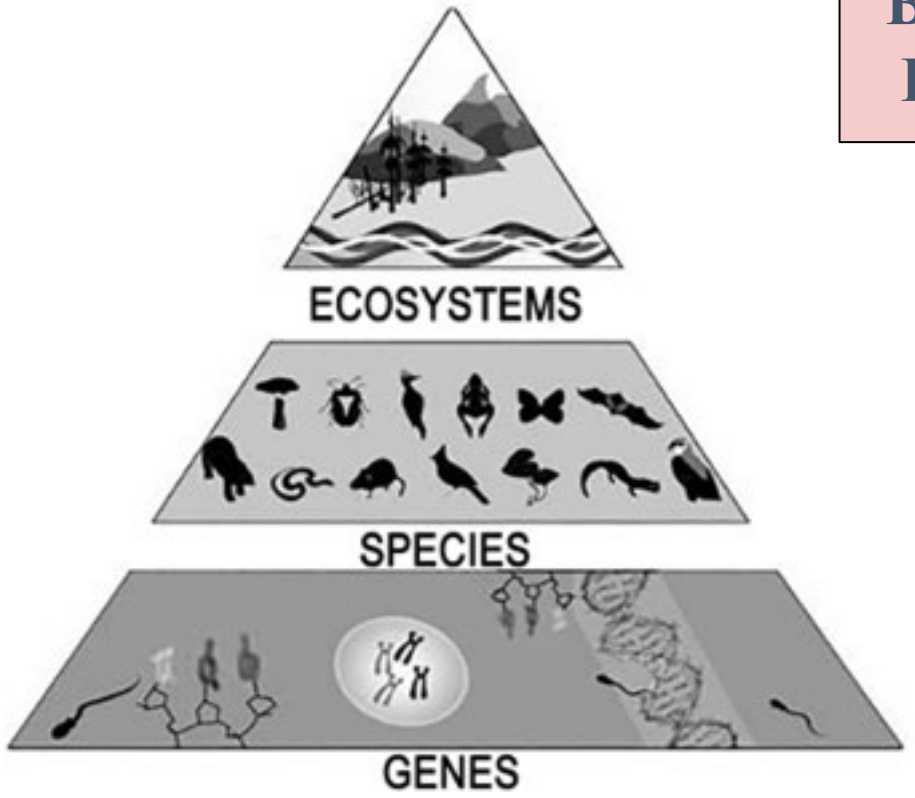
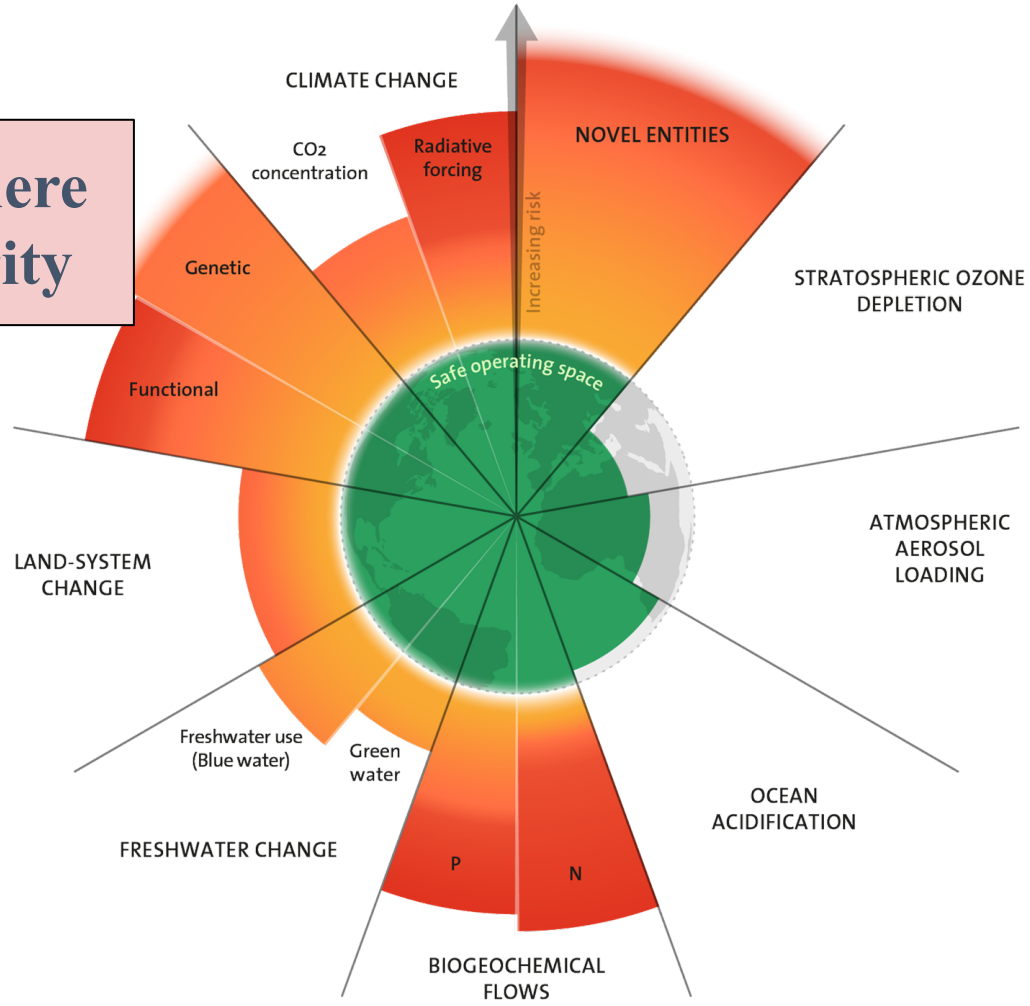
Towards Effective Biodiversity Net Gain

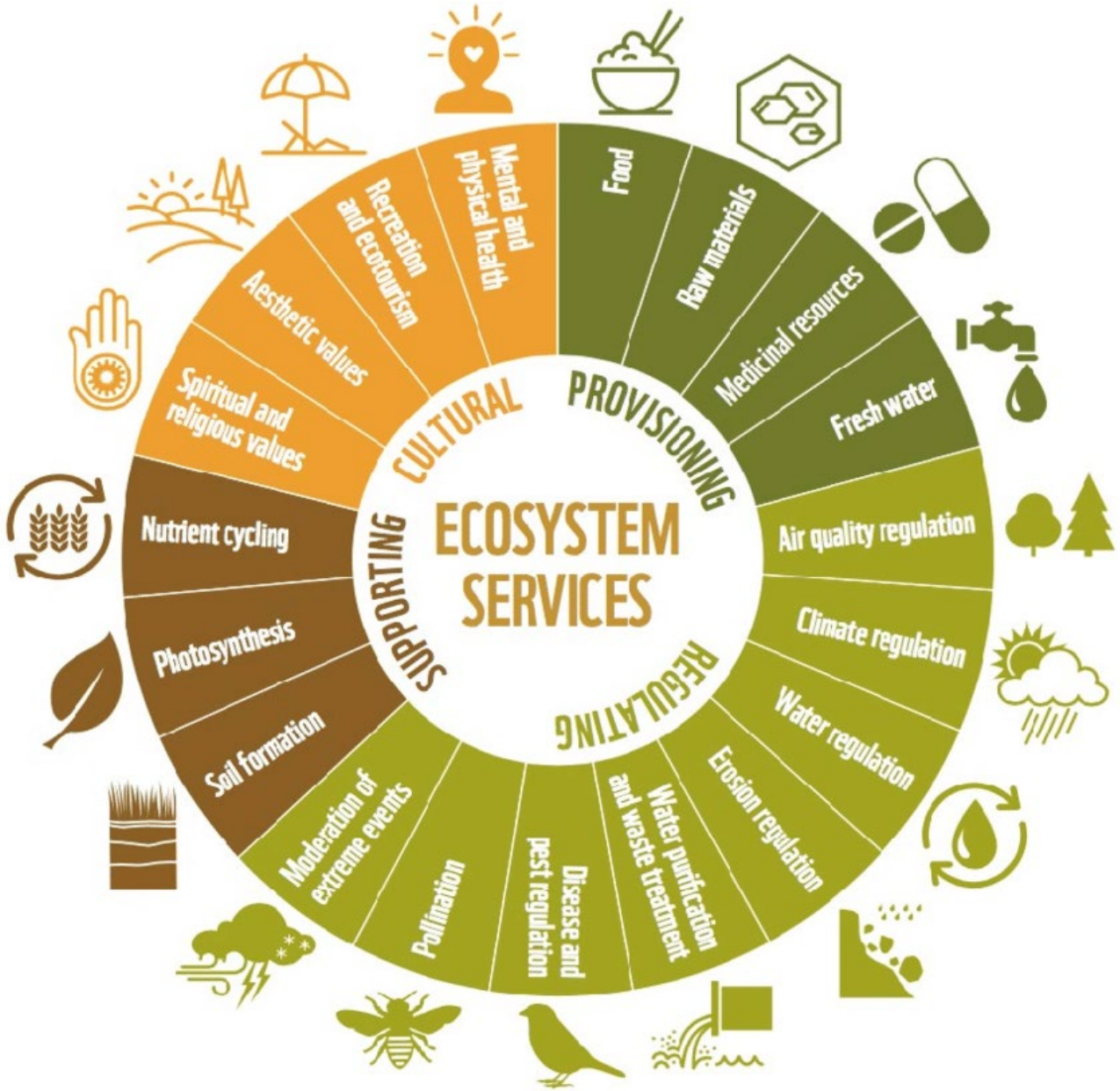
Challenges & Opportunities



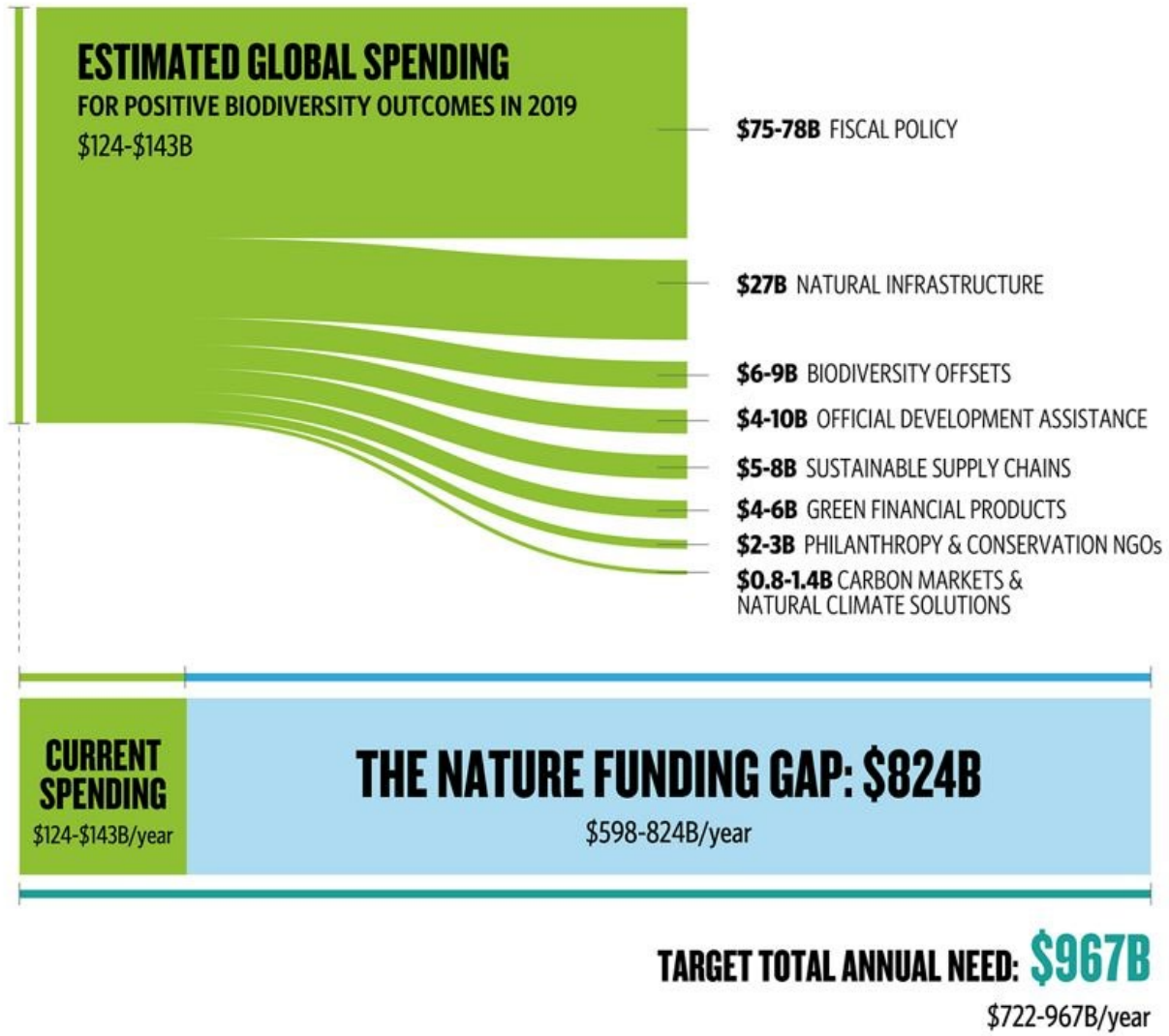
Biosphere Integrity



At least 1 million animal and plant species threatened with extinction (IPBES)

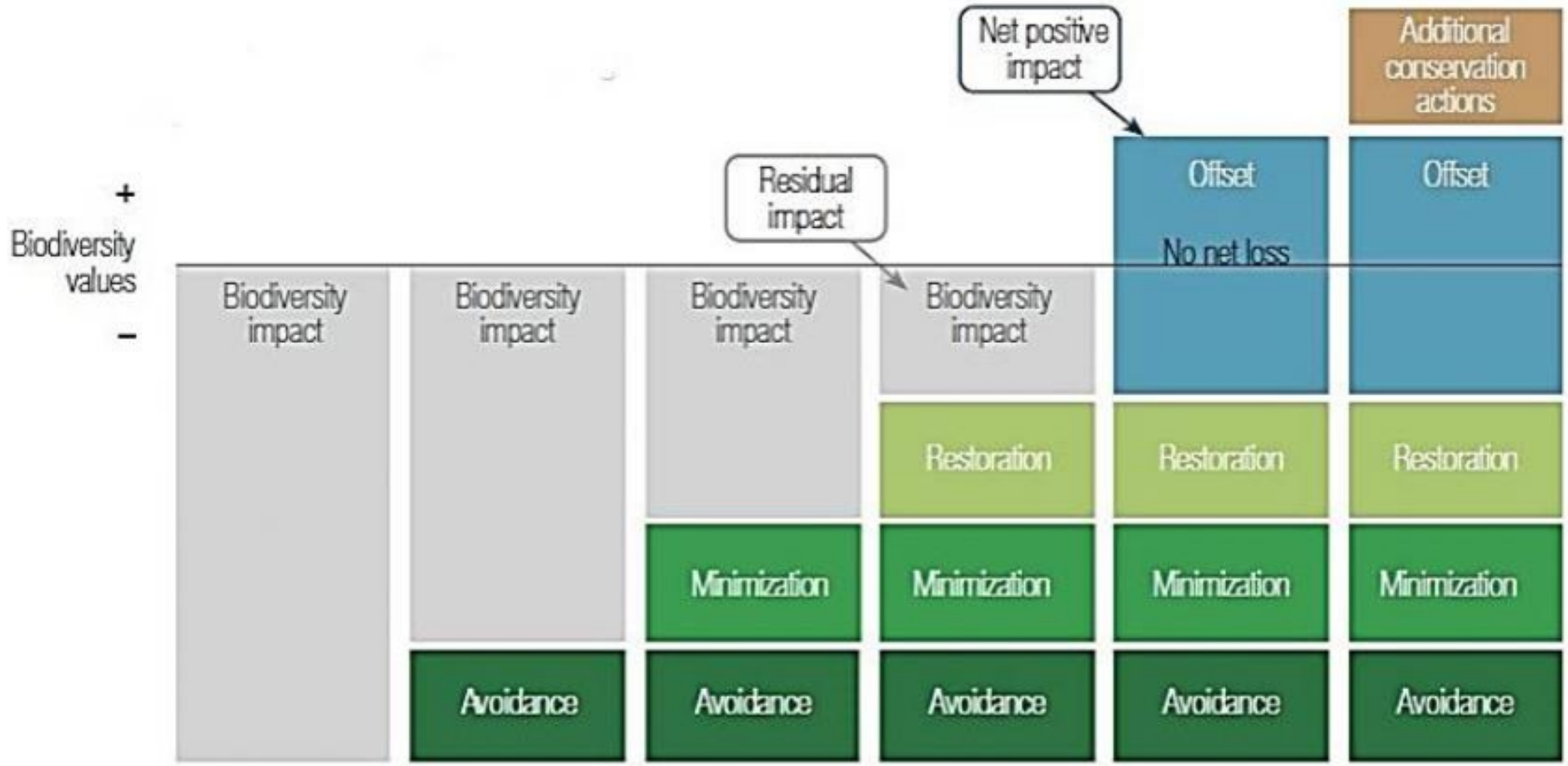


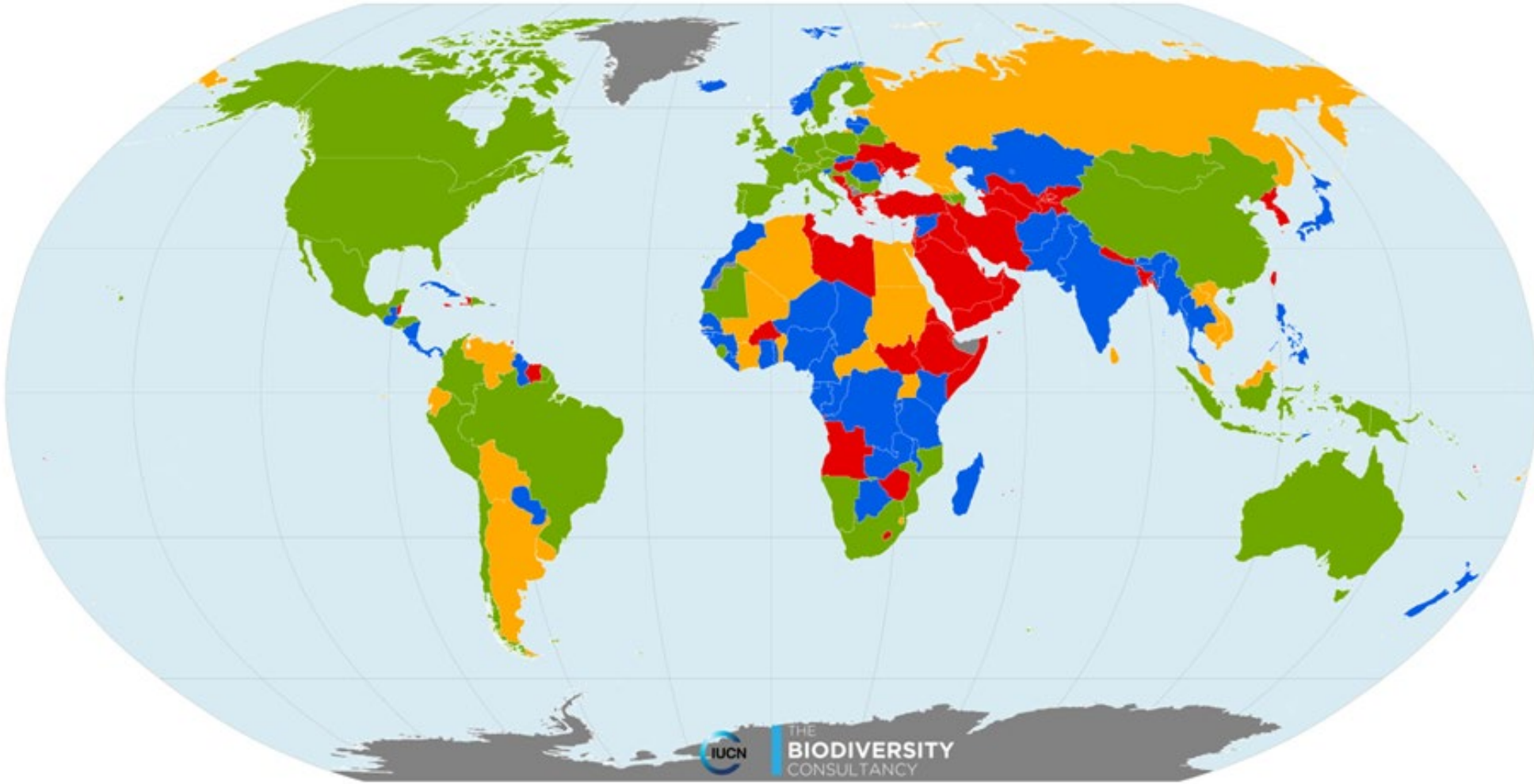
Over half the world's GDP is moderately or highly dependent on biodiversity services (US$44 trillion in 2020; World Economic Forum)



Kunming-Montreal Global Biodiversity Framework (2022)

Biodiversity & Development: Mitigation to Net Gain & Beyond





No provisions could be found with regards to compensation/offset

Initial research, discussion or exploration of policy options

Provisions in place to enable and facilitate voluntary offsetting

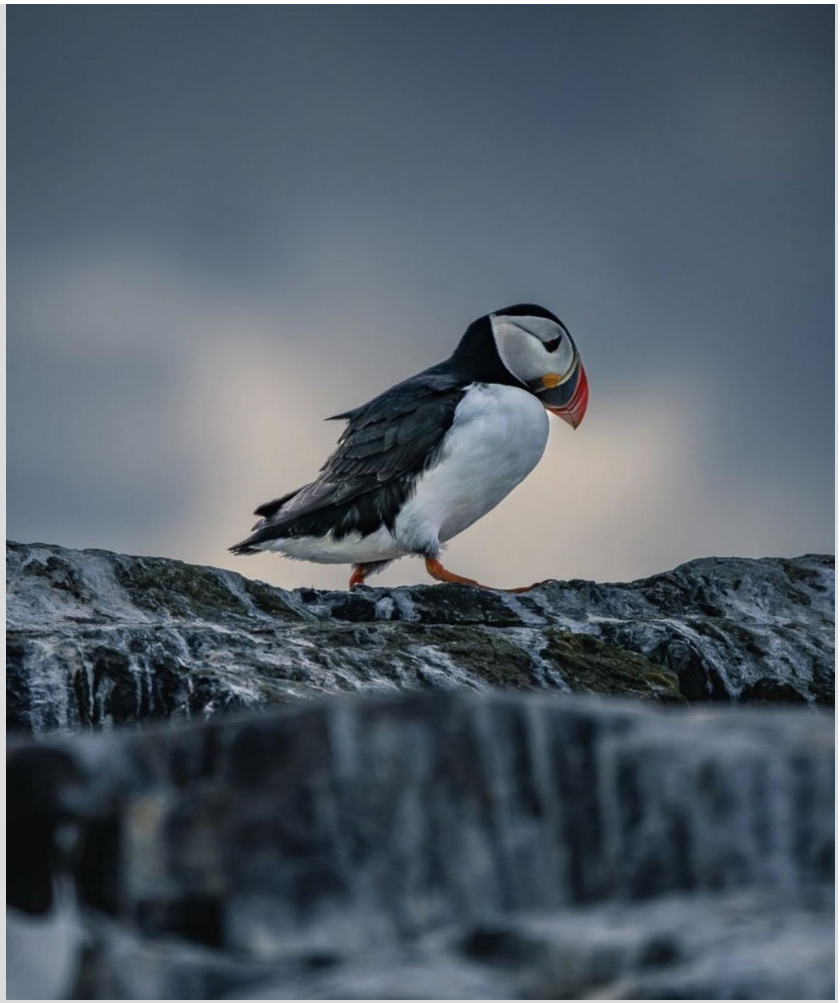
Offsets a regulatory requirement for at least some projects in some circumstances

No data

Background

Adherence

Benchmarks



Equivalence

Broader Impacts

Case Studies

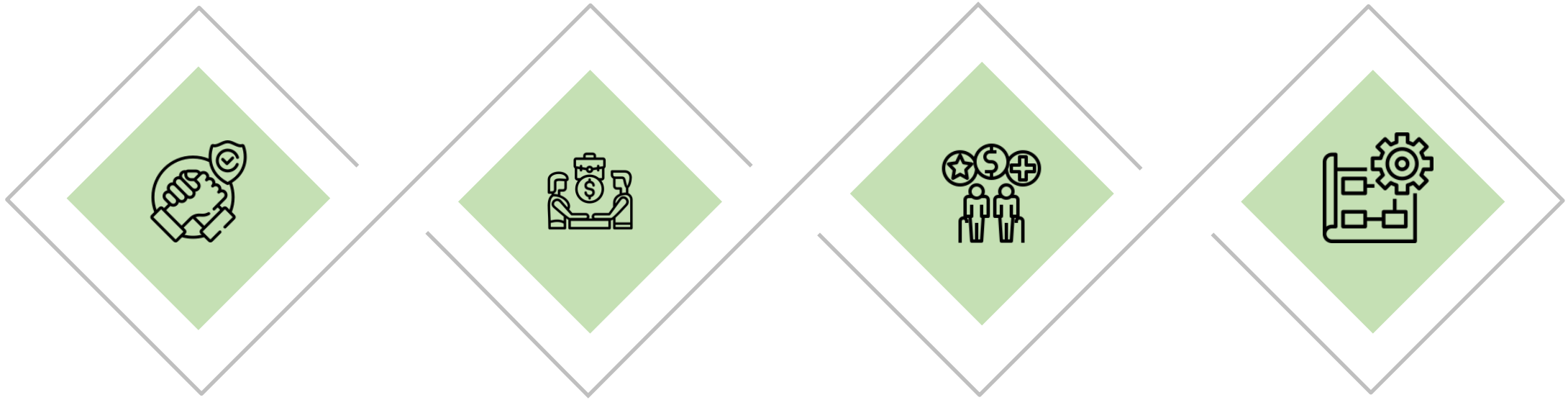
Assorted Offset Schemes, NSW, Australia

Biodiversity Net Gain, England, UK

Case Studies & Key Challenges

Australia: NSW Biodiversity Conservation Act 2016

Goal: No net-loss of biodiversity



Biodiversity Credits:

Tradable (ecosystem and species) credits used to offset biodiversity impacts from development

Biodiversity Stewardship Agreements:

Landholders can generate biodiversity credits by managing land for conservation and sell them directly to developers.

Biodiversity Conservation Fund:

Developers can pay into the fund instead of purchasing credits directly

Biodiversity Assessment Method

A scientific tool for assessing biodiversity impacts and calculating required offsets

Case Studies & Key Challenges

Australia: NSW Biodiversity Conservation Act 2016

Achievements (2023):

- **64,889 hectares** protected under Biodiversity Stewardship Agreements.
- **$15 million** paid to landholders for biodiversity gains, benefiting regional communities.
- **$288 million** in the Biodiversity Stewardship Payment Fund.

Challenges:

- **Lack of Primacy:** Act's objectives undermined by other legislation (e.g., native vegetation, land use).
- **Limited Effectiveness & Transparency:** Insufficient data, evaluation, and monitoring of outcomes.
- **Biodiversity credits:** constantly in short supply, lack of landowners and preservation

Case Studies & Key Challenges

Australia: NSW Biodiversity Conservation Act 2016

- **Goal**: Net improvement in biodiversity
- Implemented February 2024 (DEFRA)
- Mandatory biodiversity net gain of 10%
- On-site (incentivised) or off-site
- Developers improve biodiversity or purchase of statutory biodiversity offsets

A housing development project in Kent.

Before: Farmland with limited biodiversity.

After: A 15% net gain in biodiversity through:

Creation of wetlands and woodlands.

Restoration of wildflower meadows.

Installation of wildlife corridors.

Outcome: Increased species diversity, improved water quality, and enhanced green spaces for the community.

Challenges:

- Measuring biodiversity consistently.
- Balancing economic development with ecological goals.
- Ensuring long-term maintenance of new habitats.

Opportunities (Germany)

Opportunities (Germany)

Status and Challenges for Net Gain: Germany

Funding: €1.5 billion annually by 2025

NNL of biodiversity

Offsets:

- Federal Nature Conservation Act (1976)
- Impact Mitigation Regulation (IMR)

Critics:

- « License to destroy »
- Quantity vs. Quality
- No federal standardization

Opportunities (Germany)

Strengthen Monitoring

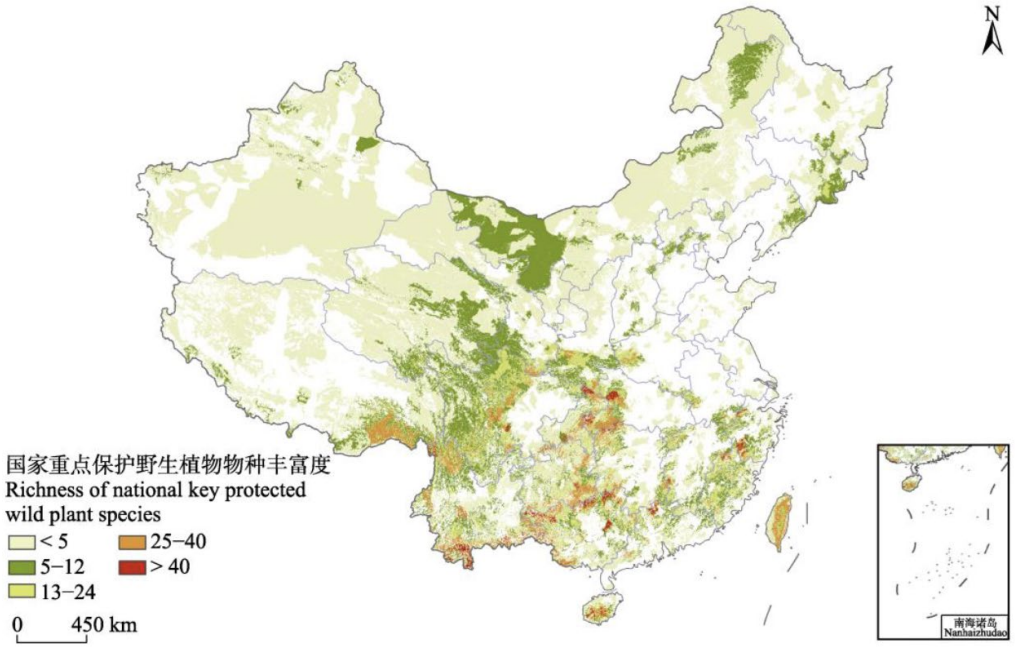
Transparency and Accountability

Diverse focus of offsetting

Standardization

Civil Society Engagement

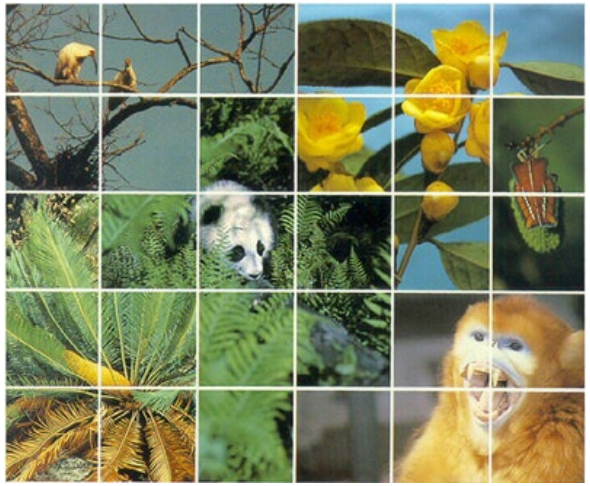
Opportunities (China)



Geographic distribution pattern

One of the megadiverse countries

- **10%** plant species, **14%** animals species
- **34,984** higher plants, **50%** native endemic species
- **13,800** species with medical value

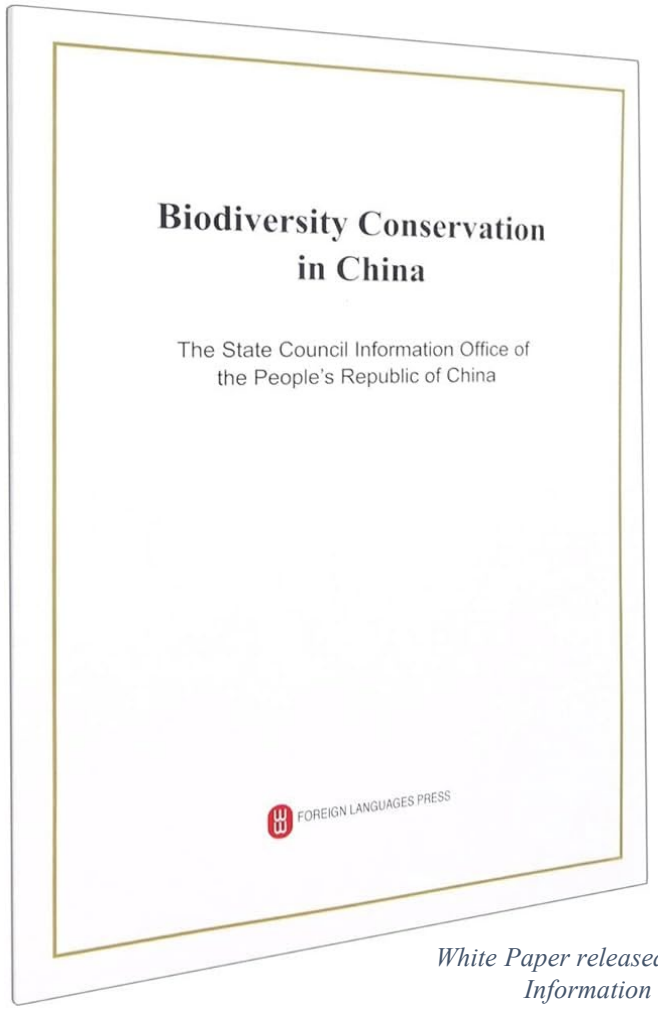


Endangered Species in China

Logo of COP15 (Kunming)

Opportunities (China)

中国生物多样性保护战略与行动计划
（2023—2030 年）



White Paper released by The State Council Information Office of PRC

- **Status Quo**
  - Product and service innovation develops towards **diversification**
  - Various types of **cooperative actions** to promote financing at the national level
  - Integration of biodiversity **risks and opportunities** into business considerations

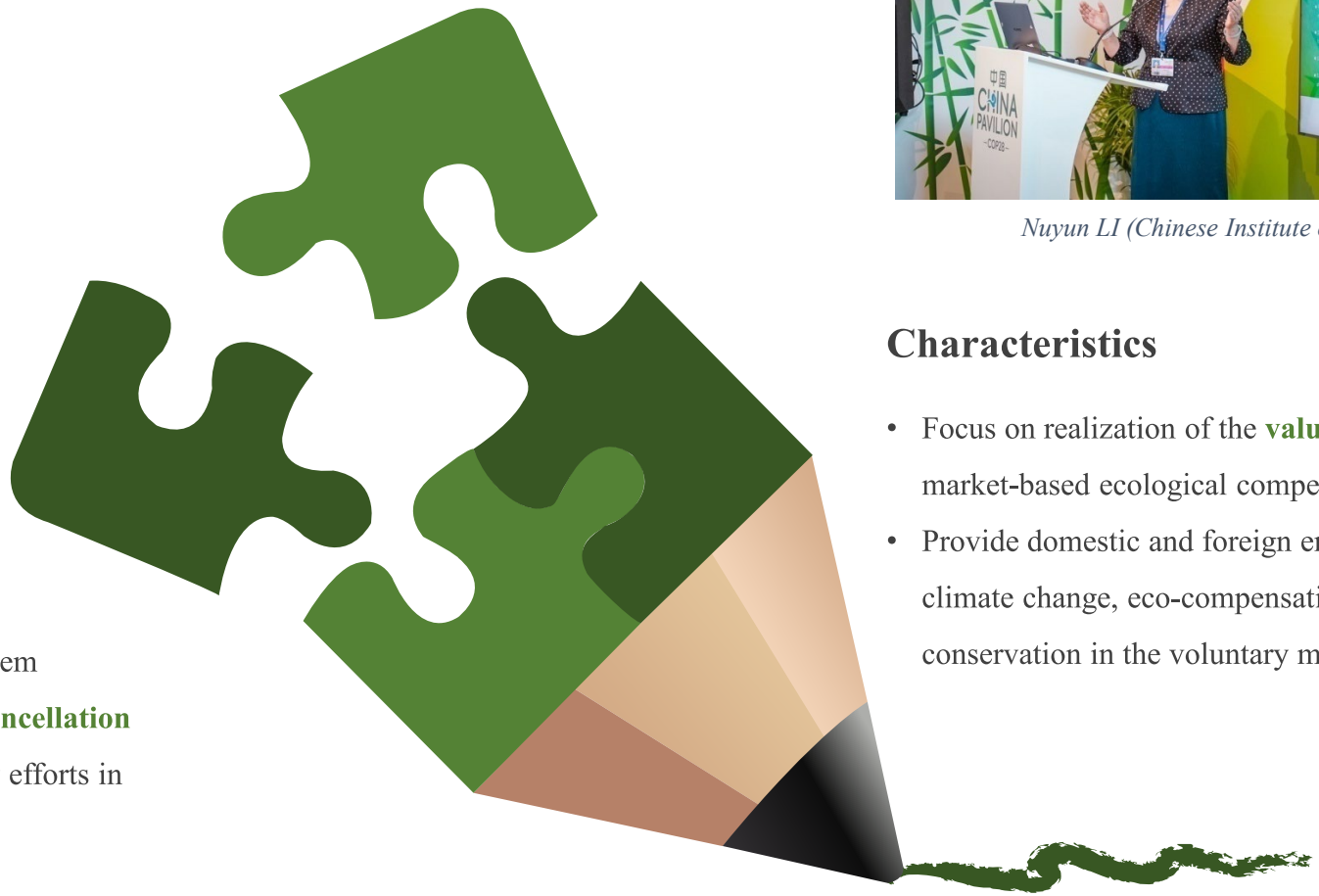
- **Challenges**
  - Lack of **harmonized standards**, frameworks, and concerted action
  - **Uneven development** of financing for biodiversity offsets and credits
  - Insufficient capabilities in financial **risk management**

Opportunities (China)

GVER: Practice in China

Good Practice: GVER

(Green Voluntary Emission Reduction)



Nuyun LI (Chinese Institute of Green Carbon)

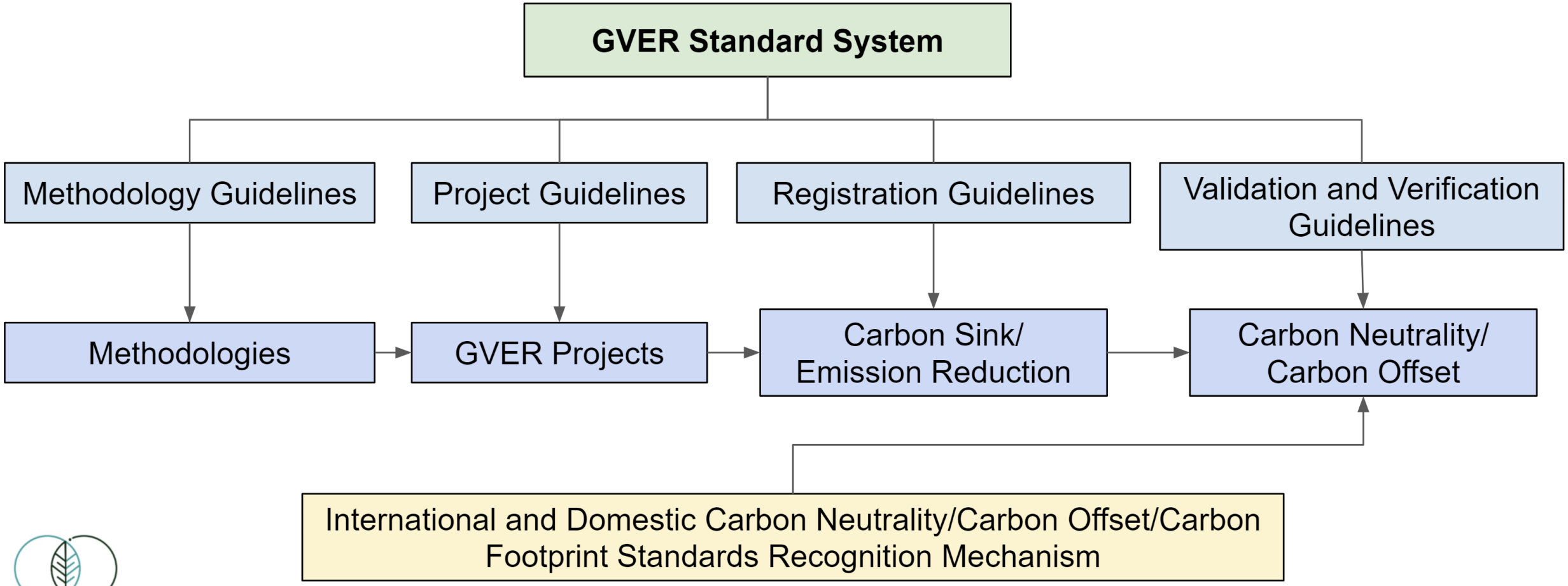
Objectives

- Globally oriented carbon reduction standard system
- Project **development, registration, issuance, cancellation**
- Facilitate carbon reduction and carbon neutrality efforts in **enterprises**

Characteristics

- Focus on realization of the **value of ecological products** and market-based ecological compensation
- Provide domestic and foreign enterprises with **tools** address climate change, eco-compensation and biodiversity conservation in the voluntary market

- **Good Practice: GVER (Green Voluntary Emission Reduction)**



Source: the slides of Chinese Institute of Green Carbon

Opportunities (China)

Habitat conservation of *Phayre*'s Leaf Monkey in Yunnan Province

- **Backgrounds**
  - Compilation of the first methodology of **GVER v1.0** is completed
  - **PDD (Project Design Document), Construction, Monitoring, Verification**
  - two township development projects in ***Mangshi, Yunnan***

- **Basic Information**
  - **320** Langurs in project area
  - **2015**: ban on logging of natural forests, income reduced
  - **2019**: carried out project, including tree species transformation, infrastructure construction, skills training and nature education

Phayre's Leaf Monkey

Yunnan province

Source: China Daily

Opportunities (China)

Habitat conservation of *Phayre*'s Leaf Monkey in Yunnan Province

- **Monitoring Report**
  - Biodiversity Benefits: carbon sink increased
  - Community Benefits: **41%** residents participated in the conservation, **65%** participated in awareness activities

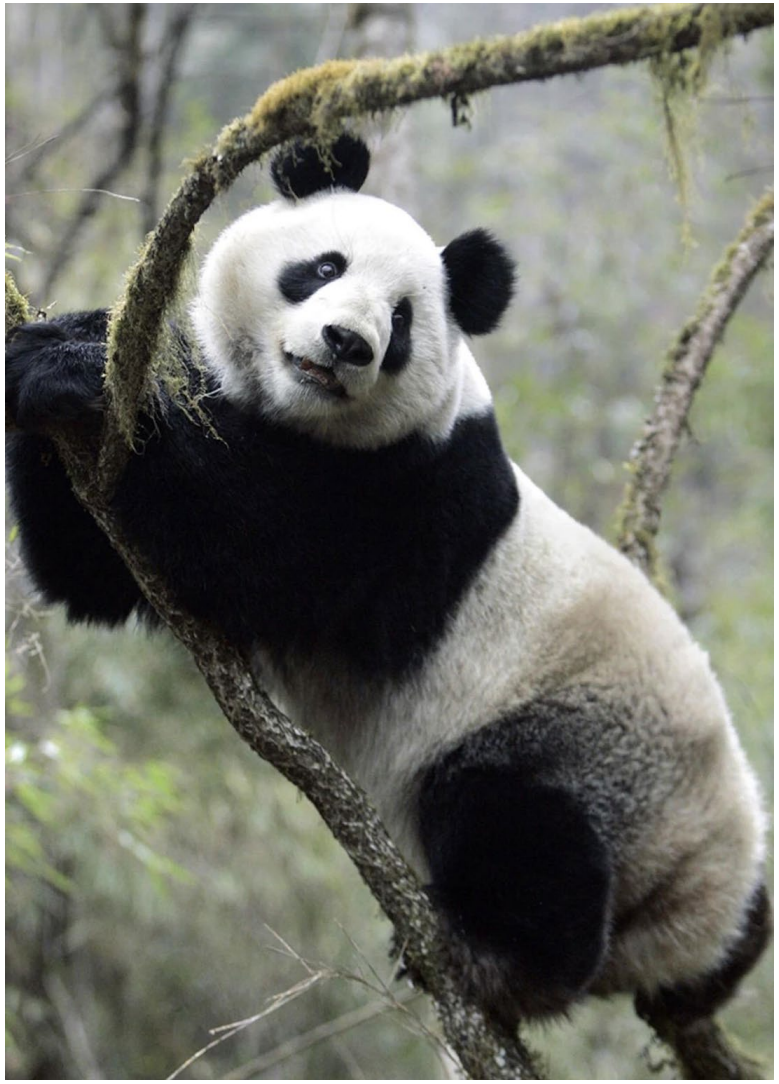
- **Estimated Emission Reduction**
  - **138,920t** CO2 e in 20-year credit period
  - Averaging **4.5t** CO2 e per hectare per year

Pre-project emission reduction	**Data**
Project (ha)	1543.62
Crediting Period (2019.6.10-2039.6.9)	20 years
Average annual emission reduction during the crediting period (tCO2e)	6946
Average annual emission reduction per unit area	4.5

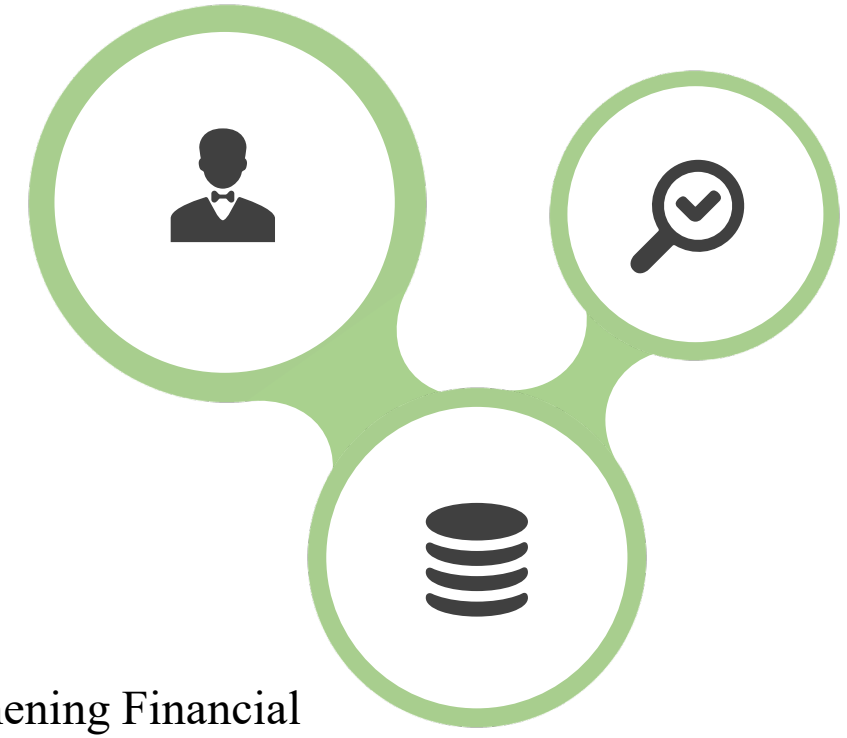
Source: Design Document of this Project

Opportunities (China)

Opportunities for Net Gain: China



Harmonized Standards
+
Evaluation Systems



Offsetting
Transactions and
Credits Facilities

Strengthening Financial
Risk management

Key Takeaways

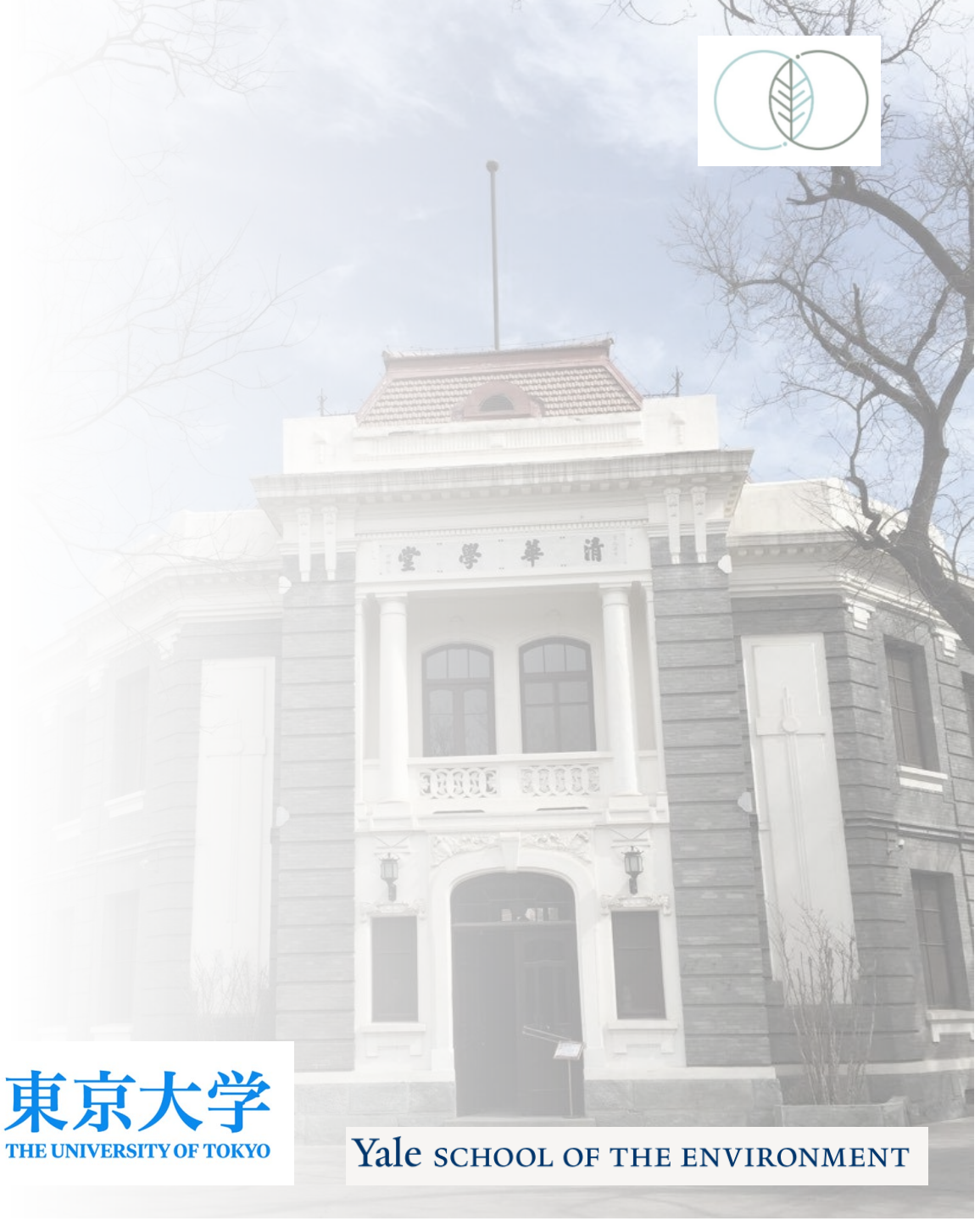
- **Promising** though still with challenges
- Shifting focus from no net loss to **net gain**
- International **collaboration** as necessity

Sino-German
Environmental Partnership

Further Discussion

- Do people care enough to take action?
- Is an International hotspot-focused scheme possible?
- Who holds the legal rights in the biodiversity and land / seas that underpin a biodiversity credits project and biodiversity credit?
- What legal infrastructure is required to enable the administration of biodiversity credit schemes?
- Should biodiversity credits be regulated as financial products?
- How can we mitigate the risk of ‘greenwashing’ litigation and enforcement action against purchasers of biodiversity credits?
- What is just transition with regard to fostering Biodiversity? How is it applied?

Thank You !



Tsinghua University

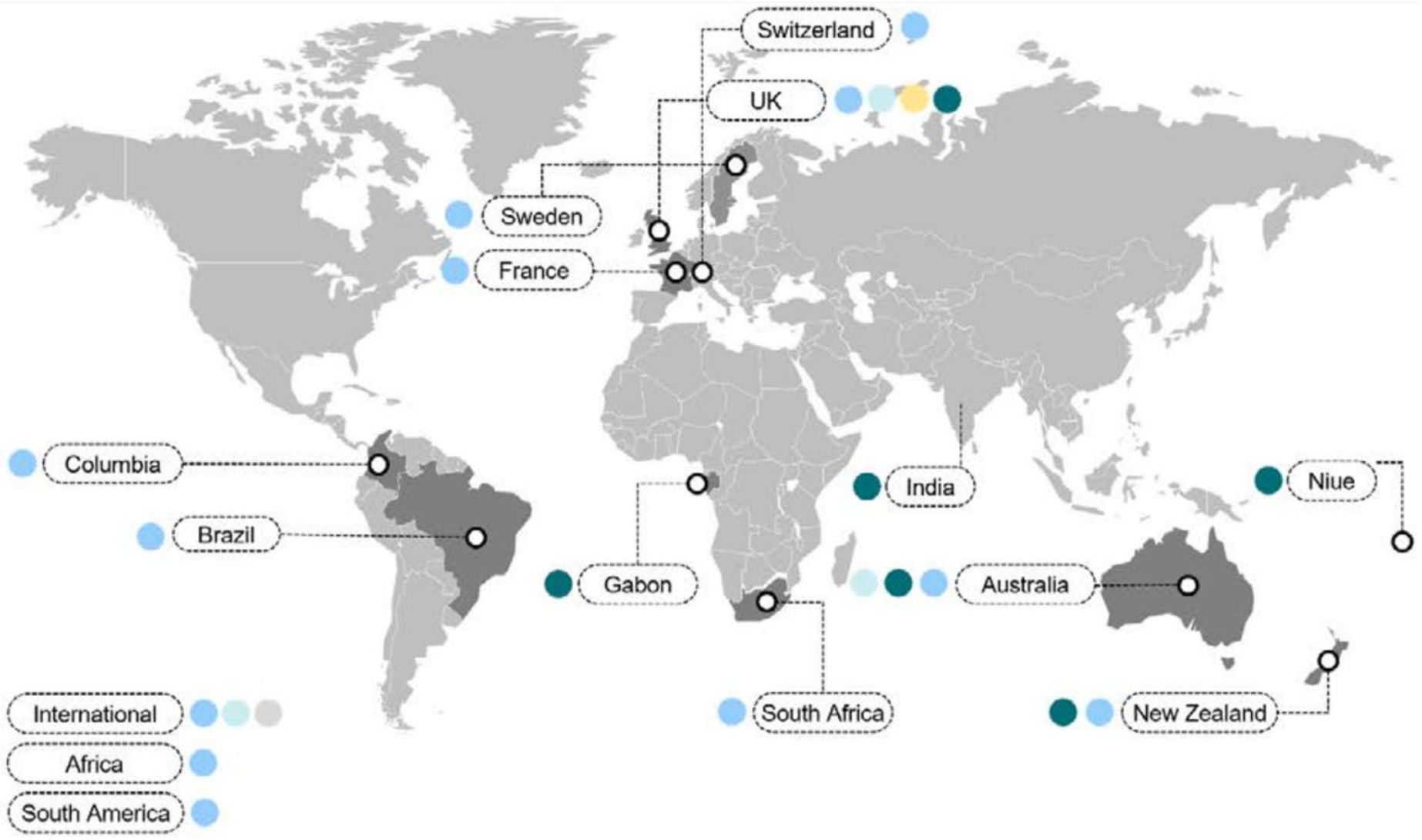
SCIENTIA IMPERII DECUS ET TUTAMEN

東京大学
THE UNIVERSITY OF TOKYO

Yale SCHOOL OF THE ENVIRONMENT

Appendix

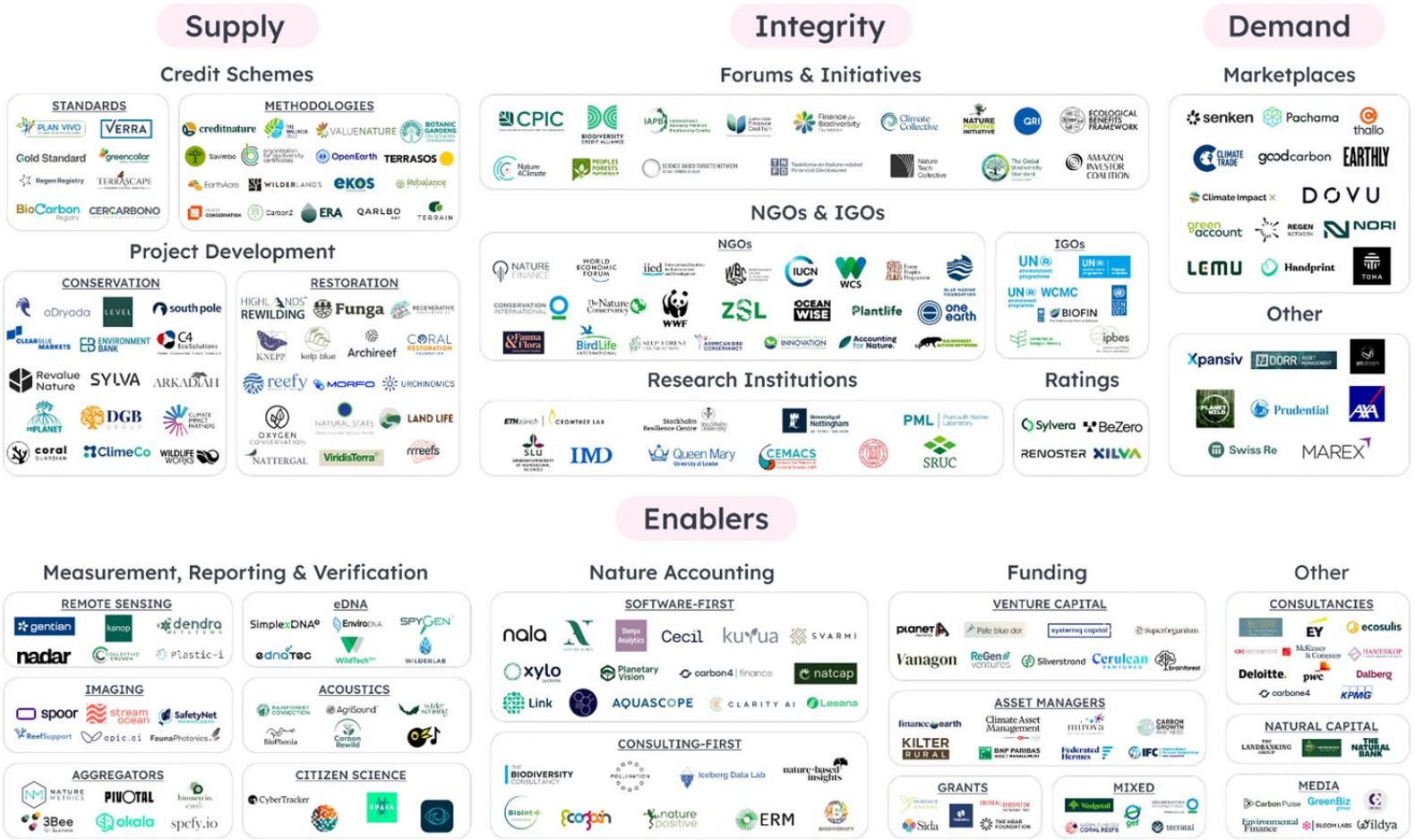
Appendix


Switzerland
UK
Sweden
France
Columbia
Brazil
Gabon
India
Niue
Australia
South Africa
New Zealand
International
Africa
South America

Appendix

Voluntary Biodiversity Market Map

by BLOOM LABS



Appendix

ADB ASIAN DEVELOPMENT BANK | AIIB ASIAN INFRASTRUCTURE INVESTMENT BANK | 香港大學 THE UNIVERSITY OF HONG KONG

议题二：中国围绕自愿抵消和联系采取的举措

SESSION 2 : PRC's Initiative Around Voluntary Offset and Linkages

Two notable trends in voluntary markets

清华大学能源环境经济研究所 INSTITUTE of ENERGY, ENVIRONMENT and ECONOMY TSINGHUA UNIVERSITY

■ **High demands for carbon removal credits**

- The EU institutions are working to set up a legal framework to certify carbon removal activities
- The first step is to set up a reliable system to quantify, monitor and verify such operations
- Apple's $280 million Restore Fund for carbon removal

■ **The integrity crisis**

- The Guardian's rant against Verra: *Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless*
- A series of follow-up research articles
- A white paper by Dr. Joseph Romm at UPenn

permanent carbon storage through **industrial technologies**, such as bioenergy with carbon capture and storage (BECCS) and direct air capture with capture and storage (DACCS)

carbon storage and soil emission reduction from **carbon farming** for at least five years (for instance by restoring forests, managing soil and wetlands and using cover crop practices)

carbon storage in **long-lasting products** (such as wood-based construction) for at least 35 years

Source: European Commission

Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows

Investigation into Verra carbon standard finds most are 'phantom credits' and may worsen global heating

Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon

nature sustainability

Article

Evaluating the impacts of a large-scale voluntary REDD+ project in Sierra Leone

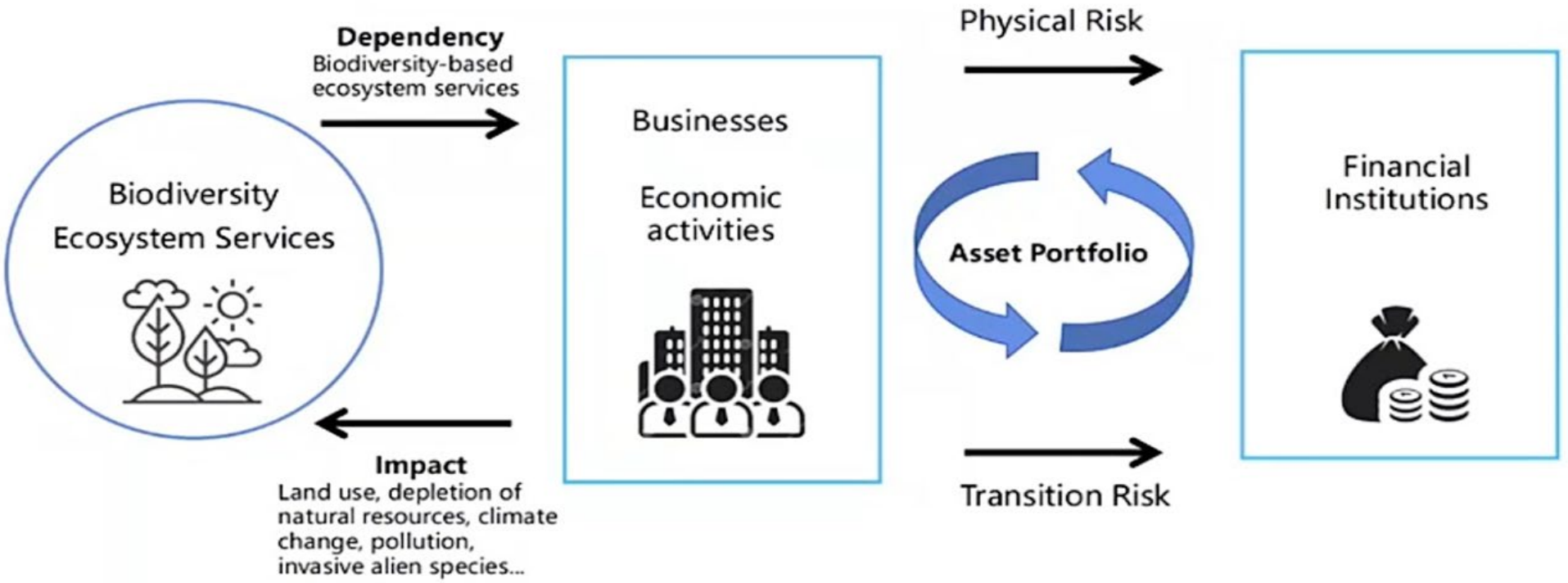
CARBON OFFSETS

Action needed to make carbon offsets from forest conservation work for climate change mitigation

张 达

清华大学能源环境经济研究所
副教授

Appendix


Dependency
Biodiversity-based ecosystem services
Biodiversity
Ecosystem Services
Businesses
Economic activities
Impact
Land use, depletion of natural resources, climate change, pollution, invasive alien species...
Physical Risk
Asset Portfolio
Transition Risk
Financial Institutions

Appendix

Mainstreaming Biodiversity into Financial system

Mitigating Negative Impacts

Manage two types of biodiversity-related risks

- **Biodiversity Risk:** risks due to the negative impacts on nature and biodiversity induced by investment and financing activities (project / portfolio)
- **Financial Risk:** physical and transition risks posed by biodiversity losses. (institutional / systemic)

Mobilizing Positive Biodiversity Finance

USe financial and policy levers

- **Taxonomy**
- **Financial product and mechanism**
- **Policy Incentives**
- **Market instruments** (biodiversity/carbon credit)
- **Information disclosure**
- **Pilots & International cooperation**

.....

Appendix

Innovative Financing Mechanisms for Wetland Conservation and Restoration

Xiazhu Lake Wetland in Deqing County, Zhejiang Province:

"Wetland Cultivation - Carbon Sequestration and Storage - Platform Trading - Reinvestment of Returns"; Wetland Carbon Sink Trading + Environmental Judicial Enforcement

Hangzhou Bay Wetland in Ningbo City, Zhejiang Province:

Various financial products: Ecological Value Insurance for Wetland Carbon Sink, Collateralized loan by Blue Carbon.

Yancheng Wetland in Jiangsu Province:

Introducing international development funds (GEF+WB+ADB) through blended financing models for wetland conservation and restoration, leveraging syndicated loan by commercial banks for eco-agribusiness and eco-tourism

Exploration on Yellow Sea wetland ecological bank.