China Council for International Cooperation on Environment and Development

SPECIAL POLICY REPORT

Biodiversity Conservation and Implementation of the Kunming-Montreal Global Biodiversity Framework

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Executive Summary

Biodiversity is related to human well-being and is a critical foundation for human survival and development. According to the fifth edition of the *Global Biodiversity Outlook,* the global trend of biodiversity loss has not been reversed, and indeed, the pressure on biodiversity is intensifying. Strengthening biodiversity conservation is now a consensus among the international community, and countries around the world urgently need to seek common solutions to biodiversity loss.

In 2022, the 15th Conference of the Parties to the Convention on Biological Diversity (CBD COP 15) agreed on the Kunming–Montreal Global Biodiversity Framework (hereinafter referred to as the Kunming–Montreal Framework). The framework provides the most detailed program yet developed to address the biodiversity crisis. Its mission codifies for the first time an ambitious and measurable global goal to "halt and reverse biodiversity loss by 2030." It sets four long-term goals (by 2050) and 23 action targets (by 2030), which clarify the direction and focus of global biodiversity conservation and are both guiding and binding on signatories of the CBD. Like all UN decisions, adherence will inevitably be inconsistent between countries, and experience suggests that some targets will be more successful than others. But governments look closely at such decisions so that slight changes in wording have major implications on policies, funding streams, and the ways that policies and laws develop.

The framework covers many aspects of biodiversity conservation—ranging from protected areas to management in the wider landscape and seascape, sustainable use and benefit-sharing, and financial mechanisms to ensure the implementation of the framework—and includes issues such as human rights and gender equality. Target 1 requires spatial planning across all of a country's territory to address land-, water- and sea-use change. Target 2 calls for the restoration of 30% of degraded areas. Target 3 set out a series of requirements to protect at least 30% of the world's land and seas by 2030 to help ensure that the global trend of biodiversity loss and ecosystem degradation is reversed. It has subsidiary clauses relating to effectiveness, connectivity, representativeness, and social equity and inclusion. Targets 5 to 12 all focus on the sustainable use of biodiversity and reducing threats to biodiversity; Targets 14 to 16 stress the importance of mainstreaming biodiversity in public policy and expenditure, in the business and financial sector, and among consumers; Target 18 is about changing incentives to be positive instead of negative for biodiversity; and Target 19 is about domestic and international resource mobilization and identifies the importance of innovative financing and incentive mechanisms for the implementation of national biodiversity strategies and action plans. Target 23, added at COP 15, looks specifically at gender issues. Target 3, the so-called "30×30 Target" on the expansion of protected and conserved areas, Target 10 on sustainable use of natural resources, and Targets 18 and 19 on resource mobilization for implementation have attracted particular attention and are the principal themes of this Special Policy Study.

As the COP 15 presidency, China was a leader in driving the successful conclusion of negotiations on the Kunming–Montreal Framework, encouraging the world to jointly promote the realization of the three goals of the CBD: biodiversity conservation, sustainable use, and equitable benefit-sharing. In January 2024, China updated and released the China Biodiversity Conservation Strategy and Action Plan (2023-2030), which demonstrates China's great importance to biodiversity and its firm commitment to and strategy for implementing the Kunming–Montreal Framework. As part of this process, CCICED has established a thematic policy research project on biodiversity conservation and implementation of the Kunming–Montreal Framework. This report is an important output of this program.

The project has conducted in-depth research on the implementation of the "30×30" goals and an analysis of their effectiveness (Target 3), the sustainable use and management of agricultural biodiversity (Targets 7 and 10), and the financing mechanisms and incentives for resource mobilization for biodiversity conservation and sustainable use (Targets 18 and 19). It puts forward policy recommendations for effectively achieving the goals and targets of the Kunming–Montreal Framework in China and the rest of the world.

Summary of Key Policy Recommendations

1. On the basis of existing protected areas and China's ecological conservation redlines (ECR), establish an area-based ecological conservation model in line with international standards and promote the implementation of the 30×30 target globally, demonstrating China's leadership in this sphere.

1) Accelerate the introduction of China's plan for implementation of 30×30, including research on the universal model of ECR applied internationally, and cooperate with stakeholders to set up an integrated technical package for the delineation of ECR in other jurisdictions.

2) Considering China's significant progress towards achieving Target 3 at the domestic level, commit to full achievement by 2030 combined with an aspirational commitment to exceed 30%, thus consolidating China's leadership as the outgoing COP 15 Presidency and encouraging other countries to exceed 30% in protected areas and other effective area-based conservation measures (OECMs) by 2030.

3) Strengthen research to clarify the similarities and differences between the concepts, spatial delineation and identification criteria of protected areas as defined by the CBD and International Union for Conservation of Nature (IUCN), ECR, and OECMs, and establish a multi-functional ecological reserve model that conforms to international standards.

4) Produce a series of technical support documents, such as management plans, standards, and guidelines for redline delineation in line with international standards to support the implementation of Targets 1, 2, and 3 of the Kunming–Montreal Global Biodiversity Framework.

5) China can also play an important role in supporting other countries, particularly developing economies, to achieve 30×30 alongside China's foreign policy goals, such as the Belt and Road Initiative.

2. At a global level, further strengthen the effectiveness and representativeness of protected areas and enhance the high-quality protection of key ecosystems and species habitats.

1) Systematically assess innovative measures and lessons learned in the existing global area-based conservation system; designate national parks; build and optimize an effective protected area system, including improving the quality of protected areas; and recognize suitable sites as OECMs.

2) Focus particular attention on the representativeness of area-based conservation, protection of intact ecosystems, governance, and management. Improve institutional mechanisms and the effectiveness of protected area management. Use this information to consolidate a model of a protected area system for the implementation of the 30×30 target, with special attention to marine and inland water ecosystems.

3) Strengthen research on connectivity between protected areas to strengthen the construction and maintenance of ecological corridors and ensure their quality and effectiveness.

4) Improve evaluation systems for the management effectiveness of protected areas, in consultation with all those affected, including issues relating to social equity, gender equity, and human rights.

5) Promote innovative techniques for biodiversity surveys, as well as monitoring and assessment of key ecosystems and species habitats, including an integrated space-ground biodiversity monitoring system.

3. In consultation with all affected stakeholders, accelerate the development of a new, more sustainable approach to agricultural productivity and improve agricultural ecological functions and biodiversity as the basis for ensuring food security.

1) Improve agricultural productivity, yield, and food security through the consideration and maintenance of ecological assets (e.g., natural/seminatural elements, such as wetlands, ponds, riparian vegetation, natural forest pockets, meadow strips, etc., interspersed in the agricultural landscape).

2) Explore options for regenerative agriculture with high and stable yields and green and organic agriculture to accelerate a new model of agricultural productivity.

3) Increase farmland soil biodiversity and soil carbon while ensuring productivity by means of crop diversification and regenerative techniques and incorporate soil biodiversity indicators into the evaluation system of farmland soil health and agricultural ecological development.

4) Fully recognize the relationship between agricultural production, consumption, and dietary structure; strengthen the assessment and governance of farmland soil health; encourage the application of organic fertilizers; prohibit the production of highly toxic pesticides and fertilizers; strengthen the research and development of green products; adopt conservation tillage; improve farmland soil biodiversity; and take other steps to accelerate the transformation of agricultural production methods and improve agricultural ecological functions and biodiversity.

5) As China implements the Big Food Concept, it is essential to ensure the sustainability of food from forests, grasslands, and aquatic ecosystems.

6) Encourage agricultural commodity importers and other related firms to work with commercial partners in food-producing companies to advance traceability and other on-the-ground efforts that enhance production in already cleared areas and avoid deforestation.

4. Ensure China's responsibility and leadership in resource mobilization and financial investment for biodiversity conservation, accelerate the implementation of market incentive policies, and identify, eliminate, and phase out or reform incentives that are harmful to biodiversity.

1) Continue to play a leading role in actively participating in biodiversity conservation, promoting the implementation of the Global Biodiversity Framework Fund, improving the Kunming Biodiversity Fund mechanism, and promoting the provision of biodiversity conservation funds, standards, experience and technology support to developing countries for capacity building and other priorities of the Kunming–Montreal Framework, especially national biodiversity financing plans.

2) Ensure strong links are made between monetary policy tools for carbon emission reduction and the climate finance mechanism, actively promote the development and demonstration of biodiversity conservation

and climate change response actions, strengthen the co-benefits and synergies of biodiversity and climate investment and financing, and share China's domestic experience with other countries and institutions working on nature and climate finance.

3) Coordinate the use of multiple funding sources, including government, new financial instruments, and private sector investment, and explore the combination of sustainability-related sovereign debt instruments for the refinancing/restructuring of new and existing loans.

Keywords: biodiversity conservation, protected area, other effective area-based conservation measures, OECM, Kunming–Montreal Framework, 30×30 target, agricultural biodiversity, soil health, regenerative agriculture, resource mobilization, market-based finance instruments, sustainability-linked sovereign debt

Contents

1.1 Report Objectives

The following report is an output of the 2023–2024 Biodiversity Conservation and Implementation of the Kunming-Montreal Framework policy research project launched by China on January 10, 2024. There are four main components: (i) an analysis of China's experience in in-situ biodiversity conservation and the implications for implementation of the 30×30 target; (ii) a concurrent analysis of international in situ biodiversity conservation with respect to the 30×30 target; (iii) research on the sustainable use and management of agricultural biodiversity outside protected areas and; (iv) analysis of financing mechanisms and incentive strategies for resource mobilization for biodiversity conservation. Additionally, there was a request for a particular emphasis on gender issues as they relate to the Kunming–Montreal Framework, which is addressed in Box 1 and in recommendations throughout. The project brought together Chinese and foreign researchers and proposed policy recommendations for China and the world to promote biodiversity conservation and the implementation of the Kunming–Montreal Framework as effectively as possible.

Box 1. Gender equity

Conservation measures and related policies impact women, men, and social groups differently, based on their different needs, perspectives, and gendered realities. It is important to apply gender analysis to biodiversity conservation. Women and men generally have different roles in the use and management of natural resources. Understanding these roles is key to combating biodiversity loss and ensuring equitable access to limited and life-giving resources, especially in developing countries. Gender-differentiated responsibilities vary from region to region, but in many communities, women act as primary caretakers and natural resource managers, procuring water and firewood, managing waste, and providing health care, often through plant-based medicines. Women's activities are directly impacted by biodiversity loss, and the related impacts on women's lives in terms of health, safety, and education reinforce unequal rights and affect access to decision making.

Target 23 of the Kunming–Montreal Global Biodiversity Framework aims to "Ensure Gender Equality and a Gender-Responsive Approach for Biodiversity Action": "Ensure gender equality in the implementation of the framework through a gender-responsive approach where all women and girls have equal opportunity and capacity to contribute to the three objectives of the Convention, including by recognizing their equal rights and access to land and natural resources and their full, equitable, meaningful and informed participation and leadership at all levels of action, engagement, policy and decision-making related to biodiversity." (Decision adopted by the Conference of the Parties to the Convention on Biological Diversity. 15/4 Kunming-Montreal Global Biodiversity Framework. 19 December 2022).

Target 23 includes key questions that can help add specific references to gender equality:

- What processes or mechanisms are in place to ensure gender equality and a gender-responsive approach?
- What are the opportunities for and constraints to improving gender equality?
- What mechanisms are in place to ensure that women and girls have access to land and resources? How can these be improved or strengthened?

Addressing these questions in the context of the Global Biodiversity Framework also addresses gender requirements in the Sustainable Development Goals (e.g., SDG 5), UN Convention on the Elimination of Discrimination Against Women (CEDAW) with respect to climate change, [1] and many other international agreements.

Recommendations

1.Align National Biodiversity Strategy and Action Plans (NBSAPs) with Target 23 by using the Kunming–Montreal Global Biodiversity Framework, as well as the Convention on Biological Diversity (CBD) and United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plans (GAPs), to develop and apply monitoring indicators relating to conservation and climate benefits, finance, governance, and decision making.

2.Develop gender-responsive climate change and biodiversity policies and associated capacity-building and data generation and disaggregation (GAP under the CBD and UNFCCC).

1.2 The Proposed Context of Biodiversity Conservation and the Implementation of the Kunming-Montreal GBF

1.2.1 The Global Trend of Biodiversity Loss Has Not Been Reversed, and the Pressure on Biodiversity Is Intensifying.

According to the fifth edition of the Global Biodiversity Outlook, global biodiversity loss continues, and furthermore, the pressure on biodiversity is still increasing [2]. Without a concerted, international effort, the current rate of global species extinction will accelerate and is already tens if not hundreds of times faster than the average over the past 10 million years [3-6].

1.2.2 An International Consensus Has Been Reached to Strengthen Biodiversity Conservation.

In 2022, the 15th Conference of the Parties to the CBD (COP 15) agreed on the Kunming–Montreal Global Biodiversity Framework (hereinafter the Kunming-Montreal Framework), which draws up a blueprint for action and a framework for global biodiversity governance over the next 10 years and beyond. As the COP 15 presidency, China played a leading role throughout the negotiations and their successful conclusion. The Kunming–Montreal Framework is designed to provide governments with a roadmap to achieve the three goals of the CBD: biodiversity conservation, sustainable use, and benefit sharing.

1.3 Area-Based Biodiversity Conservation Experiences and Strategies for Achieving the 30×30 Target

1.3.1 Importance and Challenges of the 30x30 Target

To halt and reverse biodiversity loss effectively, the Kunming–Montreal Framework proposes an ambitious plan drawing on the Strategic Plan for Biodiversity 2011–2020 and its achievements, failures, and lessons learned, along with experiences and outcomes of other relevant multilateral environmental agreements. The Kunming–Montreal Framework sets out four long-term goals (by 2050) and 23 action targets (by 2030). Of particular importance here is the 30×30 goals of Target 3, which set out a series of targets to protect at least 30% of the world's land and seas by 2030. This is the main focus of the following section.

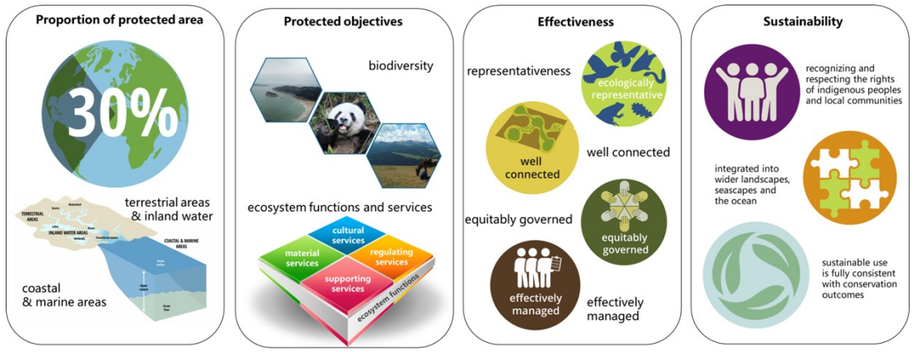

Figure 1. Core content of the 30×30 goal (refer to the reports of WWF and IUCN WCPA.) [2]

> *Box 2. Target 3 of the Kunming-Montreal Framework*
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> *"Ensure and enable that by 2030 at least 30 per cent of terrestrial, inland water, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories."*

1.3.2 Progress of China's Protected Areas System and Analysis of its Effectiveness in Implementing the 30x30 Target

1.3.2.1 Progress of China's Protected Areas System

Over the past 10 years, the development of China's nature protected areas system has included establishing a national park system in 2013, a major policy shift toward establishing a protected area system with national parks as the main body (first proposed in 2017), and the official establishment of the first batch of national parks in 2021 [7]. The following timeline is relevant:

(1) Establishing a variety of different protected areas (before 2013)

(2) Exploring the pilot of the national park system as a strategy for China (2013–2016)

(3) Proposals for a protected area system with national parks as the main component (2017–2020)

(4) Accelerating the establishment of the system with national parks (2021–present). [8-11]

1.3.2.2 Analysis of the Effectiveness of Construction of China's Protected Areas System to the Implementation of the 30×30 Target

By the end of 2021, China had set up nearly 10,000 protected areas of various levels and types, accounting for about 18% of the country's land area, [12-13] with about 90% of terrestrial ecosystem types and 65% of higher plant communities currently represented. [14-15] But the representativeness of important species habitats, [16] Key Biodiversity Areas, [17-18] ecosystem services, [19-20] and carbon sequestration [21] still need to be strengthened, along with better representation in marine protection. [22-23] From the perspective of management effectiveness, the status of highly protected, long-established reserves in provinces with higher social and economic development is relatively good. [24-26] More than half the national nature reserves have a positive effect on reducing forest loss, [27] and more than two-thirds of Wetlands of International Importance (Ramsar sites) have helped reduce an otherwise rapid wetland decline. [28] The 10 pilot national parks have also achieved positive results for the protection of important species. [29] However, there is no systematic evaluation for other types of protected areas, [30-31] and there are few studies on the conservation effectiveness of grasslands and meadows, deserts, and marine and coastal ecosystems. The management of many species is challenged by insufficient data background information, [32] and the conservation effectiveness of protected areas needs to be further understood. [33]

In January 2024, China released the China Biodiversity Conservation Strategy and Action Plan (2023-2030) (NBSAP), [34] which highlighted four priority areas, including (i) biodiversity mainstreaming, (ii) addressing the threat of biodiversity loss, (iii) sustainable use and benefit-sharing of biodiversity, and (iv) modernization of biodiversity governance capacity. This NBSAP, which has been submitted to the CBD in accordance with the agreed implementation mechanisms of the Kunming–Montreal Framework, states that, as of 2021, the terrestrial area of nature reserves accounts for ~18% of China's land area. Further, China has established 32 conservation priority areas for biodiversity conservation, accounting for 28.8% of the entire national territory—very nearly attaining the 30% global benchmark for Target 3.

1.3.3 Progress in the Construction of an Ecological Conservation Redline in China and an Analysis of the Effectiveness in Implementing the 30×30 Target

1.3.3.1 Recent progress for China's ECR

The ecological conservation redline (ECR) concept was proposed by Chinese researchers some years ago and has gradually risen to the level of national strategy and legislation. [35] ECRs focus on three major areas: (i) protecting important ecological functions, maintaining ecosystem services, ensuring the supply of ecological

products, and providing ecological support for sustainable development; (ii) protecting sensitive areas of the environment, mitigating and controlling ecological disasters, and buffering human settlements; and (iii) protecting key species and ecosystems, maintaining biodiversity, and promoting sustainable use of biological resources. "Ensuring that ecological function is not reduced, area is not reduced, and nature is unchanged" is the goal of redlining ecological protection. [36]

There are significant differences between the Chinese ECR and IUCN protected areas in terms of classification methods, management requirements, management approaches, and spatial layout. The terrestrial redline is mainly composed of protected areas, areas with important but fragile ecological functions outside protected areas, and areas with potentially important ecological value. Protected areas are therefore only one component of the ECR, which now covers 31.7% of China's land area. Protected areas cover about 1.7 million km^2, accounting for 56% of the total terrestrial ECR. The area of protected areas in the marine redline is about 96,000 km^2, accounting for 64% of the total marine ecological protection redline. [37]

In order to promote the practical experience of China's ECR, the Chinese redline technical team and the IUCN jointly developed an international version of the Ecological Conservation Redline Delineation Toolkit. This proposes an international approach to the delineation of ECR. The Chinese government has established an ECR management system that integrates various policies and measures with the whole-process management of "strict prevention before the event, strict management during the event, and rewards and punishments after the event" as the main principle. [36] The Department of Ecological and Environmental Protection issued the Measures for Ecological and Environmental Supervision of Ecological Conservation Red Lines (Trial), establishing a regulatory system for ECR in terms of the rule of law, fiscal and tax policies, standard formulation, and regulatory and law enforcement while strengthening the management of ECR areas.

1.3.3.2 Analysis of the Effectiveness of Implementing China's ECR to achieve 30 × 30 Target

From the perspective of the proportion of ECR's area, China's terrestrial ECR is 3.04 million km^2, accounting for 31.7% of China's terrestrial area. If the ECR proves to be an effective tool for conserving biodiversity over time, this would achieve the requirement of "protecting 30% of the land" in the 30 × 30 target of the Kunming-Montreal Framework.The designated area of marine ECR is 150,000 km^2, accounting for 5% of China's marine area. Through the delineation of ECR, China has covered four major categories of key ecological functional areas, 3 major categories of 23 ecologically sensitive and fragile areas, thus protecting the most valuable "lucid waters and lush mountains" and "high-quality ecological products", as well as the "lifeline" that concerns national ecological security. ECR has protected more than 95% of national key protected species, more than 90% of excellent ecosystems and natural landscapes, and the source areas of 210 rivers. To sum up, ECR plays an important role in purifying the atmosphere, expanding water environmental capacity, and providing ecological products. It can be said that the ECR covers the key areas of the national ecological space, therefore effectively promoting biodiversity conservation in situ in China.

From the perspective of ECR's management, China has established a rigid management system to ensure the effectiveness. "Ensuring that the ecosystem function is not reduced, the designated area is not reduced, and the land use characteristic is not changed" is the ultimate goal of strictly managing ECR. This is different from the policy requirement of PA system by IUCN. Since 2018, the Chinese Ministry of Ecology and Environment has begun to implement the construction of the "National Ecological Conservation Redline Supervision Platform", using technologies such as satellite remote sensing and geographic information systems to build an "integrated sky-air-ground" ecological supervision system. This system can achieve timely monitoring and evaluation of human interference activities, ecosystem status, ecological environment risks, and ecosystem assets in the national ECR areas. It can be said that the Chinese government has established a strict ECR management system, which effectively protects the ecological functions and biodiversity within the designated redline areas.

1.3.4 Progress in International Area-Based Biodiversity Conservation (Protected Areas and Other Effective Area-Based Conservation Measures) With Analysis of Implementation of the 30x30 Target

Most countries have not yet submitted their updated National Biodiversity Strategy and Action Plans (NBSAPs) and national targets aligning with the Kunming–Montreal Framework to the CBD, so it is still too early to make definitive statements about global progress on Target 3. However, considerable attention from parties and donors has focused on this target, as it is one of the more actionable and well-understood targets of the Kunming–Montreal Framework. There is already a fully developed guide to implementation, funded by the Global Environment Facility, [2] along with a web platform developed to support implementing countries. To date, 118 countries have signed up to the High Ambition Coalition (HAC), which calls on members to commit to 30×30, reinforcing their obligations under the Kunming–Montreal Framework. The HAC is working with donor governments to both raise and distribute funding to support implementation. A coalition of NGOs is implementing Project Finance for Permanence projects in a proposed 20 countries around the world to provide additional funding to reach this target. Countries are exploring options, particularly for other effective area-based conservation measures (OECMs), within their NBSAPs processes. A few new NBSAPs were announced at the May 2024 SBSTTA meeting in Nairobi, and more are expected by CBD COP 16. The CBD has been hosting well-attended regional Target 3 workshops to support country implementation.

National reports on progress are required in time for CBD COP 17 and again in advance of COP 19, with global reports planned for COP 18 and COP 19, six months before the deadline at the end of 2030. A draft outline of country reporting commitments is given in Figure 2. [38]

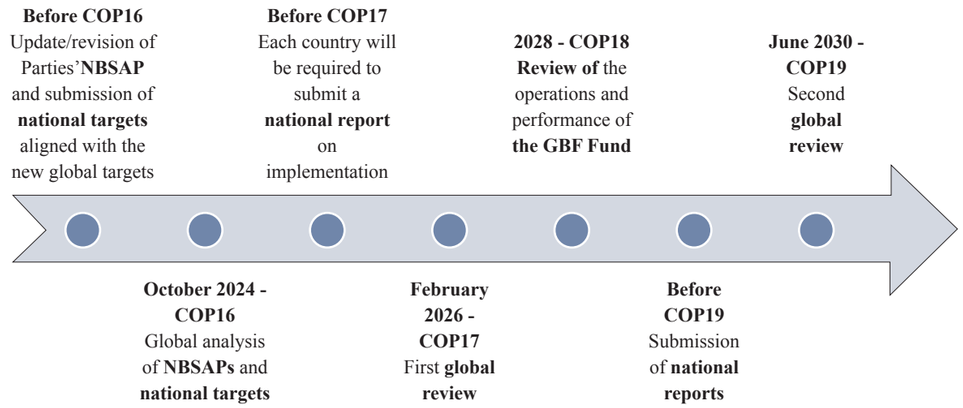

Figure 2. A draft outline of country reporting commitments (Source: Aubert and Dudley, 2024 [briefing for the European Parliament])

1.3.4.1 Status, Representativeness, and Effectiveness of Protected Area Systems and Conservation Measures in the International Community

According to the World Database on Protected Areas, as of January 2024, the number of protected areas in the world is 295,579, with an area of 66,748,700 km^2. [39] Terrestrial and inland water protected areas cover 16.06% of the land surface, and marine protected areas cover 8.16% of coastal and ocean areas. Detailed analysis has been carried out for this assessment of protected area coverage in the United States, Canada, Brazil, Australia, the United Kingdom, Germany, Russia, South Korea, Japan and India. Numbers of other effective area-based conservation measures (OECMs) are rising fast, and these figures are likely to continue changing rapidly, with OECMs assuming a larger proportion of the total terrestrial and marine sites under area-based conservation. [40] The large majority of protected areas, at least by area, are under the control and management of governments, although there are a growing number of privately protected areas and areas governed and managed by Indigenous Peoples and local communities in some parts of the world. Shared management of various sorts is also becoming more common.

Conservation scientists recommend variously that 25%–75% of the Earth's land surface should be designated as protected areas to conserve biodiversity effectively. [41-43] The post-2020 Global Biodiversity Framework proposes a 30% target for area-based conservation. [44] It is estimated that increasing the number of high-level (legally strict) protected areas to focus on global biodiversity, such as the ambitious "Half Earth" initiative to protect 50% of the Earth's surface, [45] could protect around 85% of species from extinction.

Far less is known about the management effectiveness of protected areas. The UNEP World Conservation Monitoring Centre lists 19,707 protected areas as having had an assessment, but it has been almost 15 years since a global assessment of results. The last such assessment found that around 40% showed major deficiencies in management. [46] Improving management effectiveness is one of the major challenges for Target 3. Many assessment methods are available, and most are linked to the management effectiveness framework developed by the IUCN World Commission on Protected Areas. [47] Additionally, some 58 protected areas and OECMs around the world have been assessed by the Green List, the IUCN accreditation system that measures success against agreed standards.

1.3.4.2 Challenges Defining OECMs in a National Context and Determining "What Counts" Toward the 30 × 30 Target

As an important new conservation tool to achieve the 30×30 goals, OECMs aim to promote the in-situ conservation of global biodiversity by identifying and recognizing areas outside protected areas that are

"effectively conserved" and therefore conserve biodiversity. The identification and recognition of OECMs requires stakeholder engagement and support, which can foster more equitable partnerships in global conservation efforts. OECMs first appeared in the 2010 CBD COP 10 Aichi Biodiversity Targets. At its COP 14, the CBD adopted Resolution 14/8 on OECMs, which provides a definition:

"Other effective area-based conservation measures, OECMs, are geographically defined areas outside of protected areas whose governance and management can achieve positive, sustained long-term outcomes for in situ conservation of biodiversity, with associated ecosystem functions and services, as well as cultural, spiritual, socio-economic and other locally relevant values, where applicable."

In 2019, IUCN published Recognizing and Reporting Other Effective Area-based Conservation Measures, which included OECM screening tools, case studies, and processes for monitoring and reporting OECMs.[48] In 2023, the IUCN World Commission on Protected Areas (WCPA) published the Site-Level Tool for Identifying Other Effective Area Conservation Measures. [49] Governments are now rapidly starting to implement OECMs following the agreement on the 30×30 target in December 2022. Understanding how protected areas, OECMs, and the ecological redline system relate to each other is a major step needed in the further development of an effective conservation network in China and beyond.

1.3.4.3: Analysis of the Effectiveness of the International Community in Implementing the 30 × 30 Target and Addressing OECMs

OECMs are a powerful tool for conservation, but only if applied correctly. They must deliver biodiversity conservation effectively, as proven by efficient and regular monitoring. In some ways, the demands on OECMs are now stricter than for protected areas.

Several challenges can be identified:

- Disagreements about the extent to which livestock pasture, managed forests, and certain agricultural systems should or should not be recognized as OECMs.
- Uncertainty about what kinds of fishing are acceptable within marine—and, to a lesser extent, freshwater—OECMs.
- Whether "potential OECMs" might be recognized in areas that are currently undergoing restoration (e.g., as a contribution to GBF Target 2 and the UN Decade on Ecosystem Restoration).
- How monitoring can be organized in OECMs, many of which are being managed by people not skilled in or perhaps interested in biodiversity conservation. [50-51]

1.3.4.4 Prospects for Achieving Target 3 Globally, Including Components Related to Management Effectiveness, Ecological Representation, and Equity

Aichi Target 11, the precursor to Kunming–Montreal Framework Target 3, broadly speaking, achieved the area component of the target, at least on land (the target was 17%) and made great progress toward doing the same in the ocean (target of 10%). Yet it is recognized that much less progress was made in achieving some of the other elements, including ecological representation, management effectiveness, and particularly in addressing social issues, including gender issues. Furthermore, research suggests that choices made by governments often did not result in the ecological representation target being met and that social issues remain problematic in many parts of the world.

Today, there is a strong commitment to addressing the whole of Target 3. However, the headline indicator still focuses on areas under protected areas and OECMs. It will be incumbent on governments and others to monitor the target in a more holistic way than hitherto. This includes monitoring:

- Biodiversity – not just iconic species but representatives of all groups.
- Ecosystem services (including especially water, carbon, disaster risk reduction and food security),

which have assumed greater importance than hitherto under the wording agreed for Target 3.

●Management effectiveness, requiring at least basic headline indicators applied across the full range of protected areas and OECMs.

●Integration of protected areas and OECMs into the wider landscape, represented by indicators of ecological connectivity.

●Rights and equity, particularly for Indigenous Peoples and local communities, which implies refinement and wide application of social impact and governance assessments.

●Agreement on what kinds of sustainable use is acceptable in protected areas and in OECMs, and ways to measure that sustainability is being achieved.

1.3.4.5 Challenges and Best Practices in Selecting Areas and Building the 'Social License to Protect,' Leveraging Support from and Generating Socio-Economic Benefits to Local Communities

Protected areas and OECMs need to be supported by the majority of people in surrounding communities if they are to have the chance of being effective in the long term. This means that site selection is inevitably a trade-off between what might be ideal from a biodiversity perspective and what is acceptable from social and political perspectives; negotiating these trade-offs is a critical part of Target 3. [52] For Indigenous Peoples, there is now a formal requirement of Free, Prior, and Informed Consent (FPIC) for any activity on their traditional land or water. [53] Both Indigenous Peoples and local communities can be very effective guardians of protected and conserved areas, as long as they have been fully engaged in and are supportive of the process of identification and management. This means that the process of setting up a protected area or OECM now often takes longer than in the past, when governments made top-down decisions, often with little consultation. The results are likely to be much more effective, but there is an inherent tension between the need for speed (the 2030 deadline) and the need to bring people along with any conservation initiatives. There is still a great deal to be learned about the process of bottom-up conservation, and fortunately, there are plenty of good examples to draw from.

1.3.5 Policies and Recommendations

This study puts forward the following suggestions, in order to provide reference for China and other countries in promoting the implementation of the 30×30 target. The implementation of an integrated plan for protected areas requires careful consideration of the interactions between different ecosystems and human pressure of various kinds to optimize the spatial layout of the protected area system. In China, national parks will be the main protected area type. Additionally, actions are needed to improve the effectiveness of protected area conservation and management to ensure that various ecosystems, species, and their habitats are effectively conserved.

(1) Funding: Current support for protected areas comes predominantly from public financing. In addition to central and local sources of finance, investigation of novel and diversified funding channels is recommended, with pilots and cost-benefit analyses carried out in some national parks and other nature protected areas.

(2) System planning and effectiveness: Coordination of major projects for the protection and restoration of important ecosystems, for biodiversity conservation and mitigation of climate change is urgently needed, particularly in marine and freshwater ecosystems. This also requires strengthening analysis of the economic feasibility and long-term development of China's national parks and other nature reserves to provide scientific support for the most effective management measures. **Formulate and introduce a plan for China to implement the 30×30 target domestically, committing to exceed the 30% global benchmark if possible.**

(3) Management effectiveness: We note that the government is emphasizing ***management effectiveness*** and supports this; expansion without effectiveness will have little benefit. Steps toward effectiveness include setting a baseline (probably broadly in place) and agreeing on methods to ***monitor trends*** in both (i) management and (ii) biodiversity and ecosystem services. We recommend using standard methodologies across the country, in line with the framework agreed upon by the CBD and IUCN.

(4) OECMs: Countries should consider determining the criteria for recognizing OECMs according to their national conditions, clarifying current challenges of implementing OECMs, and integrating OECMs into the path to the 30×30 Target. An in-depth understanding of OECMs is needed to make them an effective supplement to protected areas.

(5) Sustainable use: Given the inclusion of "sustainable use" within Target 3, it is important to agree to guidance on what can be included within the term in protected areas and OECMs.

(6) Broader aspects of 30×30: When pursuing the 30×30 target, it is important to include all aspects, including greater stakeholder participation and influence, including Indigenous Peoples and local communities as appropriate, and a focus on both equity and gender equality. In line with Target 23, this will include measures to apply the Kunming–Montreal Framework and CBD and UNFCCC Gender Action plans so that budgets are gender responsive and participation targets in climate and biodiversity benefits, governance, and decision making are developed and applied.

(7) Ecological conservation redline: Document, disseminate, and apply China's ECR model and establish a multi-functional ecological protection redline model that is in line with international guidance for protected areas and OECMs.

(8) Strengthen the connection between the IUCN protected area definition and management categories and OECMs. Current plans for protected areas still fall well short of the 30% global target and China has the potential to ***contribute more land and water through OECMs.*** Differences between ecological redlines, protected areas, and OECMs need to be defined through a series of technical support documents for the delineation of ecological redlines in line with international standards to improve the international recognition of these concepts.

(9) Introduce the idea of "important carbon sink ecological function areas" to help the vision of carbon peak and carbon neutrality. China can further improve the ECR results according to China's climate change goals by including carbon storage and sequestration in site-selection methodologies, thus contributing to China's effective response to climate change and the promotion of the UNFCCC.

(10) Establish an integrated technical package for the delineation of ECRs. Users such as government agencies, planning authorities, regional institutions, enterprises, and environmentalists will be able to use the Ecological Redline Delineation Package to identify ecological redlines at the regional, regional, national,

and international levels. Each country will be able to optimize the parameters in the technology package according to the actual local situation to be more conducive to the promotion and localization of applications in other countries.

(11) Assess the benefits of ecological conservation redlines. These can be divided into ecological benefits, economic benefits, and social benefits. A variety of approaches, including economic accounting, value assessment, public policy, and environmental impact assessment, are recommended to carry out a comprehensive assessment. Issues of potential inequalities, including gender inequalities, should be addressed in the assessment.

(12) Apply the results of the redline benefit assessment to the formulation of green development policies. Local governments can introduce and formulate policies such as compensation for environmental protection, quantitative monitoring of green development performance, and preferential green development, as well as explore the establishment of an ecological security normative system that matches local conditions. Laws, policies, transfer payments and other means can be employed to ensure this is successful.

(13) China's policy role: Systematically review the policy evolution and various innovative measures and experiences in the development of China's protected area system and analyse the influence and role of China's protected area system in supporting the implementation of related global goals (including the UNFCCC and the United Nations Sustainable Development Goals (SDGs), in addition to the Kunming–Montreal Framework) to provide a replicable and generalizable model for the international community. **Formulate and introduce a plan for China to implement 30×30 globally.** Promoting ECRs through international organizations such as the CCICED and The Nature Conservancy (TNC) is an effective way for China to promote the implementation of the 30×30 Goals.

1.4 Progress and Management Strategies in the Sustainable Management of Agriculture for Biodiversity

1.4.1 Importance and Challenges of Sustainable Utilization of Agricultural Biodiversity

Agricultural biodiversity is an important issue on the CBD agenda and is of great practical significance for global food security, sustainable agricultural development, and carbon neutrality. Agricultural biodiversity is a broad term that encompasses all components of biodiversity relevant to food, agriculture, and ecosystems: all varieties and variability of genes, species, and ecosystems, and all animals, plants, fungi, and microorganisms necessary to sustain the critical roles, structures, and processes of agroecosystems. Agricultural biodiversity stems from the interaction between genetic resources, the environment, and the management systems and practices adopted by farmers.

Agrifood sectors—crop and livestock production, forestry, fisheries and aquaculture—are directly related to more than half the targets of the Kunming–Montreal Framework, and to all the other targets in one way or another. Target 10 of the Kunming–Montreal Framework commits countries to the sustainable management of agriculture, aquaculture, fisheries, and forestry, including through the sustainable use of biodiversity and an increase in the use of biodiversity-friendly practices. Targets for the reduction of pesticides, sustainable management of food production, and the elimination, phase-out or reform of perverse incentives, including subsidies, are directly tied to the agriculture sector.

In constructing bold, innovative, and actionable policies for the agriculture and food sectors, it is critical to cut across the "silos" of agriculture and environment, with environmentalists needing to consider change and progress from the standpoint of the agrifood sector and agriculture policymakers needing to prioritize shifting the sector from a source of negative environmental impacts to becoming an agent of change for sustainability.

There is a growing global and Chinese consensus toward the next stage of the development of agriculture, even though there are many complexities in achieving change and progress. There is a broad understanding that modern industrial agriculture has negative environmental impacts and that those impacts are hurting the long-term sustainability and resilience of agriculture, including productivity. [54]

1.4.2 Analysis of the Effectiveness of Modern Agrobiodiversity Conservation Measures and Their Implementation of Kunming–Montreal Framework Targets in China

1.4.2.1 Agricultural Pollution Risk Prevention and Control

(1) Fertilizer and Pesticide Reduction: China has an active fertilizer and pesticide reduction program, which is gradually reducing the volume of these products and replacing toxic with less toxic alternatives. In December 2022, the Ministry of Agriculture and Rural Affairs of China released policy documents such as the "Action Plan for the Reduction of Chemical Pesticides by 2025[55]".and the "Action Plan for the Reduction of Chemical Fertilizers by 2025 [56]," effectively promoting the reduction and structural adjustment of pesticides and fertilizers. China's total pesticide application increased from 1.386 million tonnes in 2004 to a peak of 1.808 million tonnes in 2013 and then fell back to 1.2392 million tonnes in 2021, down 31.4% from 2013. In 2020, the proportion of micro, low, and toxic pesticides in China was 98.1%, while the proportion of highly toxic pesticides was less than 1%, and the amount of new biological pesticides rose to 83,000 tonnes in the same year, with an average annual growth rate of 3.4%. The total amount of chemical fertilizer application reached a peak of 60.226 million tonnes in 2015, and since then, it has decreased year by year, falling to 50.792 million tonnes in 2022. The structure of fertilizer usage in China has also changed, with an increasing proportion of compound fertilizers. [57]

(2) Decrease of plastic film residue in farmland and annual increase in recycling rates: Since 2012, the Ministry of Agriculture and Rural Affairs of China has issued policy documents such as "the Plastic Film Recovery Action Plan", "the Management Measures for Agricultural Plastic Films", and "the Opinions on Accelerating the Prevention and Control of Agricultural Plastic Film Pollution". These documents clearly state the goal of achieving zero growth in the area covered by plastic film nationwide by 2020, full recovery of agricultural plastic films by 2025, and negative growth in film residue to effectively control white pollution in farmland. Starting in 2016, the annual usage of agricultural plastic films began to decline year by year, reaching 2.358 million tons by 2021, a decrease of 9.4% compared to 2015[58]. Beijing and Chongqing are actively promoting the use of biodegradable films as an effective means to address plastic pollution in agricultural fields. By 2021, Chongqing had achieved comprehensive coverage of pilot projects for biodegradable plastic films in agricultural counties.

(3) Legal framework for pesticide packaging waste management and establishment of recycling and resource utilization system: In July 2020, the Ministry of Agriculture and Rural Affairs and the

Ministry of Ecology and Environment jointly issued the “Management Measures for the Recycling and Treatment of Pesticide Packaging Waste”. This initiative aims to establish a new recycling and disposal model characterized by “unified collection, centralized transportation, and comprehensive harmless treatment”. It enhances the supervision and management of pesticide packaging waste throughout its entire lifecycle, including production, sales, use, recycling, and disposal, while clarifying the legal responsibilities of all parties involved. In 2021, the Ministry of Agriculture and Rural Affairs released a notice on the implementation of the “Solid Waste Pollution Prevention and Control Law of the People's Republic of China”, emphasizing the importance of recycling and treating pesticide packaging waste. It mandates that all parties strictly adhere to the principle of “whoever produces, manages, uses, and recycles” to ensure that responsible entities fulfill their obligations regarding recycling and treatment. In February 2022, the Ministry of Agriculture and Rural Affairs led the formulation of the “14th Five-Year Plan for National Pesticide Industry Development”, which outlines specific measures to promote the recycling and utilization of pesticide packaging waste. These measures include establishing recycling and resource utilization standards, building a recycling and treatment system, conducting pilot recycling projects, constructing storage and transportation stations, and encouraging pesticide companies to improve packaging processes, and the pesticide packaging waste recycling rate will be over 80% by 2025.

(4) Advancement of livestock manure recycling and implementation of pollution prevention measures: In December 2019, the General Office of the Ministry of Agriculture and Rural Affairs and the General Office of the Ministry of Ecology and Environment jointly issued the “Guiding Opinions on Promoting the Legal Utilization of Livestock and Poultry Manure for Land Application and Strengthening Pollution Control in Animal Husbandry”. This document emphasizes the importance of deepening the integration of crop and livestock production, accelerating the recycling of livestock and poultry manure for land application, clarifying the pathways for livestock pollution control, enhancing the level of manure resource utilization, and promoting the coordinated development of ecological protection and animal husbandry. The guidelines specifically highlight the need to standardize the use of feed and veterinary drugs in livestock farming, initiate actions to reduce the usage of veterinary antibiotics, and strictly enforce the “Safety Usage Norms for Feed Additives”. These measures aim to minimize the use of growth-promoting antibiotics and mineral feed additives, thereby reducing the residues of antibiotics and heavy metals at the source and controlling utilization risks. In June 2020, a joint notice titled “Further Clarifying the Requirements for the Utilization of Livestock and Poultry Manure for Land Application and Strengthening the Supervision of Livestock Pollution” was issued. It outlines the standards and requirements for the land application of livestock and poultry manure, emphasizes the need for enhanced supervision during and after the process, and calls for the improvement of manure management systems. It also encourages the establishment of a new sustainable development model integrating crop and livestock production and promoting agricultural recycling. The “Solid Waste Pollution Prevention and Control Law of the People’s Republic of China”, implemented in September 2020, stipulates that large-scale livestock operations must establish facilities for the harmless treatment and resource utilization of manure, ensuring their proper functioning.

The reduction and structural optimization of chemical fertilizers and pesticides, the reduction and recycling of agricultural films, the recycling and resource treatment of pesticide packaging waste, as well as the recycling of livestock manure for land application and pollution prevention are closely related to the goals of the “Kunming-Montreal Framework”. These efforts contribute to reducing agricultural pollution risks, maintaining the health of agricultural ecosystems, and promoting the protection of agricultural biodiversity.

1.4.2.2 Sustainable Agricultural Management

(1) Continuous development and growth of organic agriculture, making china the fourth largest organic cultivation country in the world: According to the “2023 Annual Report on Organic Product Certification and Industry Development”, by 2022, China's organic crop production area had reached 4.752 million hectares, establishing the country as the fourth largest organic agriculture producer globally. The sales revenue of organic products reached an impressive 87.76 billion yuan, consistently ranking fourth in the world for several consecutive years. Among the certified organic products, the production volumes for different categories were as follows: 21.43 million tons for crops, 2.82 million tons for livestock and poultry, 440,000 tons for aquaculture, and 5.39 million tons for processed goods, with crops accounting for over 70% of the total. By the end of 2022, a total of 16,000 enterprises had obtained more than 26,000 organic product certification certificates, marking a remarkable increase of 99.8% in the number of certifications compared to 2015.

(2) Diversification of agricultural waste utilization methods and steady improvement in resource utilization levels and capabilities: Since the 18th National Congress of the Communist Party of China, significant achievements have been made in the construction of the agricultural ecological environment, leading to a steady improvement in the utilization levels of agricultural waste. As of now, the comprehensive utilization rate of livestock and poultry manure nationwide has reached 78%, and a new development pattern of integrated crop-livestock farming and agricultural-circular systems has begun to take shape. Moreover, various regions have implemented scientific returning measures tailored to local conditions, such as straw incorporation, shredding and mixing, and covering in fields, effectively enhancing the effectiveness of returning straw to the land. According to the “National Crop Straw Comprehensive Utilization Situation Report” [59] released by the Ministry of Agriculture and Rural Affairs in 2022, the total straw utilization in the country reached 647 million tons in 2021, with a comprehensive utilization rate of 88.1%, representing an increase of 3.4 percentage points compared to 2018. The comprehensive utilization rates of straw from the three major grain crops—corn, rice, and wheat—were 87%, 89.6%, and 92.1%, respectively, all reflecting a high level of utilization. The utilization rates of straw for different purposes are as follows: 60% for fertilizers, 18% for animal feed, 8.5% for fuel, 0.7% for substrates, and 0.9% for raw materials, forming a pattern characterized by “primarily agricultural use with multiple pathways”. In addition, data from the Ministry of Agriculture and Rural Affairs monitoring 32 key agricultural areas nationwide indicated that the average increase in soil organic matter after returning straw to the fields ranged from 5% to 7%, while crop yields increased by 2% to 4.5%.

(3) Significant improvement in agricultural productivity assessment indicators and substantial increase in comprehensive farmland productivity: The adoption of agricultural practices such as low tillage (or “conservation tillage”); organic agriculture; [60] intercropping, [61-62] including contour intercropping; [63] and crop rotation and greater crop diversity, [64] as well as cover crops has yielded significant benefits for soil health, farmland productivity, cost reduction and efficiency enhancement, and soil carbon sequestration.

(4) Significant achievements in agricultural resource protection, and the addition of 91 new national resource repositories China is rich in biological genetic resources and is the centre of origin of important crops such as rice and soybeans, as well as wild and cultivated fruit trees. China has 1,339 cultivated crops (and 1,930 wild relatives) and more than 1,000 economic tree species, ranking first in the world in fruit tree species. There are 7,000 species of ornamental plants native to China. China also has 576 species of domestic

animals. China actively implements the CBD and its protocols, promotes synergy with other relevant conventions, assumes its responsibilities as a major country, and plays a key role in promoting global biodiversity conservation and governance. [58] China is deeply aware of the need to preserve its rich plant genetic resources, including wild relatives, which can help ensure crop and nutritional variety. [65]

Protection of wild relatives of domesticated crops (especially in situ) and their genetic resources is vital to maintaining genetic diversity and ensuring the long-term sustainability of the agricultural system. An ongoing focus on wild species conservation is critical to the health of future agricultural production, as wild species contain traits for disease and pest resistance, drought tolerance, and other issues to support resilience in the face of climate change, and environmental stress, and for increasing crop yield. This area is well funded by the government for plant breeding and food security purposes. Wild relatives are the foundation of modern breeding. Plant breeding is one of two agriculture priorities in China's 14th National Five-Year Plan (2021–2025). Last year, the Chinese government approved and funded 72 national crop germplasm resource banks and 19 national microbe resource banks. [65]

(5) Diversification of dietary structure and the gradual formation of a "big food concept": The Central Document No. 1 of 2023 emphasizes the establishment of a "Big Food Concept," aimed at accelerating the construction of a diversified food supply system that integrates grain, economy, and feed while combining agriculture, forestry, animal husbandry, and aquaculture, alongside plant, animal, and microbial contributions. At the same time, healthier diets can take the pressure off ecological systems. The 2023 *China and Global Food Policy Report* by Fan et al. elucidated this relationship in detail. [66] Sustainable and healthy diets were proposed by the EAT-Lancet Commission in 2019. The report recommended that the Chinese population generally increase consumption of whole grains, fruits, and soy products and reduce consumption of ultra-processed foods, refined grains and red meat. Doing so would yield important benefits for human health while decreasing overall needs for domestic production and food imports.

Chinese agriculture experts urge an emphasis on healthier diets, not only to ensure the health of individuals and the population, but also to take pressure off China's limited arable land—which is facing the stresses of climate change, as are food-producing landscapes elsewhere. In general, there is an urgent need to shift the food system to ensure food security, ecological security, and human security, including health.

While the food system includes multiple challenges, such as reducing food waste and loss, some of the components of an actional "Big Food" initiative likely include:

- Establishing an integrated management and decision-making system across departments to improve the institutional mechanism for supporting the transformation of the agrifood system.
- Transforming the current motivation mechanism from solely yield-driven toward providing multiple benefits.
- Identifying practical means of implementation for improving the climate resilience of agrifood production systems to guarantee the stability of food supply.
- Improving resource use efficiency and crop productivity while minimizing environmental impacts such as soil degradation and water pollution.
- Identifying feasible technologies for diversifying food sources and formulating policies for supporting their research and development.
- Establishing guidelines tailored for Chinese conditions toward healthier and sustainable dietary patterns, including a more diverse food intake and behaviours, including reduction of food waste.
- Improving the resilience of food supply in international trade.

1.4.3 Analysis of the Effectiveness of International Conservation Measures in the Agricultural Sector and Implementation of the Kunming–Montreal Framework

All three of the Rio Sustainable Development Conventions (CBD, UNFCCC, and UNCCD)* have recognized the importance of more sustainable agricultural approaches to the attainment of climate, biodiversity, and land-resilience objectives. National governments and other actors have also recognized that the current high-input agricultural model is not sustainable for future food security and ecological resilience. Both internationally and in China, there is a growing consensus that the key to long-term food security and resilience is tied to healthy soils. In fact, recent CCICED studies have confirmed this consensus, including the SPS on High-Quality Development of River Basins and Adaptation to Climate Change and the Scoping Study on Integrated Lands Management (both CCICED, 2023).

In December 2019, the new European Commission launched the European Green Deal, which includes a series of supporting policies aimed at promoting green and low-carbon development in the agricultural sector as a crucial component. In May 2020, the Commission further developed the Farm to Fork Strategy and the Biodiversity Strategy based on the European Green Deal, aiming to organically connect nature, farmers, businesses, and consumers. These strategies are designed to halt biodiversity loss in Europe and worldwide, while transforming the EU's food system into a global benchmark. In December 2019, the new European Commission launched the European Green Deal, which includes a series of supporting policies aimed at promoting green and low-carbon development in the agricultural sector as a crucial component. In May 2020, the Commission further developed the Farm to Fork Strategy and the Biodiversity Strategy based on the European Green Deal, aiming to organically connect nature, farmers, businesses, and consumers. These strategies are designed to halt biodiversity loss in Europe and worldwide, while transforming the EU's food system into a global benchmark. The EU also supports the transition of agricultural production towards a carbon-neutral economy. It encourages farmers to utilize food and feed residues, agricultural waste, or other biomass to produce textiles, natural packaging (as an alternative to plastics), building materials (to reduce the use of energy-intensive materials like steel and cement), and clean energy (such as biogas). This approach not only aids in achieving sustainable agricultural management goals but also helps diversify farmers' incomes.

*Each of the conventions acknowledges that agriculture is both threatened by and a solution for their respective missions. The CBD acknowledges the importance of biodiversity (including pollinators, soil and landscape diversity, and genetic diversity) in supporting agriculture and vice versa. Target 10 calls for sustainable and biodiversity-friendly agriculture practices. The UNFCCC established the 4-year Sharm el-Sheikh joint work on implementation of climate action on agriculture and food security. The Climate Convention earlier instructed the SBSTA and SBI to focus efforts related to agricultural technology research and development (e.g., improved soil health and water management) through the Koronivia joint work on agriculture. Finally, the UNCCD explicitly calls for including farmers and pastoralists and their representative organizations in policy planning, decision making, and implementation while also recommending specific agriculture and food system measures in national action programme. Additionally, the UNCCD acknowledges agriculture as a significant driver of land conversion and degradation to be addressed in Land Degradation Neutrality target-setting.

Despite the relatively underdeveloped economies of developing countries, they possess significant advantages in biodiversity. With effective natural resource management strategies, these regions can harness their biodiversity for development opportunities. For example, Africa's wildlife resources hold immense economic potential. However, the substantial overlap between regions rich in agricultural biodiversity and areas of high poverty indicates that the mere presence of biodiversity does not guarantee better yields or improved livelihoods for farmers. Therefore, a key challenge facing developing countries is how to enhance farmers' quality of life while simultaneously protecting agricultural biodiversity. [67] Furthermore, climate change is a significant factor affecting species redistribution in developing countries. Currently, changing varieties or crops has become a preferred strategy for these nations in adapting to climate change. For instance, in Ethiopia, many farmers are responding to rising temperatures by adopting new varieties or crops. [68]

An August 2024 study team visit to Brazil highlighted the relationship between China's imports of agricultural commodities and biodiversity conservation challenges in producing countries. Over the past 50 years, the single biggest driver of habitat and biodiversity loss has been the conversion of natural ecosystems for crop production or pasture. [69] It was reported that ~69% of tropical agro-conversion (i.e., the conversion of forests to pasture or cropland) was conducted in violation of national laws and regulations. [70] China, as the leading importer of agricultural goods worldwide, has committed to engaging collaboratively with large agriculture producer countries (e.g., Brazil) [71]] and other market countries (e.g., the EU [72] and the United States [73]) in joint efforts to support the halting of global forest loss and eliminating international illegal deforestation through enforcing respective laws on banning illegal imports and exports.

Significant efforts in Brazil and elsewhere demonstrate that food security and economic returns can be assured through enhanced management of already cleared lands. Traceability systems are emerging to encourage such efforts. Brazil's Para State is a great example of local political leadership supporting traceability to both benefit beef production and avoid deforestation.

1.4.4 Research on Key Scientific Theories and Practices of Sustainable and Regenerative Agriculture in China

Healthy ecosystems serve as the foundation for agricultural sustainability, and stable and healthy biodiversity is essential for sustainable agricultural development. China is continually advancing theories and practices of sustainable and renewable agriculture to address global challenges such as biodiversity loss, climate change, and land degradation. In this process, sustainable management of agricultural biodiversity practices will place greater emphasis on the coordinated development of ecology and production, promoting the long-term coexistence of agricultural production and natural resources.

China is promoting agrobiodiversity conservation by adopting sustainable agricultural technologies to increase the resilience, resilience, and productivity of agro-ecosystems. Intercropping systems, such as cereal/cereal, grain legume/cereal, and cereal/vegetable combinations, can enhance yields while reducing the need for inputs like fertilizers and pesticides, and it can also conserve soil and promote soil ecological health and sustainable agricultural development. For instance, farmers in the Ningxia region practice wheat/corn intercropping, while Gansu Province employs a system that includes flax, soybean, and corn. In southern Xinjiang, apricot/cotton and jujube/onion intercropping is implemented, and Fujian Province promotes tobacco/peanut intercropping. Additionally, intercropping systems like banana/chili, citrus/potato, and citrus/radish are extensively used in Guangxi Province. In Yunnan Province, intercropping systems involving tobacco/corn, sugarcane/corn, and wheat/fava bean have achieved yield increases ranging from 33% to 85%. These gains are primarily attributed to the additional corn yields in tobacco/corn and sugarcane/corn intercropping, as well as the extra fava bean yields in wheat/fava bean intercropping. These systems not only boost productivity but also effectively protect crops from a variety of diseases. [74] Compared to monoculture, the yield benefits of intercropping increase over time. Simultaneously, intercropping can enhance soil organic matter, total nitrogen, and the content of macroaggregates, thereby improving soil fertility. [75] Demonstration projects conducted by The Nature Conservancy (TNC) from 2021 to 2022 in the North China Plain (Hebei, Henan, Shandong, and Anhui provinces) showed that implementing conservation tillage improved soil fertility by approximately 10%, increased soil moisture retention by about 7%, and significantly enhanced underground biodiversity. Additionally, due to simplified mechanical operations, fuel use was reduced by around 58%, costs decreased by about 17%, and farmer incomes increased by 20%. In terms of carbon sequestration, conservation tillage also demonstrated positive results, with carbon storage at a depth of 0-40 cm increasing by approximately 7%. [76] These results not only demonstrate the potential of sustainable agricultural technologies to enhance agricultural productivity but also underscore their significance in promoting ecological health and the sustainable development of agricultural biodiversity.

In addition, the ecological cycle model and the ecological model of reducing carbon and increasing efficiency have also become the focus of sustainable development of modern agriculture. The Shanghai Songlin Ecological Agricultural Park has preliminarily established an ecological mode that integrates crop and livestock production while emphasizing carbon reduction and efficiency. Covering an area of 102 acres, with a total investment of 230 million yuan, the project was officially launched in August 2021. Leveraging the largest modern pig farming facility in Shanghai, the park has achieved 100% resource utilization of agricultural waste, specifically pig manure. Through the concentration of biogas slurry and purification of biogas, the park produces 7,200 tons of organic liquid fertilizer annually, generating revenue of over 3 million yuan, while also achieving an annual natural gas output of 1.75 million cubic meters, contributing an additional 3.5 million yuan in income. The annual carbon reduction achieved is approximately 18,986 tons, resulting in an extra income of 600,000 yuan. Furthermore, nearly 80,000 tons of biogas slurry are returned to the fields, reducing chemical fertilizer use by 30%-50%, which effectively enhances soil organic matter and increases income by 417 yuan per mu through reduced fertilizer application. From 2008 to 2023, the project has cumulatively increased farmers' income by a total of 60.574 million yuan. This successful case not only demonstrates the economic and ecological benefits of ecological agriculture but also provides valuable experience for sustainable agricultural development. [77]

1.4.5Policy Recommendations – Agriculture

(1) Improve policy frameworks to implement agricultural biodiversity conservation: Enhance the policies, laws, and ecological compensation measures for agricultural biodiversity protection, implementing the "China Biodiversity Conservation Strategy and Action Plan (2023-2030)." Establish a robust ecological compensation mechanism based on the "Ecological Protection Compensation Regulations" to compensate for damaged agricultural ecosystems. Improve relevant laws and economic incentives for the recovery and utilization of pesticide packaging and agricultural films, clarifying responsibilities and encouraging producers, sellers, and users to participate in recycling.

(2) Enhance action measures to practice agricultural biodiversity conservation:

●**Develop Green Alternatives:** Promote the development of green substitutes for fertilizers and chemicals to reduce excessive reliance on chemical inputs, fostering sustainable agricultural development and environmental protection;

●**Promote Sustainable Agricultural Technologies:** Implement techniques such as precision fertilization, conservation tillage, cover cropping, crop rotation, and intercropping to reduce chemical inputs, minimize runoff, enhance soil moisture retention, and ensure long-term productivity;

●**Advance Biodegradable Packaging Research:** Actively promote the development of biodegradable or easily recyclable pesticide packaging and agricultural films, along with efficient recycling technologies to lower costs and improve recycling efficiency;

●**Advance Biodegradable Packaging Research:** Actively promote the development of biodegradable or easily recyclable pesticide packaging and agricultural films, along with efficient recycling technologies to lower costs and improve recycling efficiency;

●**Optimize Land Use:** Utilize large-scale land use planning tools, such as the ecological red line system, to identify currently available and potential agricultural land, conduct related analyses, and predict the impacts of climate change to achieve optimized land use;

●**Improve Soil Health Assessment Systems:** Incorporate biodiversity indicators into the evaluation system for soil health and agricultural ecological development outcomes, selecting appropriate metrics to quantify the impact of agricultural practices on biodiversity, such as soil microbial diversity, plant species richness, the quantity and quality of agricultural habitats, and the status of key species.

(3) Strengthen capacity building to promote agricultural biodiversity conservation:

●**Knowledge and Skills Training:** Strengthen training in green organic agriculture knowledge and skills, encouraging women to play a larger role in agricultural production management and improving the management level of organic farming;

●**Smart Digital Agriculture Technologies Application:** Promote the use of smart agriculture and digital technologies, such as precision agriculture and climate-smart agriculture, to enhance production efficiency and resource utilization while reducing environmental impacts, further advancing sustainable agricultural development;

●**Agricultural Recycling Facilities Construction:** Increase the deployment of pesticide packaging waste and agricultural film recycling facilities in rural areas, establish recycling demonstration projects, accumulate experience, and promote widely;

●**Traceability Systems Support:** Encourage importers and other relevant companies to support the development of food and agricultural product traceability systems, ensuring transparency and sustainability in the food supply chain and preventing procurement practices that involve deforestation or habitat conversion detrimental to sustainable agriculture;

●**Agricultural Demonstration Zones Promotion:** Promote biodiversity-friendly agricultural demonstration zones, establish a monitoring network for agricultural biodiversity, regularly conduct surveys and assessments of agricultural biodiversity, summarize experiences, and gradually disseminate successful practices.

(4) Enhance awareness and advocate for agricultural biodiversity conservation: Promote the "Big Food concept", alleviating pressures on domestic and international food production ecosystems. Encourage dietary shifts toward whole grains, fruits, vegetables, and legumes, while avoiding ultra-processed foods, refined grains, and red meat. Ensure sustainable grazing lands and maintain healthy, high-yield wild-capture fisheries, as well as terrestrial and coastal aquaculture.

(5) Strengthen safeguard measures to enhance agricultural biodiversity conservation: Increase financial investment in agricultural biodiversity protection, ensuring funds are allocated for scientific research, monitoring, public education, and ecological restoration. Enhance policy support for organic and sustainable agriculture through financial subsidies and tax incentives to lower agricultural production costs, encourage farmers to adopt eco-friendly practices, promote biodiversity-friendly planting and breeding methods, reduce reliance on single crops, and enhance agricultural biodiversity. Ensure the effective use of financial resources by formulating clear funding usage plans, prioritizing projects and activities related to agricultural biodiversity, and strengthening the evaluation and supervision of fund usage to ensure effective implementation.

1.5 International Cooperation and Mobilization of Funds for Biodiversity Conservation

Since the first CBD COP, resource mobilization and the convention's financial mechanism have been on the agenda, often focusing on the use of funds from the Global Environment Facility (GEF), the official financial mechanism of the CBD, including its allocation modalities and priority funding areas. Like most conventions in the field of the environment, the CBD faces chronic underfunding to meet its established aims and ambitions.

In order to achieve ambitious and historic biodiversity conservation targets such as the 30×30 goals, a large financial investment is needed. The Kunming–Montreal Framework proposes to gradually reduce the estimated biodiversity financing gap of USD 700 billion per year and to mobilize at least USD 200 billion in financial resources per year by 2030 in Target 19. Therefore, the financial institutional arrangements will be directly related to the implementation of the CBD and the Kunming–Montreal Framework.

As the largest developing country and the COP 15 presidency, China plays an important role in resource mobilization and can help significantly advance international knowledge and action on the issue of finance. Below, the current situation and problems of domestic and foreign aid and implementation funds are summarized, particularly in light of China's experience. Suggestions are then put forward to the Chinese government and international organizations on how to strengthen resource mobilization for the implementation of the Kunming–Montreal Framework based on domestic and foreign experience.

1.5.1 International Cooperation and Resource Mobilization for Biodiversity Conservation

In recent years, the international community has put increasing emphasis on exploring alternative financing opportunities for biodiversity conservation, including payment for ecosystem services, biodiversity-friendly subsidies, a collection of biodiversity taxes and fees, biodiversity certificates and credits, crowdfunding mechanisms, fiscal transfers, debt-for-nature swaps, and sales of ecological goods. A detailed review was carried out of opportunities for funding through the work of the UNDP Biodiversity Finance Initiative (BIOFIN), the creation of a new Global Biodiversity Framework Fund at COP15, EU foreign assistance in the area of biodiversity, the GEF, international conservation NGOs, and resource mobilization through international funds. SCI Research estimates that as of the third quarter of 2023, the investment in 134 biodiversity-related funds is USD 59 billion.*

The analysis went on to look in detail at China's foreign assistance policy, including the Belt and Road Initiative.[78-80] From 2013 to 2018, China's foreign aid amounted to CNY 270.2 billion (USD 37.87 billion), including projects to support environmental protection, combat climate change, and promote sustainable development. According to incomplete statistics, from 2006 to 2020, China implemented more than 70 foreign aid projects related to biodiversity conservation, which were funded through foreign aid funds from the central government, special funds, foreign aid funds from local governments, and donations to international organizations.[81] In October 2021, President Xi Jinping announced at the COP 15 Leaders' Summit that China would take the lead in investing CNY 1.5 billion (USD 210 million) to establish the Kunming Biodiversity Fund to support biodiversity conservation in developing countries and play a greater role in global governance.[82]

1.5.2 Domestic Fiscal and Tax Policies and Incentives for Biodiversity Conservation

According to *A Comprehensive Overview of Global Biodiversity Finance,* published by the Organization for Economic Co-operation and Development (OECD), global biodiversity finance is estimated to be between USD 78 billion and USD 91 billion per year, of which about USD 67.8 billion is spent on domestic public finance, USD 3.9 billion to USD 9.3 billion on international public finance, and the rest on the private sector. At the same time, a new study commissioned by The B Team and supported by Business for Nature investigates environmentally harmful subsidies (EHS) across a wide range of industries and estimates that the world spends at least USD 1.8 trillion a year, equivalent to 2% of global GDP, on subsidies that lead to ecosystem destruction and species extinction.

In the decade from 2011 to 2020, China invested a total of CNY 2.16 trillion (USD 302.7 billion) in core funds for biodiversity conservation, CNY 4.14 trillion (USD 580.3 billion) in broad funds, and CNY 4.86 trillion (USD 681.2 billion) in comprehensive funds. The annual investment scale of China's broad and comprehensive funds increased by CNY 307.400 billion (USD 43.08 billion) and CNY 360.614 billion (USD 50.55 billion), respectively, in the decade from 2011 to 2020. Biodiversity offsets or compensation requirements for unavoidable impacts on natural ecosystems are largely integrated into countries' Environmental Impact Assessment frameworks and are based on the "polluter-pays" principle. These policies have the potential to both reduce impacts on biodiversity and generate significant funding for conservation activities.[83] However, most policies appear to fall short of the requirements and make it difficult to achieve zero net loss on a sustainable basis. For example, less than a quarter of countries that require or introduce biodiversity offsets require that compensation can only be taken as a measure of last resort after other measures at the level of mitigation measures have been implemented. China has made improving compensation mechanisms for ecological protection a priority in its latest biodiversity strategy and action plan (2024). China's ecological compensation mechanism is mainly divided into two categories: one is the comprehensive compensation system, with the core being the transfer payment system for key ecological functional areas. The other type is the element classification compensation mechanism, mainly including forest ecological compensation, grassland compensation mechanism, wetland ecological benefit compensation, etc.

A total of 28 provinces in China have explored the implementation of carbon emission rights trading, which has the potential to support NbS that support biodiversity and ecological restoration. Hebei and 19 other provinces have carried out the verification of initial pollutant discharge rights. In 2022, the China Water Rights Exchange completed 3,507 transactions, double the number in 2021. Since the establishment of the national park system in 2015, a number of national parks, such as Sanjiangyuan, Wuyishan and Giant Panda, have successively piloted and formulated concession-related systems.

In April 2021, proposals were made to encourage the protection and restoration of the ecological environment and the operation and development of ecological products to[84]

- Increase green financial support.
- Encourage banking institutions to increase support for medium- and long-term loans for the operation and development of ecological products.
- Encourage government financing guarantee institutions to provide financing guarantee services for qualified ecological product operation and development entities.
- Explore the path and mode of asset securitization of ecological products.

Since 2016, China's total environmental public welfare donations have reached CNY 2.523 billion (USD 354 million), of which CNY 1.757 billion (USD 246 million) has been used for biodiversity-related funding, accounting for 69%. From 2016 to 2020, the growth rate of public welfare donations for biodiversity conservation also maintained a rapid growth rate, reaching 21%, 35%, 43%, and 29%, respectively.[85] Species conservation accounted for 23% of the donations, and private funds were mainly focused on finless porpoise conservation, snow leopard conservation, and coastal bird conservation. In addition, more than CNY 60 million (USD 8.41 million) was donated to national parks and other nature reserves. In 2020, China set up the National Green Development Fund, with an initial fundraising scale of CNY 88.5 billion (USD 12.4 billion), to build a green finance responsibility system led by the government to guide and encourage more social capital to invest in green industries.

1.5.3 Innovative Market-Based Financing Mechanisms for Biodiversity Conservation

The analysis also considers a range of innovative mechanisms, such as green finance, corporate investment, payments for ecosystem services, and philanthropic donations. China's NBSAP makes several references

*Calculated based on real-time exchange rates, similarly hereinafter.

to financial support and its strategic mission to "explore socialized, market-based investment and financing mechanisms." The establishment of diversified investment and financing mechanisms for biodiversity conservation should be a priority action, and financial institutions should be encouraged to incorporate biodiversity into project investment and financing decisions to mobilize more resources for biodiversity conservation. At the local level, more biodiversity-supportive economic activities can be identified, and the scope of the catalogue can be expanded, taking into account the natural ecological endowment of the region and the dependence of key industries on ecosystem services to increase the willingness of financial institutions to invest and promote diversified financing. Different regions of China may therefore wish to prioritize the development of different market-based mechanisms, according to their ecological and economic circumstances.

1.5.3.1 Private Sector Transparency and Support for Nature-Positive Investment Both Domestically and Internationally

The Kunming–Montreal Framework and the Strategy for Resource Mobilization established in Decision 15/7 rightly emphasized the need for a significant increase in the level of financial resources from all sources, including domestic, international, public, and private resources. Targets 19 (c) and 19 (d) of the Kunming–Montreal Framework highlighted the most promising private sector financial mechanisms that can contribute to resource mobilization, including blended finance, impact funds, and new financial solutions, such as biodiversity credits and offsets, payment for ecosystem services, and debt-related instruments like green bonds. These form part of a wide array of finance solutions identified in the UNDP BIOFIN Initiative's Catalogue of Biodiversity Finance Solutions. [86]

Two biodiversity finance solutions that merit particular attention as part of this Special Policy Study are high-integrity biodiversity credits and sustainability-linked sovereign debt instruments, as both have the potential to mobilize significant financial resources from the private sector and have wide applicability internationally. Each is set out in more detail below.

1.5.3.2 Biodiversity Credits, Regulated Offsets, and Related Mechanisms

Biodiversity credits are identified in the Kunming–Montreal Framework as one possible new instrument to help deliver biodiversity-positive outcomes. The current working definition of a biodiversity credit is "a certificate that represents a measured and evidence-based unit of positive biodiversity outcome that is durable and additional to what otherwise would have occurred." [87]

Unlike carbon or biodiversity offsets, which are payments made by a business to compensate for its damaging impacts on location-specific ecosystems, biodiversity credits, in theory, would provide a mechanism for companies to support nature-positive action, funding long-term conservation and the restoration of nature. In this way, biodiversity credits have the potential to create a positive impact rather than simply offset negative impacts, provided that a high level of integrity is maintained in the way in which the improvement in biodiversity underpinning the credits is baselined, monitored, reported, and verified. The current size of the potential market for biodiversity credits is unknown, but one estimate of the global market for such credits suggests that they could reach USD 2 billion by 2030 and upwards of USD 69 billion in 2050. [88]

There are a growing number of countries in which regulated biodiversity offsets or credit markets exist in one form or another—such as Australia's Nature Repair Market, the UK's Biodiversity Net Gain requirements, and Colombia's biodiversity compensation regulations. These regulated markets provide additional impetus to the interest in biodiversity credits created by voluntary initiatives.

China does not at present have any biodiversity credit markets as such, but it has considerable experience over the last two decades with the development of nature markets. These took off in 2004 with the transfer of rights for agricultural land use, seeing a transfer rate of 35.4%. This was followed, a decade later, by the transfer of timberland rights, which occurred at a rate below 10%. Another innovative step has been the trading of ecosystem asset usage rights, including the trading of carbon credits. [89] Although still in its preliminary stages, this has begun to take shape through pilot projects.

A crucial development in this evolutionary process is the integration of nature-centric projects into China's national green taxonomy. This move has effectively attracted private investment toward ecological initiatives, a development strengthened by the growing sector of green finance.

A recent paper by the Biodiversity Credits Alliance [90] suggests that the evolving biodiversity credits market could usefully consider insights from the carbon market and avoid issues like low integrity, poor credit quality, weak demand, limited supply, slow adoption, high costs, lack of results, and potential market failure. However, it is crucial to recognize the fundamental differences between biodiversity markets and carbon markets, necessitating innovative approaches in the biodiversity sphere. The involvement of Indigenous Peoples and local communities is also crucial when considering the development of biodiversity credit markets. Establishing a benchmark standard to define the integrity of biodiversity credit projects and their outcomes, along with systems enabling credible claims from purchasers, is particularly important.

A number of collaborative initiatives have emerged over the last 2 years, which seek to advance work on biodiversity credits at the local, national, and international levels. These include the Biodiversity Credit Alliance, the Taskforce on Nature Markets, [91] the World Economic Forum (WEF), the World Business Council for Sustainable Development (WBCSD), and the International Advisory Panel on Biodiversity Credits (IAPB). [92] The IAPB was launched at the Paris Summit for a new Global Financing Pact in June 2023 by the governments of France and the United Kingdom to help deliver the Global Roadmap to Harness Biodiversity Credits for the Benefit of People and Planet. [93] Under the guidance of a multistakeholder group of experts, the IAPB is addressing five key design challenges associated with the development of high-integrity biodiversity credits markets, namely measurement, demand, supply, stewardship, and governance, and is expected to produce a wide-ranging report of findings and recommendations in time for CBD COP 16 in Colombia in October.

At the domestic level, there is considerable scope for China to do more to develop biodiversity credit markets, building on its experience with carbon credit markets and nature markets more broadly. Sharing this through active engagement with the work of the IAPB would undoubtedly be welcomed both by the panel itself and by its wider international audience. Both such steps form part of the Recommendations of this SPS.

1.5.3.3 Sustainability-Linked Sovereign Debt Instruments

According to the World Bank's International Debt Report [94] (published in December 2023), developing countries spent a record USD 443.5 billion to service their external public and publicly guaranteed debt in 2022. In the same year, the global public debt stood at USD 92 trillion. [95] More than half of all low-income countries, 37 out of 69, are assessed to be at high risk or in debt distress, according to the latest IMF and

World Bank Debt Sustainability Framework. [96]

Sustainability-linked sovereign debt can contribute to solving sovereign debt issues in several ways. First, it directly rewards countries with lower costs of debt repayment when they achieve positive nature and climate outcomes. Second, it encourages investments that reduce risks and boost resilience and economic productivity, ultimately lowering debt repayment costs for the entire country. Third, it supports broader sustainable development by promoting economic growth and productivity and providing financial flexibility for increased public spending. Lastly, it reduces the need for complicated debt restructuring by promoting smarter risk-sharing between debtors and creditors.

The potential for China to engage more actively in sustainability-linked debt arrangements has been highlighted in a recent report from the UNDP, the Green Finance and Development Center, and the Chinese Academy of International Trade and Development Cooperation. [97] The report notes that China has significantly increased its total and relative external debt exposure to 7.1% of total public and publicly guaranteed (PPG) external debt exposure in the Asia–Pacific region. This provides China with a powerful opportunity to demonstrate leadership in using nature-aligned debt instruments in the Asia-Pacific region, but also wherever it is a bilateral creditor, both to alleviate some of the debt burden of debtor countries and at the same time support the delivery of the Kunming–Montreal Framework and other international nature- and climate-related agreements.

Sustainability-linked bonds and loans hold significant promise. Commercial debt swaps for nature, pioneered by The Nature Conservancy, allow countries to finance their conservation and climate commitments without increasing, or at times even reducing, their debt burden. These instruments also face numerous challenges. Developing ambitious targets and project pipelines, as well as robust key performance indicators (KPIs), can be costly and time-consuming for issuers, especially under-resourced sovereign governments. They may also require credit enhancement from multilateral development banks or development finance institutions, such as credit guarantees and political risk insurance, in order to de-risk and attract sufficient capital into relatively novel instruments. However, there are initiatives like Sustainability-Linked Sovereign Debt Hub (SSDH), hosted by the Nature Finance organization, which will continue to provide support for this area. [98]

At UNFCCC COP 28 in December 2023, the world's largest multilateral development banks and international organizations announced a joint dECRaration and launched a task force to boost sustainability-linked sovereign financing for nature and climate, an effort also supported by leading insurance companies![99] The participating institutions will collaborate to scale climate and nature-linked financing by sovereigns and other public sector entities by improving access to and affordability of risk mitigation and credit enhancement instruments. The KPIs that are embedded in sustainability-linked financing structures can track a wide range of climate, nature, and biodiversity targets and issues, including forest cover, agricultural and land-use practices, natural resource depletion, terrestrial and marine protected areas, and species extinction risk, among others. The International Capital Market Association (ICMA) is compiling a public registry of illustrative biodiversity KPIs that can be referenced in sustainability-linked transactions. Other KPIs are site- or country-specific. It is critical that the KPIs are developed in accordance with best practices concerning transparency, traceability, and integrity of the underlying data to gain the confidence of creditors and build credibility with stakeholders who use them.

1.5.3.4 Alignment of Financial Flows in Line with the GBF's Approach to Mainstreaming

One of the most significant developments in international understanding of biodiversity and finance has been the recognition that financial flows that are harmful to biodiversity dwarf those that are designed to have a positive impact on biodiversity. Realigning harmful subsidies and incentives (covered in Target 18 of the Framework) needs to be an important element of this, but it is only part of the realignment of finance that is essential to achieve the goals of the Kunming–Montreal Framework.

Goal D and Target 14 of the Kunming–Montreal Framework give explicit recognition to this and make it progressively clear that there needs to be a full alignment of all relevant public and private activities, as well as fiscal and financial flows with the framework. So, this is, in effect, a call to action by sovereign governments, private sector companies, private financial institutions, and public development banks.

Measuring the degree of misalignment of each of these types of institutions and then supporting their plans to improve the situation as part of wider nature and climate transition planning has been the subject of growing attention in the last two years or so. A framework for the measurement and disclosure of nature-related risks, impacts, dependencies, and opportunities has been the focus of the Taskforce on Nature-related Financial Disclosures (TNFD) and an important starting point for private companies and financial institutions starting to address their alignment with the Kunming–Montreal Framework. A range of tools is becoming available to support companies and financial institutions in this.

But strong policy and regulatory signals are also an indispensable part of action to achieve realignment of harmful financial flows, whatever sector of the economy they are in, and China has the opportunity both to strengthen how it achieves this aim domestically and to share its learnings with a wider international audience.

1.5.4 Synergistic Mechanisms for Biodiversity Finance and Climate Finance

1.5.4.1 Prioritizing Solutions That Address Multiple Threats

Climate change and human activities work together to shape the pattern of the Earth's biodiversity. Changes in biodiversity at different dimensions and trophic levels, in turn, affect climate change and human activities to a greater or lesser extent, i.e., the feedback effects of biodiversity. Therefore, it is necessary to actively promote the development and demonstration of biodiversity conservation and climate change response, promote nature-based solutions, play an effective role in the coordinated response to the biodiversity crisis and climate change crisis, and raise funds to support the coordinated promotion of biodiversity conservation and climate change response.

1.5.4.2 Key Mechanisms for Financial Synergies and Safeguards to Ensure Biodiversity and Climate Benefits

Approaches include promoting synergies between climate change and biodiversity, integrating the monetary policy tools of carbon emission reduction, optimizing the co-benefits of biodiversity and climate investment, and financing and identifying the synergies between biodiversity and other societal challenges, including particularly water and food security and human health.

1.5.5 Policy Recommendations

The task of biodiversity conservation and the implementation of the Kunming–Montreal Framework is demanding and will require long-term commitment. In the future, we need to continuously improve relevant legislation, increase financial investment, strengthen national regulation and control, and improve the efficiency of fiscal fund use to establish a sound financing mechanism for biodiversity conservation and help the implementation of the Kunming–Montreal Framework.

A sound financial mechanism is the basis and an important condition for achieving biodiversity conservation and public welfare. At present, China's biodiversity conservation investment and financing mechanism is still in the stage of exploration and construction and is facing a large demand for funds. The central government is relatively active in mobilizing biodiversity conservation resources. However, it still has not reached the level of attention that is given to climate change. Problems such as the lack of relevant laws and regulations, the instability of financial investment, and the lack of diversified financing channels make it difficult for private capital and public welfare funds to enter. The following recommendations aim to address these limitations.

1.5.5.1 At a Domestic Level

(1) Substantially increase domestic public spending related to biodiversity and, as far as possible, gradually align public finance with the goals and targets of the Kunming–Montreal Framework. In particular, this relates to investment in the protected area system with national parks as the main mechanism and a general increase of available funds for biodiversity conservation. At present, there are insufficient funds, which makes it difficult for some small and medium-sized green enterprises to obtain loans. The investment of financial funds in green projects will effectively solve the problem of having too few private funds. The implementation of the Kunming–Montreal Framework and the NBSAP requires the cooperation of and an increased role for green finance, and these efforts require green fiscal and tax policies to play a greater leveraging role in helping the marketization of biodiversity conservation projects.

(2) Give preference and support to biodiversity conservation in financing and policies, improve the tax system, positively incentivize environment-friendly enterprises by reducing or increasing taxes as appropriate, and penalize enterprises that have a negative impact on biodiversity and natural resources. At the same time, in ecological and environmental fields, especially when related to biodiversity management, many projects have some risks and low returns. Once the investment fails, the loss is significant. Therefore, it is necessary to further improve green investment and financing policies, guide green investment through preferential policies of green finance, and make green financial products a powerful tool for incentives or damages. **Mobilize and guide all stakeholders, including corporations, women's groups, Indigenous peoples, local communities, etc., to participate in biodiversity governance and build an institutional system and coordination mechanism for national action.**

(3) Establish a special fund for biodiversity in China and integrate and coordinate scattered conservation resources through government guidance. Improve transfer payments, finance, investment, price policies, and related market-oriented mechanisms to support biodiversity conservation. Guide social capital to join in by referring to internationally mature blended financing methods, thus reducing the input costs of social capital. Help biodiversity conservation projects such as the development of protected areas to obtain more financial support and promote the development of these fields. **At the same time, the Kunming Biodiversity Fund has been rapidly developed to achieve results.**

(4) Promote innovation in financial products related to biodiversity to improve financial access and reduce the financing gap. Biodiversity conservation activities can provide multiple benefits through synergies between, for example, forestry carbon sequestration and climate change. In order to mitigate the negative impact on biodiversity, ecological compensation can be provided through methods such as wetland compensation banks. Financial institutions can play a key role in financing biodiversity conservation projects through the issuance of biodiversity bonds. By focusing on developing innovative financial products, the necessary protection funds can be secured, and the overall impact increases. China should explore the inclusion of biodiversity in the evaluation results of green finance and in the assessment of financial institutions to mobilize the enthusiasm of financial institutions. In this way, there may be greater breakthroughs in leveraging the role of green finance to contribute to the realization of the goals of the Kunming–Montreal Framework and support biodiversity conservation and sustainable development.

(5) Eliminate harmful incentives: China should eliminate, phase out, or reform the incentives most harmful to biodiversity in order to contribute to Target 18. This should include increasing biodiversity-positive incentives in key sectors and making use of appropriate fiscal instruments. China should strengthen biodiversity-related risk management, effectively identify and assess the biodiversity-related risks of investment and financing projects of financial institutions and carry out pilot projects on biodiversity risks in various pilot zones for green financial reform and innovation to assist financial institutions in effectively identifying and assessing the biodiversity-related risks of investment and financing projects.

(6) Promote transparency: China should roll out private sector disclosure requirements rapidly and explore the establishment of harmonized and standardized biodiversity disclosure standards and frameworks and include within these reporting requirements for Chinese companies operating overseas, as well as domestically, to improve market transparency and channel investment decisions that are positive for nature.

(7) Biodiversity credits: China should explore the potential for expanding high-integrity biocredit markets, both domestically and in the overseas operations of Chinese companies as part of wider efforts to integrate nature markets into its economic framework. China should share its experience of these new nature markets by participating actively in relevant international fora, including the International Advisory Panel on Biodiversity Credits (IAPB).

(8) Debt instruments: China should explore the scope for the use of sustainability-linked sovereign debt instruments, both for new loans and the refinancing or restructuring of existing loans, and the opportunity this offers for China to demonstrate a major international leadership role in this area.

1.5.5.2 At an International Level

The recommendations identified above to help China achieve the resource mobilization targets of the Kunming–Montreal Framework at a domestic level also offer, in most cases, an excellent opportunity for China to maintain and enhance its established leadership role internationally.

This is particularly the case for action to eliminate incentives harmful to biodiversity for new market instruments such as biodiversity credits and the work of the IAPB, as well as for sustainability-linked sovereign debt instruments, where China's position as a significant creditor of many developing and emerging countries, as well as its Belt and Road Initiative, offer it a unique leadership role internationally in bringing together global goals for biodiversity, climate change, sustainable economic development, and equitable

social outcomes. Application of the ECR principles and practices to infrastructure and other development projects financed by China overseas is also worth exploring as a way to reduce the environmental and social impacts of such projects and enhance their contribution to biodiversity conservation.

Through the use of its own development assistance funding and the Kunming Biodiversity Fund, China also has an important opportunity to enhance its support to other developing countries, least developed countries, and Small Island Developing States in meeting their obligations under the –Montreal Framework, in particular Target 20, which addresses capacity-building and related issues, South–South, North–South and triangular cooperation. Through such capacity building of both the public and private sectors, the financial sector will be better able to support and contribute to biodiversity conservation in developing countries and promote sustainable development.

1.6 Policy Recommendations

1.6.1 On the basis of existing protected areas and China's ECRs, establish an area-based ecological conservation model in line with international standards, and promote the implementation of the 30×30 target globally, demonstrating China's leadership in this sphere.

1) Accelerate the introduction of China's plan for implementation of 30×30, including research on the universal model of ECR applied internationally, and cooperate with stakeholders to set up an integrated technical package for the delineation of ECR in other jurisdictions.

2) Considering China's significant progress toward achieving Target 3 at the domestic level, commit to full achievement by 2030 combined with an aspirational commitment to exceed 30%, thus consolidating China's leadership as outgoing COP 15 Presidency and encouraging other countries to exceed 30% in protected areas and other effective OECMs by 2030.

3) Strengthen research to clarify the similarities and differences between the concepts, spatial delineation, and identification criteria of protected areas as defined by the CBD and IUCN, ECR, and OECMs, and establish a multi-functional ecological reserve model that conforms to international standards.

4) Produce a series of technical support documents, such as management plans, standards, and guidelines for redline delineation in line with international standards, to support the implementation of Targets 1, 2, and 3 of the Kunming-Montreal Global Biodiversity Framework.

5) China can also play an important role in supporting other countries, particularly developing economies, to achieve 30 × 30 alongside China's foreign policy goals, such as the Belt and Road Initiative.

1.6.2 At a global level, further strengthen the effectiveness and representativeness of protected areas and enhance high-quality protection of key ecosystems and species habitats.

1) Systematically assess innovative measures and lessons learned in the existing global area-based conservation system; designate national parks; build and optimize an effective protected area system, including improving the quality of protected areas; and recognize suitable sites as OECMs.

2) Focus particular attention on the representativeness of area-based conservation, protection of intact ecosystems, governance, and management. Improve institutional mechanisms and the effectiveness of protected area management. Use this information to consolidate a model of a protected area system for the implementation of the 30×30 target, with special attention to the marine and inland waters ecosystems.

3) Strengthen research on connectivity between protected areas to strengthen the construction and maintenance of ecological corridors and ensure their quality and effectiveness.

4) Improve evaluation systems for the management effectiveness of protected areas, in consultation with all those affected, including issues relating to social equity, gender equity and human rights.

5) Promote innovative techniques for biodiversity survey, monitoring, and assessment of key ecosystems and species habitats, including an integrated space-ground biodiversity monitoring system.

1.6.3 In consultation with all affected stakeholders, accelerate the development of a new, more sustainable approach to agricultural productivity and improve agricultural ecological functions and biodiversity as the basis for ensuring food security.

1) Deepen the implementation of Target 7 of the Kunming-Montreal Framework and continue to reduce agricultural pollution. Strengthen the research, development, and use of green agricultural inputs, prohibit the production and use of highly toxic and high-risk fertilizers and pesticides, and encourage the use of organic fertilizers and biopesticides. Enhance the comprehensive utilization of agricultural organic waste and pollution prevention capacity, and improve the monitoring and control of toxic and hazardous chemical/biological pollution in farmland. Advance the research and development of degradable materials for pesticide packaging and agricultural films, as well as efficient recycling and processing technologies, to further improve recycling efficiency.

2) Deepen the implementation of Target 10 of the Kunming-Montreal Framework and promote sustainable agricultural management. Explore high-yield, stable agricultural sustainability and regenerative agriculture development models, and promote sustainable agricultural technologies to ensure long-term agricultural productivity. Improve the evaluation system for farmland soil health and agricultural ecological development, incorporating soil biodiversity indicators into the assessment framework.

3) Strengthen capacity building with the goal of developing new agricultural productivity. Promote the application of smart agriculture and digital technologies, enhance agricultural production efficiency and resource utilization, comprehensively improve the level of agricultural biodiversity conservation.

4) Further promote and advocate the "Big Food" concept by encouraging a shift towards diversified dietary structures. Promote the transition from industrialized and intensive crop supply systems to diversified food supply sources. Coordinate the development of food productivity across various ecosystems, including farmland, forests, grasslands, and aquatic environments, to maintain and enhance the sustainability of agricultural biodiversity.

5) Strengthen the effective implementation of fundamental agricultural support measures, increase financial investment in the protection of agricultural biodiversity, and ensure the funds are directed towards scientific research, monitoring, public education, and ecological restoration. Utilize financial subsidies, tax incentives,

and other measures to reduce agricultural production costs, increase policy support for organic and sustainable agriculture, encourage farmers to adopt biodiversity-friendly planting and farming practices, and enhance the implementation of implementation measures for agricultural biodiversity.

1.6.4 Ensure China's responsibility and leadership in resource mobilization and financial investment for biodiversity conservation, accelerate the implementation of market incentive policies, and identify, eliminate, phase out, or reform incentives that are harmful to biodiversity.

1) Continue to play a leading role in actively participating in biodiversity conservation, promoting the implementation of the Global Biodiversity Framework Fund, improving the Kunming Biodiversity Fund mechanism, and promoting the provision of biodiversity conservation funds, standards, experience, and technology support to developing countries for capacity building and other priorities of the Kunming–Montreal Framework, especially national biodiversity financing plans.

2) Ensure strong links are made between monetary policy tools for carbon emission reduction and the climate finance mechanism, actively promote the development and demonstration of biodiversity conservation and climate change response actions, strengthen the co-benefits and synergies of biodiversity and climate investment and financing, and share China's domestic experience with other countries and institutions working on nature and climate finance.

3) Coordinate the use of multiple funding sources, including government, new financial instruments and private sector investments, and explore a combination of sustainability-related sovereign debt instruments for the refinancing/restructuring of new and existing loans.

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