi-disciplinary experts who will develop China's national park development planning according to the requirements of authenticity, integrity and suitability; and formulate management implementation rules for individual national parks according their characteristics, management objectives and existing issues.

The national parks established in accordance with this highest standard and the most stringent procedures will become the highlight of Beautiful China, an outstanding representative and a model of conservation management of China's protected natural areas in the new era of ecological civilization, best reflecting the core position of national parks in the system of protected natural areas.

2. Establishing a wilderness conservation system in China and demarcating wilderness conservation areas within various protected natural areas such as national parks to carry out rescue protection of the national heritage of the country with the highest authenticity.

Wilderness refers to wild natural areas that is free from human interference and has no human inhabitation, without development land use and man-made visual obstacles such as artificial infrastructure and animal husbandry. The purpose of wilderness protection is to preserve its authentic natural state. Since wilderness is the natural heritage of the country with the highest authenticity, ecologically valuable essence of protected natural areas such including national parks, etc., the background of Chinese civilization, and the most beautiful part of homeland that is being lost rapidly in economic development, it is necessary to study and establish China's wilderness protection system and implement rescue protection.

Wilderness is a unit of management policy, instead of a unit of administration.

Currently, in most of the ten national park system pilot projects, tens of thousands of people live within the boundaries. Therefore, it is impossible to implement the "strictest protection" for the entire area for a long period of time. We recommend demarcating wilderness protection areas as large as possible within protected natural areas such as national parks, etc., where "the strictest protection" and "running wild" policies are implemented to truly give wilderness to the nature and incorporate wilderness into ecological civilization.

3. Building a faceted and multi-level protected natural area system according to the characteristics of the target of protection and the difference in the level of protection, establishing the legal framework the "system of protected natural areas with national parks as the core", and formulating management policies for different types of protected natural areas.

China's protected natural areas currently account for 18% of the country's land and may grow further in the future. Different individual nature reserves have different resource characteristics (mountain, water, forest, sea, lake, grass, sand, etc.), protection targets (ecosystem protection, ecological process protection, species diversity protection, cultural landscape protection, etc.), sizes (from hundreds of thousands of square kilometers to hundreds of square kilometers), complex land ownership (state-owned land, collective land with contracting rights confirmation), and different financial administrative powers. Therefore, such a large-scale protected natural area cannot adopt a simple, extensive and one-size-fits-all management policy. Instead, it should build a multi-faceted and multi-level protected natural area system according to the characteristics of the target of protection, and formulate management policies for different types of protected natural areas, for a differentiated, detailed and scientific management.

Considering the history of China's protected natural area development and the requirements of a new era of ecological civilization, it is recommended that China's protected natural areas be divided into four major categories: National Parks, equivalent to IUCN Category II protected area type, aim at protecting large-area ecosystems and large-scale ecological processes, where the strictest protection in a scientific sense is implemented, and environmental education activities for national welfare are allowed to be carried out; Nature Reserves, equivalent to IUCN Category I protected area type, aim at protecting typical ecosystems and rare and endangered species of flora and fauna and their habitats, implementing strict protection and differentiated management; Scenic Areas, equivalent to IUCN Category III and V protected area types, aim at protecting mixed heritage of nature and culture and unique landscape characteristic of China, including current scenic spots, geological parks, forest parks, wetland parks, etc., which can be subdivided into scenic areas, geological scenic areas, forest scenic areas, wetland scenic areas, etc.; Ecology Management Areas, equivalent to IUCN category VI protected area type, protects important ecological function areas and habitats together associated with ecosystem services such as cultural values and community livelihood, etc., whose aim is to sustainably using natural resources under the precondition of scientific conservation. Negative lists of human behavior, artificial facilities and land use are to be developed according to the sensitivity of protected targets of different types protected natural areas.

We recommend establishing a 1+4+X pyramid-shaped legal framework for the

“system of protected natural areas with national parks as the core”, where “1” refers to the Law of the People’s Republic of China on Nature Protected Areas, which shall be the basic law for “establishing a system of protected natural areas with national parks as the core”, “4” refers to four State Council regulations: National Park Management Regulations, Nature Reserves Management Regulations (formed by revising the existing Nature Reserve Regulations), Scenic Areas Management Regulations (formed by revising the existing Scenic Areas & Places of Interest Regulations), and the Ecological Management Zones Administration Regulations, and the "X" refers to the management regulations for each national park, in accordance with the National Park Management Regulations, such as Sanjiangyuan National Park Management Implementation Rules.

We recommend developing a national park functional division based on the level of strength and the goal of conservation management. Three types should be considered: core conservation area (wilderness zone), ecological conservation area, and restricted use area. The core conservation area (wilderness zone) shall strictly prohibit the construction of artificial facilities and interference from human activities; the ecological conservation area shall only allow ecological conservation measures such as scientific research activities and habitat management; and the restricted use area shall strictly limit the construction of artificial facilities required for non-protection management, and may be further divided into conventional use zones and science education & recreation zones, for which the capacity for community population and environmental education shall be scientifically developed.

4. Paying full attention to the complexity of land ownership and the arduousness of community management by developing special management policies based on the characteristics, problems, difficulties and root causes of land, population and community in the development of national parks in different regions to prevent possible long-term hidden dangers caused by one-size-fits-all policies.

The most challenging issue in the institutional development of China's national parks is the land and community population. Although China’s land system is based on public ownership, the mixture of state-owned land and collectively-owned land and different types and duration of land contracting systems has resulted in a land ownership for potential national park regions so complex that it is rarely seen around the world. Meanwhile, most of the proposed national parks and nature reserves have a large population of farmers and herdsmen, forestry workers and even urban dwellers living on both sides of the boundary. If the characteristics, problems, difficulties and root causes concerning land, population and community are not thoroughly investigated, and if a realistic and innovative package solution cannot be proposed based on such investigation for different regions and scenarios, there will be long-term hidden dangers in the development of China’s national parks and nature reserves.

We recommend engaging experts from multiple disciplines to conduct special research and subject studies on land, community and population issues. Studies should examine issues such as the existing status of land ownership, administrative authority and right to use in national parks; the impact of confirmation of land right on national park management, and the implementation of easements; the feasibility

of implementing a national park conservation and management system with community engagement such as easement, co-management agreements, etc., on the basis of which the competent authority for national parts is to develop, respectively, land administration policy, and community and population management policies for national parks.

In the process of formulating national park management policies, the opinions of stakeholders such as community residents should be thoroughly solicited, thus providing a path for community engagement in the decision-making and management of national parks, with special attention to the participation of women in this process. The contradiction between protection and community development in national parks needs to be balanced. Through functional division of national parks, visitor activities and the production and day-to-day life of the residents in the national park area will need to be defined within a clearly controllable boundary. Under the premise of ensuring the strictest protection for core protected areas and ecological conservation areas, it is necessary to have good visitor planning and community development planning, giving full play to the comprehensive functions of national park research, education, recreation and community development.

5. Giving full play to the unique role of scientific research and the community of scientists in the development of national parks, and use science as the criteria to achieve "the strictest protection".

"Science" is one of the indispensable elements in the development of the national park system, and it is also the shortcoming of various types of existing nature protection areas in China. As the main body of the natural protection area system, national parks should play an exemplary role in the scientific legislation, planning, protection, management, and monitoring to achieve the science-based “strictest protection" for national parks.

We recommend setting up the “China National Park Science Steering Committee” comprised of multi-disciplinary experts with ideals, ethics, ability and ideas, to undertake top-level scientific consultation in national park development; implementing the national park chief scientist system where the chief scientist for each national park is appointed by the competent authority of national parks; establishing a ecological conservation science department responsible for the planning, conservation, management and monitoring for the national park concerned; developing the “National Park Talent Training Base” based on top-ranking universities or disciplines to coordinate with competent authority for education in allocating postgraduate places for the training of high caliber talents for national parks.

6. Selecting one province or autonomous region each in the eastern, central, western, northwestern and autonomous regions for ethnic minorities, for prompt kick-off of province-level pilot activity to establish “a System of Nature Protected Areas with National Parks as the Core”, and exploring the ways and means and feasible paths for a “five in one” development of ecological civilization, economy, politics, culture and society in different regions taking advantage of the development of national parks, activating holistic natural conservation.

Compared to “establishing a national park system”, “establishing a system of protected natural areas with national parks as the core” is a more ambitious, arduous

and complicated task. It not only affects the overall situation of China's natural ecological protection, but also is inextricably linked with poverty alleviation, urban and population distribution, industrial transformation, national stability, national defense security, ecological red line, main functional areas, etc. It is indeed a serious matter, and should not be taken lightly during the implementation process. We recommend that lessons learned be summed up on the basis of the existing national park system pilot programs and that provincial pilot programs for "establishing a system of protected natural areas with national parks as the core" be carried out as soon as possible.

China has a vast territory, a large population, and a rich and diverse ecological environment. In the process of "establishing a system of protected natural areas with national parks as the core", the eastern, central, western, and northeastern regions face different challenges and contradictions, especially different land and community population management issues. We recommend selecting one province or autonomous region each in the eastern, central, western, northwestern China and autonomous regions for ethnic minorities, for prompt kick-off of province-level pilot activity to establish the "System of Nature Protected Areas with National Parks as the Core" based on an comprehensive consideration of geographical characteristics, difference in protected targets, economic development level, ethnic population composition, etc. exploring the ways and means and feasible paths for "five in one" development of ecological civilization, economy, politics, culture and society in different regions taking advantage of the development of national parks.

4.7 Promoting "One Belt And One Road" Green Internationalization Strategy

In 2013, Chinese President Xi Jinping proposed the "One Belt, One Road" ("Silk Road Economic Belt" and "21st Century Maritime Silk Road") as a national top-level cooperation initiative. In 2017, the Ministry of Environmental Protection issued the "One Belt and One Road" Ecological Environmental Protection Cooperation Plan. In 2019 at the Second BRI Summit, an international Coalition for a Green BRI was established.

The "planning" aims to disseminate the concept of eco-civilization, promote cooperation among countries along the 'Belt and Road' in the field of ecological and environmental protection, and strengthen cooperation mechanisms for environmental protection and environmental protection information sharing. It will encourage relevant countries to jointly formulate and implement ecological and environmental protection strategies and action plans at the bilateral, multilateral, sub-regional and regional levels. The platform construction will promote the implementation cooperation of relevant countries in multilateral environmental conventions such as the Convention on Biological Diversity and the Stockholm Convention on Persistent Organic Pollutants, which will establish a cooperation mechanism for the implementation of environmental conventions and promote technical exchanges and south-south cooperation.

4.8 China's bamboo sector and INBAR (See Annex 1)

China hosts or supports various international organizations within China related to the conservation and utilization of biological diversity and ecosystems. One that has made major contributions since it is founding in 1997 is the International Bamboo and Rattan Organization (INBAR), headquartered in Beijing but with outreach to numerous other countries. Bamboo has been associated with China's landscapes and culture, since ancient times and particularly since the 1980s, government and private sector investments in the bamboo sector have resulted in significant socio-economic and environmental benefits.

From 1981 to 2016, the annual value of the bamboo sector increased from just USD 160 million to USD 32 billion. This has led to the generation of millions of formal jobs in the bamboo sector across the south of the country, bringing many people out of poverty. For example, in Anji County, in Zhejiang Province, bamboo accounts for 35 per cent of the county GDP and provides average per capita income of USD 1000 per year.

Development of the bamboo market during this time has also had a major impact on reforestation and efforts to reverse land degradation, with bamboo forest cover increasing from 3 million to 6 million hectares during this same period. This has had tangible impacts for conserving soil and water. INBAR research has shown that areas restored from marginal agriculture to bamboo can have 25 per cent less water runoff and a reduction in soil erosion by over 70 per cent.

Restoring land with bamboo also has climate change benefits. It is estimated that bamboo forests in China currently store over 700 million tonnes of carbon, which will grow to 1.18 billion tonnes by 2050. At a conservative estimate, improving management practices in China's bamboo forests could mitigate carbon emissions of up to 50 million tonnes and generate additional income of RMB 4 billion [USD 580 million]. Furthermore, climate change vulnerability analysis, coupled with observations from recent climate shocks, such as the 2008 snow storm in southern China, indicate that bamboo resources are resilient to climate change and can support smallholder farmer adaptation.

The future for bamboo looks bright in China. In 2013, China became one of the first countries to publish a national bamboo strategy. *China's National Plan for Bamboo Industry 2013 to 2020* predicts that by 2020, the bamboo sector will reach a trade value of USD 48 billion and will employ 10 million people. Bamboo could form an important part of the Chinese government's 'eco-civilization' drive.

One very practical way in which bamboo can be used is as part of China's international cooperation with other countries, particularly the Belt and Road initiative, which is building trade and infrastructure links across a large number of countries. In 2018, bamboo was mentioned by President Xi Jinping in his speech at the Forum on China-Africa Cooperation, as part of a key push for cooperation on "green development and ecological and environmental protection in Africa." A Sino-Africa bamboo center has since been established to develop the bamboo sector

in African countries, with Chinese support. INBAR is also a member of the new International Coalition for Green Development on the Belt and Road Initiative.

5. RECOMMENDATIONS

The environmental emergency facing people and planet has continued to worsen globally since this CCICED Special Policy Study on Post-2020 Biodiversity Conservation first provided inputs to China's State Council in November 2018. In the half year since then, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), has released the first global assessment since 2005. Without transformative change towards sustainability, it is suggested that perhaps a million species are at risk. The Secretary General of the UN in his opening speech at the May 2019 Belt and Road Forum remarked that the planet's ecosystems are degrading at an alarming rate. He noted "for the first time in human history, the world has at its disposal sufficient resources and advanced technologies to end extreme poverty, to reduce inequalities and to place the planet on a sustainable trajectory." Also, that "a multipolar world needs multilateral cooperation to face common threats and seize shared opportunities." Furthermore that "China is a central pillar of multilateralism."

Over the past decade, China has certainly earned this acknowledgement through its vigorous efforts to eliminate poverty, and more recently to tackle the problems of climate change domestically and globally. Now there is an opportunity to do so for planetary ecology and biodiversity. China has taken a major step in this direction by hosting the Convention on Biodiversity Conference of Parties (COP 15) in October 2020. This timing is perfect for China domestically since it will be a turning point in terms of its own prosperity and ecological reform.

Globally, 2020 will be is the pivotal point for setting out longer term and decadal goals for protecting the planet's natural wealth—following the precedent set by the 2015 Paris Agreement on Climate Change and the ambitious UN 2030 Sustainable Development Goals. However time is short to build a coalition of 'Champions for Nature' among world governmental leaders, and others from international bodies, business and financial organizations, and individuals. Fortunately, in recent months we see momentum building on many fronts. China will need to be the catalyst and leader to secure success for COP 15. And this will require a vigorous and expansive effort in the months ahead.

In Annex 2 to this 2019 SPS Executive Summary Report, we have included the Biodiversity recommendations from the November 2018 CCICED Annual General Meeting as a reminder of some baseline needs to make COP 15 successful. Within the main body Chapters 3 and 4 of our current report, we have included some specific recommendations embedded in the general discussions on Political Engagement (Chapter 3) and on topics China might wish to showcase at COP 15 regarding its own Best Practices (Chapter 4).

In the recommendations below we provide several overarching suggestions on how opportunities for China to take in further developing its proactive role internationally, and also advice on how China can further mainstream Nature, ecology and biodiversity into its domestic efforts for high quality development, especially for the coming 14th Five Year Plan.

The following three new recommendations are forwarded for consideration.

RECOMMENDATION 1

China should pull out all stops to ensure full commitment of the world community, including world leaders, to a high quality COP 15 outcome

Only in this way can Nature receive the global policy attention required if we are to formulate and adhere to ambitious and practical goals to guide 2020 to 2030 action on conservation, and on synergies among global environmental conventions, including those inherently part of the UN SDGs. China can take advantage of various already scheduled international major gatherings In addition, China should consider one or more major preparatory meetings during late 2019 and the first 8 months if 2019. Such meetings can be used to take the measure of momentum and therefore additional efforts needed on the part of China and other Champions. The meetings should draw not only on governments but also other stakeholders from business circles, and non-state actors.

RECOMMENDATION 2

Accelerate the pace of efforts for a 'Green BRI' both within and outside China, including strong financial support and a 2019 action plan for the International Green BRI Coalition announced at the 2019 BRI Forum.

The BRI represents the largest infrastructural development project in human history, and as such has a huge potential for wide scale environmental damage without careful planning attention and mitigation efforts. However, with caution and diligent planning the BRI has the potential to be a tool for conservation. "Greening" the BRI takes two main forms. One is to reduce environmental impacts through rigorous planning, assessments, preventive and restorative measures, and post-project monitoring and capacity building. . Second is to incorporate specific conservation policies and objectives such as enhancement of ecological services, sustainable development for example related to eco-tourism, wetland restoration. etc. Both types of measures could be implemented and enforced through project financiers.

Taken together, these efforts may help to avoid problems such as excessive and poorly secondary development, associated unsustainable land development, illegal trade and disease risks. It is important to note that these efforts should be considered on the supply side of goods and services from within China, and, of course, impacts in the BRI country partner locations. Other efforts could involve sharing of green technologies and experience of value to partner countries. Prime examples are systematic efforts to introduce renewable energy; eco-efficient, low carbon and green manufacturing, and green supply chains for commodities exported to China.

Improve preventive measures through integrated assessments and planning.

In reducing the BRIs footprint there are several facets to consider. First, in the physical placement of roads, railways and other transport corridors, wherever possible these should seek to avoid important areas for biodiversity, especially Protected Areas, Key Biodiversity areas, frontier and primary forests, and other areas with high diversity and endemism based on site-level assessment (noting in particular habitats with high levels of endemism such as karst). When passing through such regions is unavoidable then care should be taken to either elevate the route (to prevent road kill, reduce fragmentation of native habitat, and reduce access which could drive the extraction of wildlife or natural products) or at a minimum to provide overpasses/underpasses for wildlife and not place stops in such areas. At the interface between the maritime and land routes this also includes ports, and their locations relative to key wetlands and breeding areas for migratory wading birds. Considerable effort in many BRI countries is needed to create effective networks of marine protected areas.

Take full advantage of conservation opportunities to support relevant UN 2030 Sustainable Goals in BRI countries.

As no initiative on this time and space scale has ever occurred before, the BRI has the opportunity to set new standards for sustainable development. Again, this comes in a number of forms:

- Standard setting in the avoidance of harm, and the implementation of practicable Eco-civilization measures along the route).
- As a mechanism to reforest and reconnect fragmented landscapes along the route, and to offset atmospheric carbon emissions and other ecological benefits. Afforestation and sustainable agriculture can reduce landslide and erosion thereby protecting corridors in addition to maintaining biodiversity. Roadside protection from land opening alongside roads, and properly maintained rail lines, pipelines and electrical grids can reduce spread of invasive plant and insect species and risk. For mines and other disruptive features to landscapes will require specialized measures to ensure environmental restoration is feasible and actually implemented.
- By connecting fragmented forest along the course of the route it would better enable species to move adaptively with a changing climate, and thus fulfill many important conservation roles.

These and other sensible policies for a Green BRI will help China to become a world leader in sustainable development, and to take an integrated approach regarding the UN SDGs within China and in BRI nations. Some countries are already seeking new types of initiatives under the next phase of BRI to better meet their socio-economic and environmental objectives—and a move away from strict emphasis on infrastructure development.

Ensure the new International Coalition for a Green BRI is financially supported and with access to capacity building, research and knowledge sharing, including wider access to the use of big data.

The Coalition should become active quickly if it is to keep pace with infrastructure development and various other BRI decisions. Substantive initiatives should begin within 3 to 6 months.

RECOMMENDATION 3

Integrate biodiversity conservation more effectively into China's efforts towards high quality development, especially into the 14th Five-Year Plan

During the 14th FYP (2021-2025), China should further increase the importance and protection of biodiversity, re-formulate and implement a strengthened 2020-2030 Biodiversity Conservation Action Plan; accelerate the development of national legislation on biodiversity conservation; conduct regular biodiversity surveys and assessments, and continue to implement ecological protection and restoration in accordance with the concept of "mountains, rivers, forests, farmlands, lakes and grass forming a community of life". This approach should take into account the ecological and environmental impact linkages between land, rivers and sea. By promoting the sustainable use of biological resources and improving the ecological compensation mechanism, China should further consolidate efforts to enhance the production and living standards of people in poverty-stricken areas, while maintaining and improving the level of biodiversity conservation.

Strengthen Biodiversity Conservation as an element for high quality development involving China and for the 14th FYP

First, enhance the status and role of biodiversity conservation, as well as the coordination among key agencies in national strategies. In terms of national top-level design, biodiversity conservation should be placed in a more important position and implemented in local governments at all levels by promoting legislation and policy formulation. The coordination between key ministries and department on the elements related to nature, climate and SDGs should be enhanced.

Second, the protection subject of local government should be transferred to broader participation of society. Local governments are the mainstay of biodiversity conservation, but it is not enough for the government alone to carry out biodiversity conservation. It is necessary to promote the broad participation of the society, especially the participation of enterprises in biodiversity conservation.

Third, promote a virtuous circle of coordination between protection and development. In accordance with the principle of "protection priority and sustainable use", selectively strengthen research on breeding of wild resources, innovate the development and utilization of biological resources, and reduce the utilization of wild resources. Through the sustainable use of biological resources, the development and utilization of biodiversity resources, for example bamboo, is a new growth point for economic development and a new means for residents to be

rid of poverty. At the same time, improve the vertical and horizontal ecological compensation mechanisms to truly environment and ecological benefits reach protectors and minimize the damage to important species and ecosystem resources.

In the 14th FYP Plan, in the field of biodiversity conservation, the government should signal to all sectors and stakeholders its concern that China will strive to be a responsible biodiversity leader country, will continue to strengthen cooperation with the international community, strengthen the implementation of "green belt and road" policy, and actively participate in the resolution of global challenges such as biodiversity conservation, forest and land degradation and marine pollution.

In terms of system design, the Chinese government might wish to promote the following specific actions.

- Formulate and implement an updated Chinese "Biodiversity Conservation Action Plan for 2020-2030"
- Promote national biodiversity conservation legislation and improve other sectoral policies from a biodiversity-friendly perspective when under revision.
- Conduct biodiversity investigation and evaluation regularly.
- Continue implementing ecological conservation and restoration in accordance with the idea of mountains, rivers, forests, farmlands, lakes, and grasslands life community.
- Construct and improve the natural reserve system with the national park as the core part.
- Delineate ecological conservation redline and construct the strictest possible system for environmental protection.
- By promoting the sustainable use of biological resources and improving the ecological compensation mechanism, the production and living standards of people in poverty-alleviation areas will be consolidated and enhanced, the ecological environment quality will get maintained and improved.
- In terms of technological innovation, a series of important technical means will promote biodiversity conservation. These specifically include:
    - Ecological conservation redline delineation technology
    - Natural protected area system with national park as main part construction technology
    - Ecological corridor and biodiversity network planning and design technology
    - Biodiversity big data and artificial intelligence technology
    - Sky-land-universe integration biodiversity monitoring technology
    - Biodiversity conservation effectiveness evaluation technology
    - Ecological function restoration and promotion for damaged ecosystem technology
    - Natural resource asset accounting method and ecological compensation method.

Over the 14th FYP the role of China as a biodiversity leader country will become stronger in the international community. The actions of the central and local

governments in fields like legislation adoption and system construction for biodiversity, ecological conservation redline delineation, systemic conservation and restoration guided by the idea of integrated strategies involving mountains, rivers, forests, farmlands, lakes, and grasslands; community improvements and poverty alleviation based on the sustainable use of biodiversity resources, may become valuable experience for many other countries to learn from.

ANNEX 1. STANDING TALL: BAMBOO AND SUSTAINABLE DEVELOPMENT

A briefing note produced by the International Bamboo and Rattan Organization (INBAR) for the Post-2020 Global Biodiversity Conservation Special Policy Study (SPS) of the China Council for International Cooperation on Environment and Development (CCICED) The note will be available in both Chinese and English for the CCICED 2019 Annual Meeting in Hangzhou 2-5 June 2019.

Introduction: the growing importance of nature-based solutions

Nature-based solutions can play a crucial role in creating a more sustainable world. If properly managed and conserved, ecosystems and the services they provide can be used to address a large range of societal challenges, including climate change, poverty, food security and natural disasters.

Ecological approaches to development are gaining ground. Sixty-five per cent of all signatories to the UN Paris Agreement on climate change have already committed to restoring or conserving ecosystems. In early 2019, a prominent group of international researchers called on politicians to sign up to a Global Deal for Nature, to accompany the Paris Agreement. Within China, the government is pursuing a more sustainable course of growth under the goal of 'ecological civilization'.

Bamboo could be an important part of nature-based development. Known in some parts of the world as 'green gold', this fast-growing grass plant covers over 30 million hectares of land across the tropics and subtropics, and has proven potential to help combat a number of global challenges, including rural poverty, land degradation, deforestation, unsustainable resource use and climate change.

As this briefing note shows, China is a shining example of what countries could do with bamboo. For several decades, China has used bamboo as an ecological approach to support sustainable socio-economic development, with startling results. China's bamboo sector is now valued at some USD 30 billion a year and employs almost ten million people.

Other countries could follow China's lead. Bamboo is a shared resource across many places in the Global South, including a large number of countries along the Belt and Road. With appropriate support, technology and training, any bamboo-producing country can integrate bamboo as a nature-based solution for their development and green growth strategies.

This report has two parts. The first section provides an overview of China's bamboo sector, including a case study from Guizhou province. The second summarizes bamboo's global opportunities: for livelihood support, as a source of energy, in construction and infrastructure, as part of sustainable consumption and production patterns, for climate change mitigation and adaptation, terrestrial ecosystem management, and women's empowerment.

Overview of China's bamboo sector

In China, since the 1980s, government and private sector investments in the bamboo sector have resulted in significant socio-economic and environmental benefits.

From 1981 to 2016, the annual value of the bamboo sector increased from just USD 160 million to USD 32 billion. This has led to the generation of millions of formal jobs in the bamboo sector across the south of the country, bringing many people out of poverty. For example, in Anji County, in Zhejiang Province, bamboo accounts for 35 per cent of the county GDP and provides average per capita income of USD 1000 per year.

Development of the bamboo market during this time has also had a major impact on reforestation and efforts to reverse land degradation, with bamboo forest cover increasing from 3 million to 6 million hectares during this same period. This has had tangible impacts for conserving soil and water. INBAR research has shown that areas restored from marginal agriculture to bamboo can have 25 per cent less water runoff and a reduction in soil erosion by over 70 per cent.

Restoring land with bamboo also has climate change benefits. It is estimated that bamboo forests in China currently store over 700 million tonnes of carbon, which will grow to 1.18 billion tonnes by 2050. At a conservative estimate, improving management practices in China's bamboo forests could mitigate carbon emissions of up to 50 million tonnes and generate additional income of RMB 4 billion [USD 580 million]. Furthermore, climate change vulnerability analysis, coupled with observations from recent climate shocks, such as the 2008 snow storm in southern China, indicate that bamboo resources are resilient to climate change and can support smallholder farmer adaptation.

The future for bamboo looks bright in China. In 2013, China became one of the first countries to publish a national bamboo strategy. *China's National Plan for Bamboo Industry 2013 to 2020* predicts that by 2020, the bamboo sector will reach a trade value of USD 48 billion and will employ 10 million people. Bamboo could form an important part of the Chinese government's 'eco-civilization' drive.

One very practical way in which bamboo can be used is as part of China's international cooperation with other countries, particularly the Belt and Road initiative, which is building trade and infrastructure links across a large number of countries. In 2018, bamboo was mentioned by China's President Xi Jinping in his speech at the Forum on China-Africa Cooperation, as part of a key push for cooperation on "green development and ecological and environmental protection in Africa." A Sino-Africa bamboo center has since been established to develop the

bamboo sector in African countries, with Chinese support. INBAR is also a member of the new International Coalition for Green Development on the Belt and Road, which is led by UN Environment and the Chinese Ministry of Ecology and Environment.

Case Study: Bamboo Promoting Livelihoods Growth in Chishui, China

In Guizhou province, several million people live below the poverty line. This is particularly true of those living in the remote mountainous Chishui municipality, in northwest Guizhou. Located in the upper reaches of the Yangtze River, Chishui is a focus area for China's national poverty alleviation program and a site of real ecological importance: it is one of the ecological protection demonstration project areas in China. Chishui's ecosystems are particularly vulnerable to climate change, and in recent decades the area has suffered from long-term land degradation and subsequent reductions in productivity and farmer income. Following heavy soil erosion and flooding in Chishui, since 2001 various programs have worked to restore unproductive land with bamboo. By 2018, Chishui's local bamboo forest had increased by over 50,000 hectares, to 87,000 hectares: the highest bamboo forest per capita in China.

Research shows that Chishui's afforestation effort has had an important impact on reducing soil erosion, conserving water resources and increasing carbon sequestration.

- Compared to sweet potato farming lands, the average water runoff for bamboo plantations is 25 per cent less, and the average soil erosion quantity is reduced by 80 per cent.
- One 13,000-hectare bamboo plantation in Chishui was shown to reduce over 350,000 tons of soil erosion that used to flow into the Chishui River annually and conserved some 6000 metres^3 per hectare of water resources annually.
- The increased bamboo stocks sequesters almost 200,000 tons of carbon annually.

As well as its environmental benefits, bamboo has played a key role in supporting the economy of Chishui.

- Farmers' annual per capita income from bamboo increased from RMB 600 to RMB 2900 [USD 87 to USD 419] between 2000 and 2015.
- The number of farmers involved in the bamboo supply chain has risen tenfold, from 10,000 to almost 100,000 between 2000 and 2015. There are now three times the number of small and micro-sized bamboo processing enterprises.
- By 2015, the total value of the sector was RMB 6 billion [USD 860 million]: almost 20 times its value in 2000.

An eco-tourism industry is also emerging and is attracting more and more investment in infrastructure and capacity building for service provision. Five out of six famous tourist spots in Chishui feature bamboo; together these spots have a value of RMB 10 billion [USD 1.4 billion].

One fascinating result of the project is the return of migrant workers to Chishui. Since the project began, about 40 per cent of migrant workers have returned home from Guangdong, 30 per cent of whom are dealing with bamboo supply chain. This result is testament to the increase in opportunities afforded by a robust bamboo supply chain.

Global opportunities for bamboo development

This section provides a brief overview of the global potential of bamboo, and in particular the plant's potential to contribute to the UN's 2030 Sustainable Development Agenda.

Bamboo has huge global potential. Given that China has created an industry of USD 30 billion from 6 million hectares of bamboo, the world could conceivably have a USD 150 billion bamboo industry if its existing 30 million hectares of bamboo are developed and utilised to their full potential. **If 200 million hectares of available land is planted with bamboo, this could create a global industry worth USD 1 trillion**.

Livelihoods
Bamboos are now considered

Bamboos are now considered one of the world's most valuable non-timber forest products, and can be an excellent resource for the poor, especially in remote areas with limited off-farm income communities. Several things make bamboo a particularly important way to create or improve livelihoods, and reduce poverty:

- **Bamboo has a multiple array of end uses** as commodities, from shoots, baskets and furniture to laminated plywood and activated charcoal. The huge variety of potential products gives producers a wide range of options, and increases their flexibility in times of market stress.
- **Bamboo has a long history of use** in many societies. This means that take-up of new, value-added products builds on existing skills and is more likely to be chosen by stakeholders than an entirely new technology.
- **Bamboo can be grown on peripheral soil**, or as part of intercropping farm systems, requires few inputs, and regrows quickly after harvesting, without the need to replant. It an essentially 'renewable' resource and one that does not compete with productive agricultural land.

Energy
Bamboo can provide a renewable, legally harvestable source of bioenergy to some of the world's most energy-poor rural communities, as fuelwood, charcoal or gas. The potential of bamboo bioenergy is particularly large in Africa, where a large number of people still rely on solid biomass on a daily basis. Creating bamboo charcoal briquettes is a particularly efficient way to create bamboo energy, and can be done with little investment or technology.

Because of its fast growth and annual regeneration, using bamboo as a source of bioenergy can take pressure off other forest resources, reducing deforestation. This

could be critical in areas such as sub-Saharan Africa, where deforestation for wood fuel remains a primary driver of deforestation. One study estimates that **sub-Saharan Africa has strong potential to produce about 9 million tons of bamboo charcoal on a sustainable basis; this could potentially replace over 60 per cent of the region's wood consumption for charcoal production**.

Construction and infrastructure

Bamboo boasts a tensile strength greater than that of mild steel, and withstands compression twice as well as concrete. Given its unique properties and wide global spread, is not surprising that bamboo is being developed for use in heavy infrastructure and construction.

Bamboo can be a resilient source of green infrastructure. In China, companies are exploring the use of bamboo as the main material for use in wind turbine blades, storm drainage pipes, and even shock-resistant exteriors for bullet-train carriages. And in India and the Netherlands, noise- and pollution-reducing 'green corridors' have been built along national highways, using bamboo. **These new products make bamboo a feasible low-carbon material to use in infrastructure development.**

The flexibility and lightness of bamboo makes it an excellent construction material for earthquake-resistant buildings in areas vulnerable to natural disasters, including Colombia, Ecuador and Nepal. Bamboo bends but rarely breaks, earning it the nickname "vegetal steel" among architects around the world. After natural disasters hit, modular bamboo homes can be erected quickly and at a low cost: the UN and Yale University are currently working on a 3D-printed modular bamboo house for this purpose.

Sustainable consumption and production

In recent decades, industry developments have vastly increased the potential of bamboo and rattan to contribute to durable, low-carbon and sustainably sourced products. **Bamboo can be a recyclable replacement for single-use plastic products, including cutlery, cups, paper and packaging.**

All parts of a bamboo plant can be used to create products: culms, leaves, roots and rhizomes. And at the end of a bamboo product's life cycle, it can be recycled, repurposed, or burned to produce heat or electricity. These factors mean that bamboo products can have a low or even negative eco-cost over the course of their lifecycle, compared to other materials.

Climate change

Bamboo is particularly suitable as a tool for carbon sequestration. **Over a period of 30 years, bamboo plants and products can store more carbon than certain species of trees.** This is mainly because bamboo can be harvested regularly, creating a large number of durable products which store carbon over several years, in addition to the carbon stored in the plant itself.

Bamboo also helps communities and individuals adapt to the negative impacts of climate change, as a sustainable source of income in a changing climate.

Terrestrial ecosystem management

Several aspects of bamboo's biology make it very useful for stabilizing loose soil to prevent soil erosion. Bamboo has extensive root systems, which bind soil and make the plant capable of surviving and regenerating when the biomass above ground is destroyed by fire. **More and more countries are integrating bamboo into their watershed and land restoration programs.** In Allahabad, India, an INBAR-supported bamboo project has helped raise the water table by over 15 meters in ten years, and return a blasted brick-mining area, prone to frequent dusts storms, to productive agricultural land. And in Ethiopia, bamboo is one priority species in a large World Bank-funded project to restore the country's degraded water catchment areas.

Bamboo is also a key element for biodiverse ecosystems**. A number of the world's most iconic and endangered species rely on bamboo for their survival**, including the giant panda, the red panda, the mountain gorilla and certain types of lemur.

Women's empowerment

Bamboo's light weight and linear-splitting nature makes it easier to process than timber. This **provides farmers, many of whom are women, with opportunities to engage in initial processing, and so increases their share in value addition**. INBAR has worked on a number of projects to train women in value-added processing and product selling techniques, and many trainees have subsequently reported an increase not only in income, but also in social standing and decision-making authority in the household and community.

Bamboo can also reduce the risks associated with collecting timber for fuelwood, a job typically done by women in certain parts of the world. Because bamboo grows locally to many rural communities across the tropics and subtropics, and is often excluded from local forest protection laws, it can be harvested legally, within close proximity to a community. Converting bamboo to charcoal requires few set-up costs—some technologies even use converted oil barrels as kilns—and the resulting charcoal has a similar calorific density to other commonly used forms of biomass.

Conclusion

Bamboo can play a key role in a changing world. Fast growing, quick to mature and easily replenishing, without the need to replant after harvesting, bamboo provides a versatile and sustainable source of income for many countries. It can also contribute to national green development strategies, climate change mitigation plans and environmental protection policies. If more countries can harness the potential of bamboo and rattan, the world will be closer to achieving its ambitious development, climate and environmental aims, including the UN's Sustainable Development Goals, REDD+ objectives, the Paris Agreement commitments, and the Aichi Biodiversity Targets.

About the International Bamboo and Rattan Organization

The report was compiled by the International Bamboo and Rattan Organization (INBAR). INBAR has been a member of CCICED since 2017, where it works to raise

awareness about the importance of nature-based solutions for a number of global challenges.

Established in 1997, INBAR is an intergovernmental development organization that promotes environmentally sustainable development using bamboo and rattan. It is currently made up of 45 Member States. In addition to its Secretariat Headquarters in China, INBAR has Regional Offices in Cameroon, Ecuador, Ethiopia, Ghana and India. INBAR's mission is to improve the well-being of producers and users of bamboo and rattan within the context of a sustainable bamboo and rattan resource base, by consolidating, coordinating and supporting strategic and adaptive research and development.

www.inbar.int

ANNEX 2. SPS 2018 RECOMMENDATIONS

Play a strong leadership role in developing effective post-2020 global biodiversity conservation goals under the Convention on Biological Diversity (CBD)

The Global Convention on Biological Diversity has failed to meet conservation targets set in 2002 and 2010. As in the case of climate change, the window of opportunity to stem major biodiversity and ecological service losses is rapidly closing. The 15th Conference of the Parties (COP15) will be hosted by China in 2020. By joining efforts with like-minded countries and organizations/partners, China can help to set revised goals covering the period to 2030 and beyond. This event is a major opportunity to set a new course in global green governance, and a platform to demonstrate China's commitments and achievements towards becoming an ecological civilization.

To fulfill its international obligations under the CBD, China must not only protect its biodiversity and related ecosystem service, but also actively participate in biodiversity and ecosystem global governance. By joining efforts with like-minded countries and organizations/partners, the desired outcome would be to dramatically reduce biodiversity losses in all parts of the world. COP 15 is a unique opportunity to accomplish four objectives noted below. These recommendations are preliminary and will be followed up by CCICED at various times in 2019 and early 2020.

1) Make a positive contribution to the development of a robust post-2020 global biodiversity conservation framework by creating an enhanced enabling framework for the implementation of the new targets building on a joint understanding why past CBD goals have not been met. Parties will need to agree on a post 2020 global biodiversity framework with ambitious and measurable targets, enabling conditions and implementation mechanisms, periodic review and ratcheting instruments to continuously increase ambitions, and with Nationally Determined Contributions for nature. Consultations with stakeholders, including those not traditionally involved with conservation, for example digital economy business leaders, and others involved in the

development and implementation of market mechanisms for ecological services and biodiversity conservation, must be carried out.

2) Establish an effective mechanism to ensure that the CBD strategic goals can be achieved on schedule. Focus should be on state-set goals (e.g. something like NDCs) rather than the power of the convention itself as the key for the successful implementation of conservation goals. The active participation of the whole society is very important. Also, a need to communicate and set up synergy with relevant international agendas.

3) Showcase China's experience in biodiversity conservation for reference of the international community and engaged Parties. Focus on China's domestic and global initiatives in dialogue and engagement with other governments, including but not limited to Eco-Civilization, Redlining, the Greening of the BRI, Green Finance, Natural Resource Assets Accounting and Auditing, National Park-centric Nature Conservation Systems. Better cross-sectoral relations between these initiatives should be established to foster synergies.

4) Build successful and on-going engagement involving heads of state. There is a need for proactive outreach linked to a proposed Heads of State Summit at the UNGA in 2020; and to build a momentum of support for the significance of the COP15 event similar to what occurred in the Paris Climate Change COP held in 2015. Steps could involve the following elements:

    i. Engage with the CBD Secretariat to provide a positive signal and to begin the preparations of the Summit at UNGA 2020.
    ii. Respond or proactively reach out to various heads of state of countries that could potentially form a "Coalition of Champions for Nature" together with China.
    iii. Prepare a series of nature, environment and biodiversity related events in China and at the global stage in and leading up to 2020 to set up springboards and milestones leading up to the COP15.
    iv. Pay special attention to the links between the CBD and the SDG2030 objectives, especially those related to social development and various aspects of gender mainstreaming.
    v. Recognize that leadership actions abroad will come from many different players, including international bodies, non-state, non-party actors such as business, financial institutions, civil society, and the general public. Increase efforts in the communication and exchange with international communities.

Recommendations on "Establishing a National-Park-Centric Protected Area System in China"

In November 2013, the 3rd Plenum of the 18th CPC Central Committee proposed for the first time "the establishment of a national park system", making pilot of the national park system an important part of China's ecological civilization system development. In November 2017, the report delivered at the 19th National Congress

of the Communist Party of China put forward "the establishment of a national-park-centric protected area system". In less than five years, China has taken the opportunity of the national park system development and made significant milestone progress in comprehensively deepening the reform of the protected area system, laying a solid foundation for the realization of ecological civilization and the national strategy of building a Beautiful China.

In September 2017, the General Office of the CPC Central Committee and the General Office of the State Council issued the Overall Plan for Establishing a National Park System, which, based on a clear definition of the concept of national park, provides explicit description on how to build China's national parks from seven aspects, namely, overall requirements, scientific definition of the content of national parks, establishing a unified administrative power and tiered management system, establishing a system of funding guarantee, improving the system of natural ecosystem protection, building a coordinated community-development system and implementation support. National parks refer to state approved and managed specific terrestrial or marine areas that have clear boundaries with an aim primarily to protect nationally representative, large-area natural ecosystems and to achieve scientific conservation and rational use of natural resources. National parks' primary aim is to protect large-area ecosystems and large-scale ecological processes, underlining the preservation of the authenticity and integrity of ecosystems. They are clearly categorized as development prohibited zones in the national main functional area planning to achieve ecological red line management and the strictest protection. National parks adhere to the features of national representation and inheritance from generation to generation, inspire national pride, and leave precious natural legacy for future generations; they adhere to public welfare of the whole people, provide environmental education and recreation opportunities for the citizens, and encourage the sense of identification for the protection of nature among the people.

As academics from home and abroad who have long been engaged in nature protection, we feel profoundly inspired by these initiatives. In order to better implement the guidelines of "establishing a national-park-centric protected area system", we sincerely put forward six recommendations as follows:

1) Solidifying the three cornerstones of "ecological protection first, national representation, and public welfare for the people" to achieve the core status of national parks in the system of protected areas by having the central government exercise the administrative power of national parks, while strictly controlling the access threshold and the total number of national parks.
2) Establishing a wilderness conservation system in China and demarcating wilderness conservation areas within various protected areas such as national parks to carry out rescue protection of the national heritage of the country with the highest authenticity.
3) Building a faceted and multi-level protected area system according to the characteristics of the target of protection and the difference in the level of protection, establishing the legal framework of the "national-park-centric

protected area system", and formulating management policies for different types of protected areas.

4) Paying full attention to the complexity of land ownership and the arduousness of community management. Developing special management policies based on the characteristics, problems, difficulties and root causes of land, population and community in the development of national parks in different regions to prevent possible long-term hidden dangers caused by one-size-fits-all policies;
5) Giving full play to the unique role of scientific research and the community of scientists in the development of national parks, and use science as the criteria to achieve "the strictest protection";
6) Selecting one province or autonomous region each in the eastern, central, western, northwestern and autonomous regions for ethnic minorities, for prompt kick-off of province-level pilot activity to establish "a national-park-centric protected area system", and exploring the ways and means and feasible paths for a "five in one" development of ecological civilization, economy, politics, culture and society in different regions taking advantage of the development of national parks, to activate holistic natural conservation.