Task Force on Ecosystem Services and Management Strategy in China

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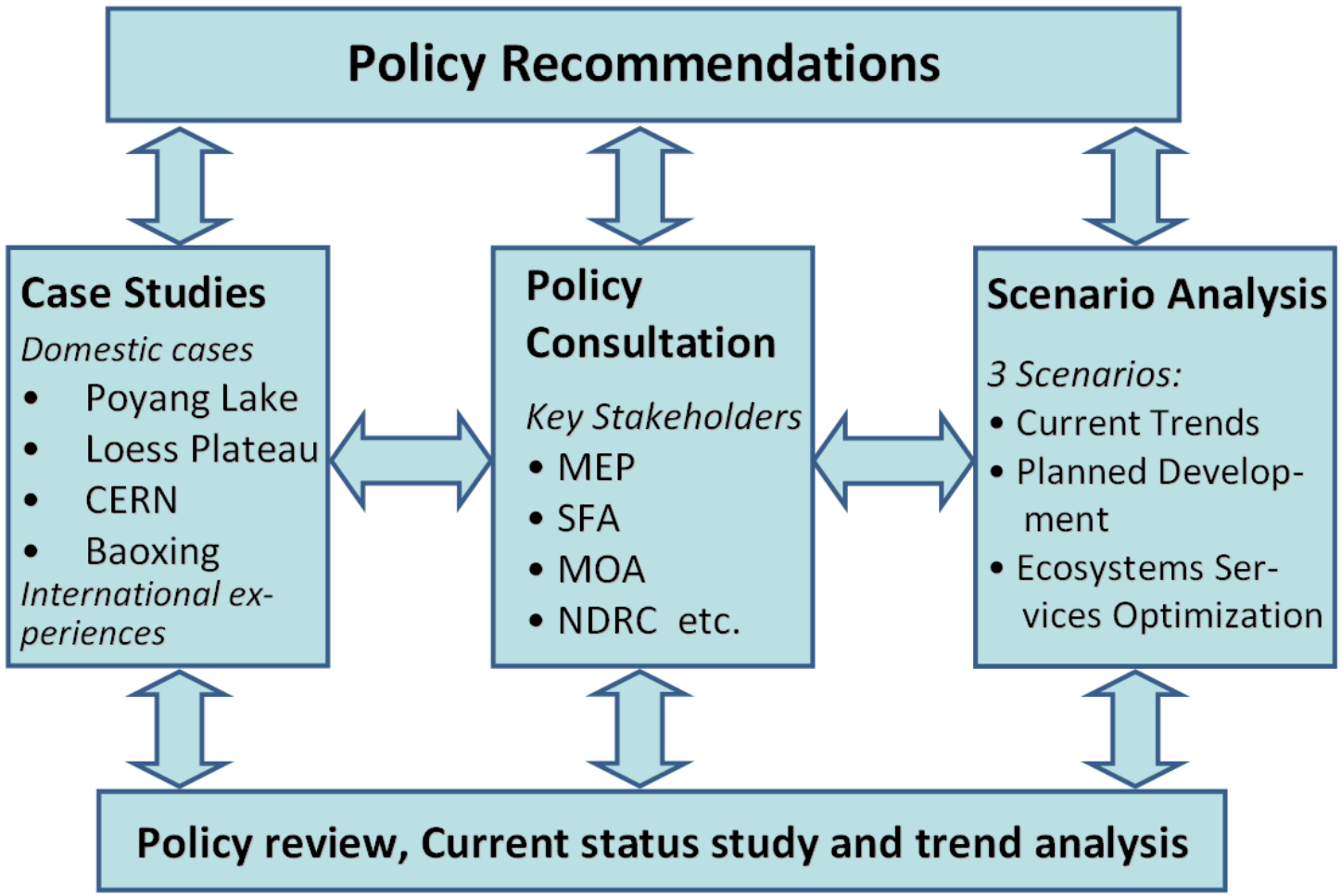
Task Force's brief

The Task Force was requested by CCICED to:

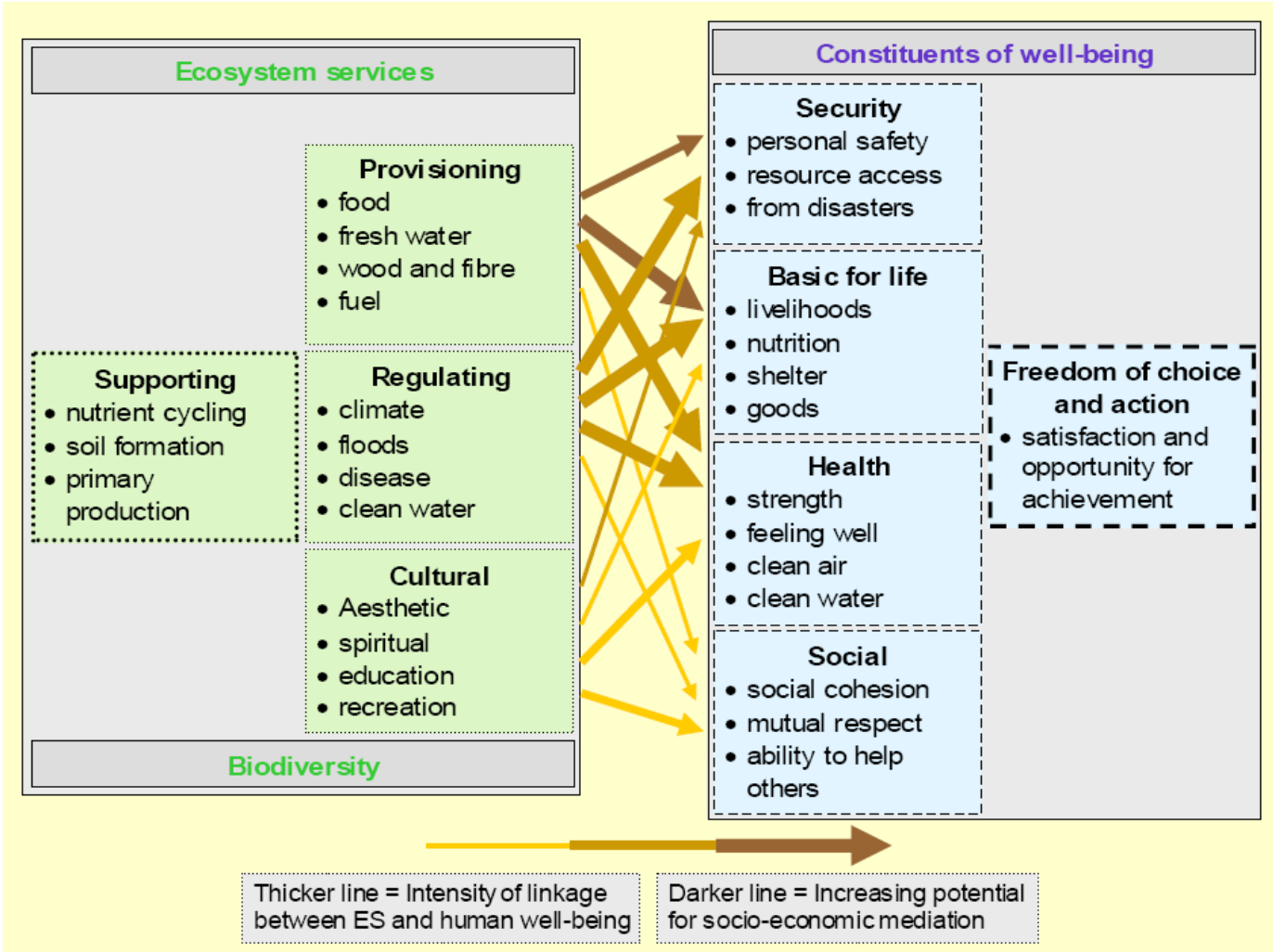
- **Assess the economic and social benefits of sustainable ecosystems management based on an ecosystem service approach;**
- **Identify better practices in ecosystem management from Chinese and international experiences; and**
- **Recommend how to better integrate ecosystem services into development decision-making in China.**
- **Focus on forests, grasslands and wetlands.**

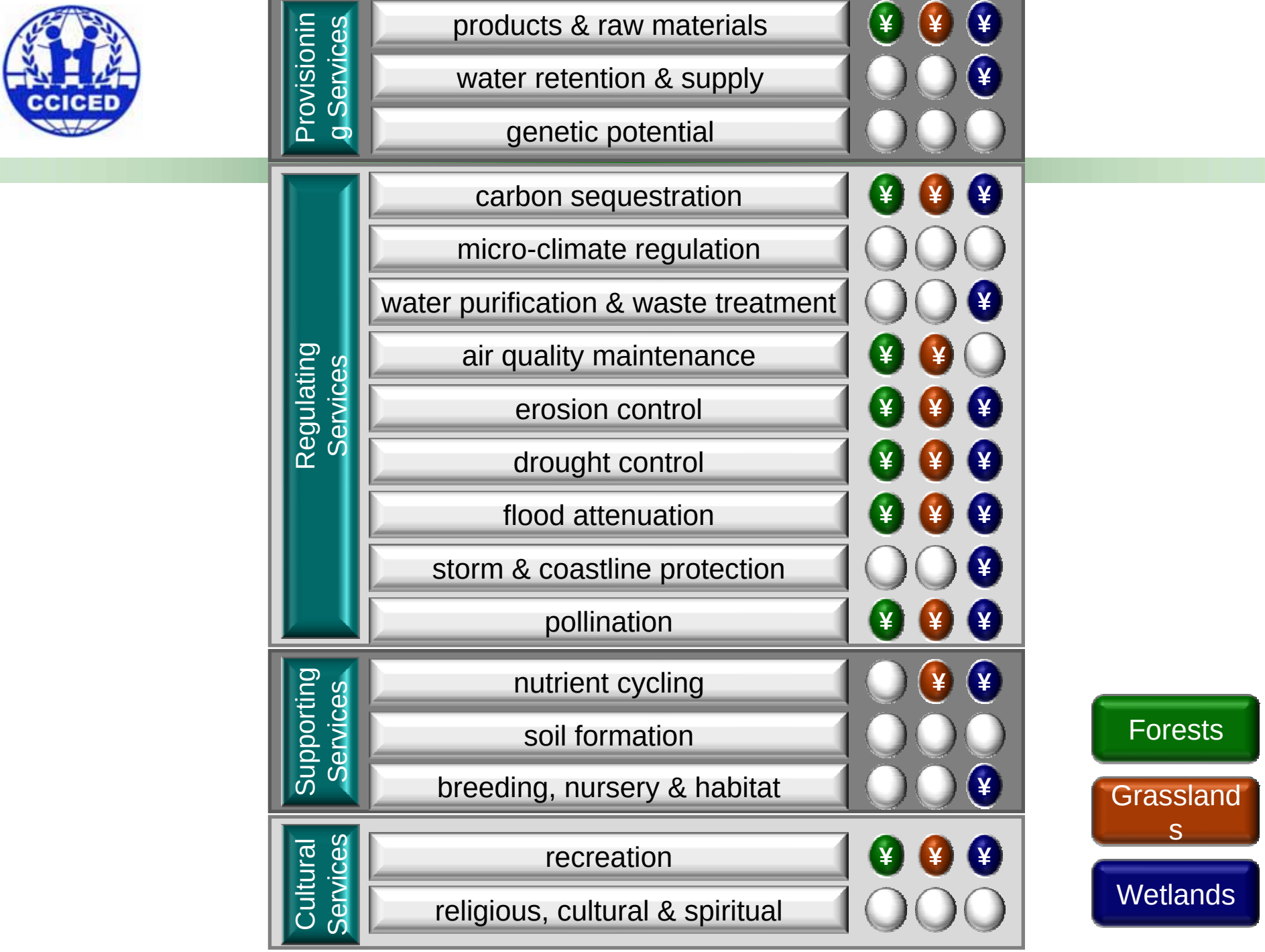
Task Force methodology



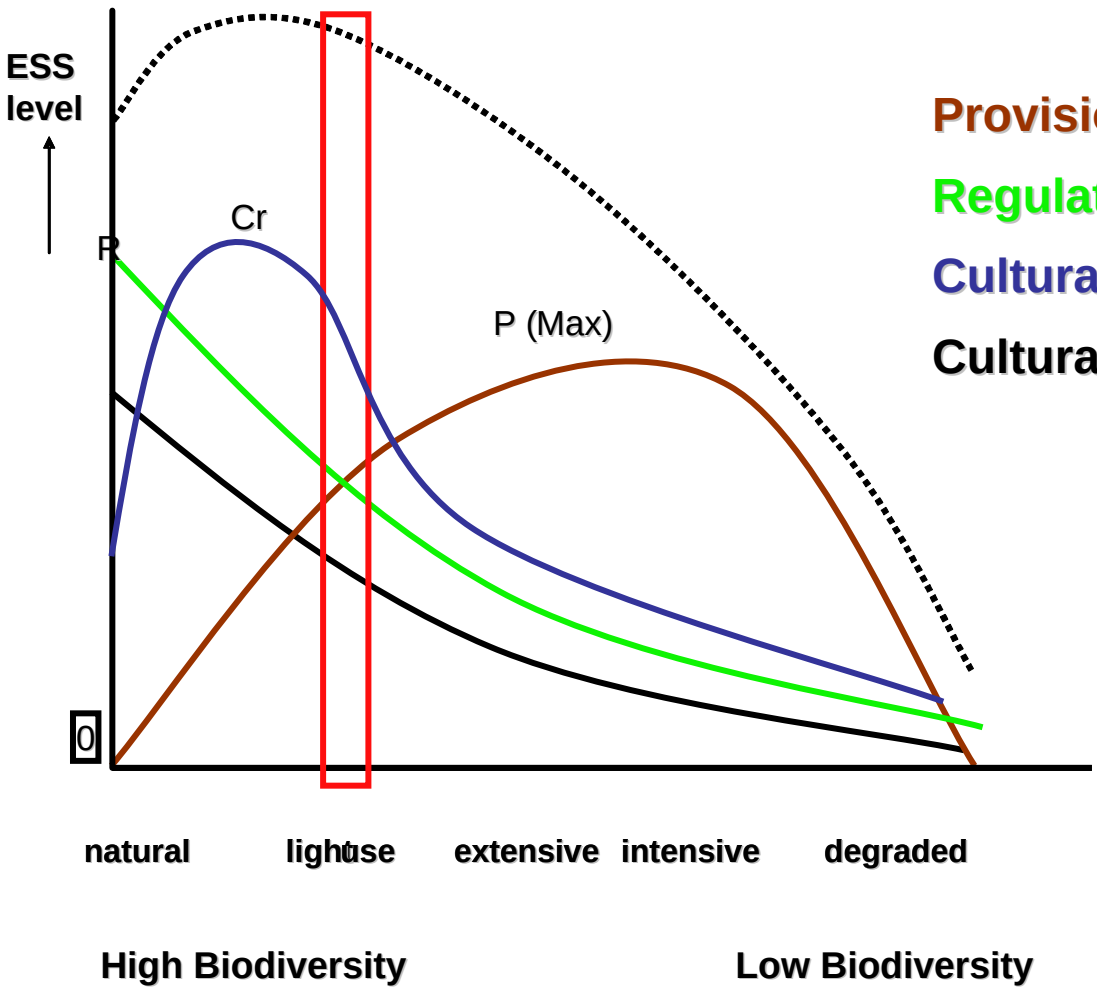
Ecosystem services, biodiversity and human wellbeing (MA 2005)

Ecosystem services: The benefits humans derive from nature.




Provisioning Services
products & raw materials
water retention & supply
genetic potential
Regulating Services
carbon sequestration
micro-climate regulation
water purification & waste treatment
air quality maintenance
erosion control
drought control
flood attenuation
storm & coastline protection
pollination
Supporting Services
nutrient cycling
soil formation
breeding, nursery & habitat
Cultural Services
recreation
religious, cultural & spiritual
Forests
Grasslands
Wetlands

Ecosystem services and land use



Provisioning services (P):

Regulating services (R):

Cultural – recreation services (Cr):

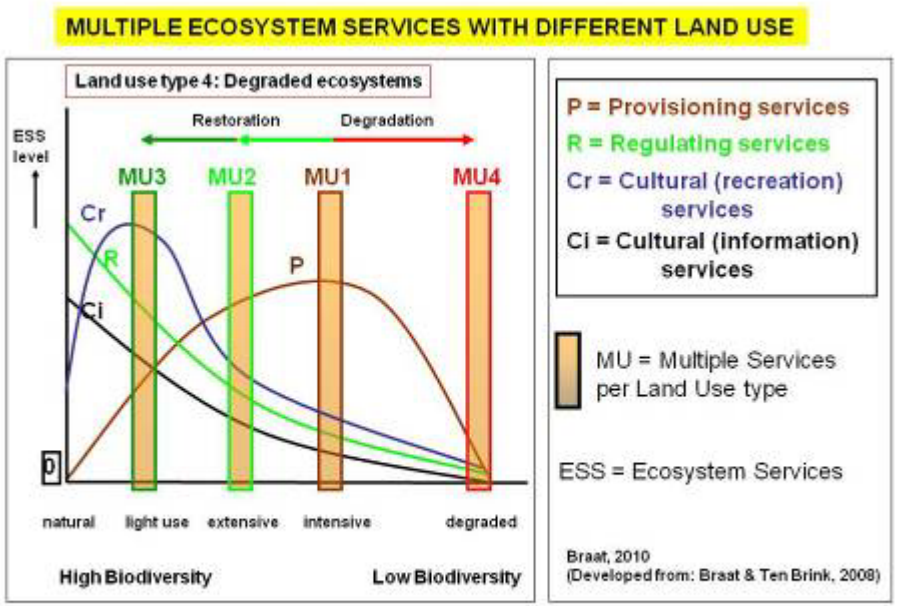
Cultural – Information services (Ci):

Multiple Services Per Land Use type

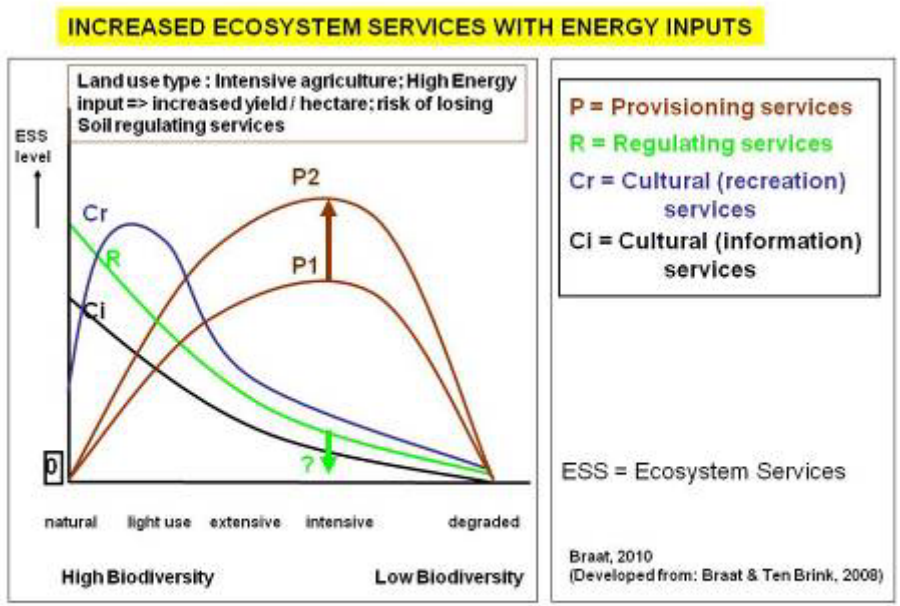
Braat et al. 2009

Management of ecosystem services

Restoration



Increased inputs



Ecosystem status in China

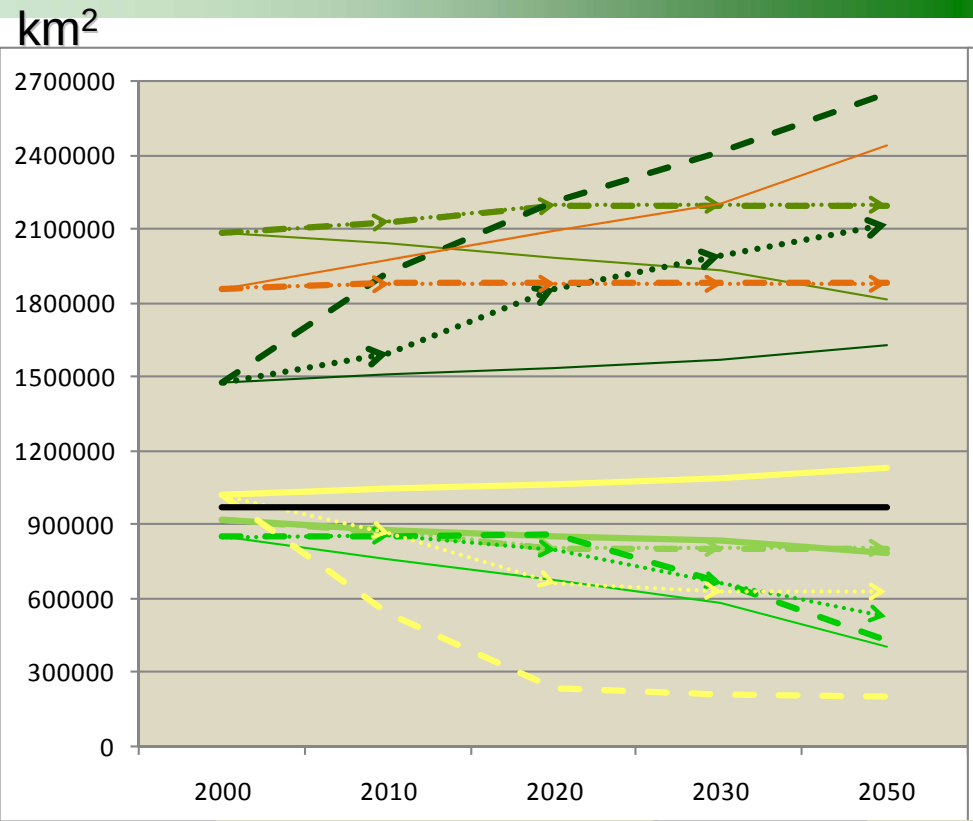
1. Chinese Government increased its support for ecological conservation and restoration of forest, grassland and wetland ecosystems from 1998.
2. Forest ecosystems have been protected and expanded. Deterioration of grasslands and wetland has slowed, and 2,538 nature reserves have been established over 15.5% of China's lands.
3. However, there has been a one-sided focus on particular services, like food production, water retention or prevention of erosion, neglecting other services such as biodiversity or carbon storage.
4. Forests have expanded but there is a decline in natural and semi-natural forests, and productivity is low;
5. Grasslands are declining through overgrazing and conversion;
6. Wetlands are declining with over fishing, pollution, and changes to water flows.

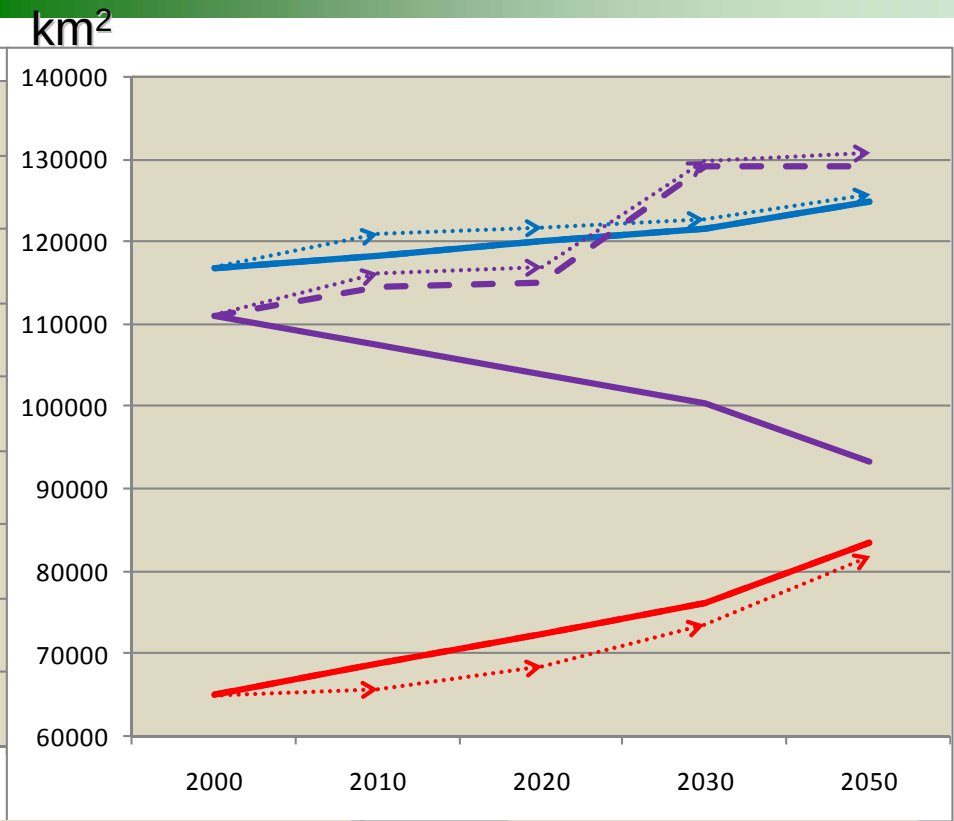
Ecosystem management in China

- Sustained and rapid economic growth and the needs of a huge population are degrading the environment due to increasing resource consumption and limited resources
- Problems are prevalent in the design and implementation of ecological conservation and restoration projects
- Solutions include more locally specific approaches, longer term investments, and better adaptive management
- Legal and institutional systems continue to hinder the integrated and sustainable management of ecosystems

Solutions include: reform of sectoral laws to eliminate conflicts; establishment of coordination mechanisms within government, and new laws to give a better mandates for ecosystem management.

Scenario outputs





	BAU	Planned	Optimization
Forest HD			
Forest LD/shrub			
Grassland HD			
Grassland LD			

	BAU	Planned	ptimization
Swamp/peat land			
Waterbody			
Arable			

	BAU	Planned	Optimization
Built-up			
Unused			
Unusable			

Business as usual vs planned vs optimized scenarios and extent of ecosystems

Scenario conclusions

1. China's sectoral plans improve outcomes over business as usual but could perform better if amended and coordinated
2. Land is in short supply and double counted in some plans: a reduced target for forests is needed to conserve other ecosystems and their services
3. Some regions and ecosystems are at greater ecological risk and need greater investment (eg. NW China, grasslands)
4. Restoring wetlands generates the highest ecosystem service benefits per unit area
5. The focus needs to change from just expanding the area of ecosystems to also improving their quality (eg. forests)
6. Greater use of remote sensing is needed to avoid over-reliance on less-accurate statistical data for decision making

Chinese case studies

Four case studies were selected to:

- draw on evidence from the county to national scales
- cover a range of ecosystem services, and
- explore key policies

Case study	Poyang Lake	Loess Plateau	CERN	Baoxing
Spatial scale				
National			√	
Eco-regional scale	√	√		
Provincial scale	√			
Local level		√		√
Predominant ecosystem services examined				
Provisioning services	√	√		√
Regulating services	√	√	√	√
Supporting services	√			√
Cultural services	√	√		√
Key findings and supported policy recommendations				
National planning	√	√	√	
Ecosystem approaches	√	√		√
Coordination and participation	√	√		√
Eco-compensation and investment	√	√		
Monitoring, assessment and education	√	√	√	

Evidence from the case studies

- balance interrelations among varous ecosystem services
- better coordinate participation of stakeholders on different levels
- effectively leverage and enhance scietific support
- identify best practices to propose more effective models, policies and guidelines

International experience

Was drawn from a range of studies, including the *Millennium Ecosystem Assessment* and *The Natural Capital Project*. *The Economics of Ecosystems and Biodiversity* (2009) lessons include:

Rewarding suppliers of ecosystem services through payments and markets;

Reforming subsidies that harm ecosystems;

Responding to losses of ecosystem services through regulation and pricing;

Adding value through expanding protected areas;

Investing in ecological infrastructure; and

Ensuring equity across different groups of users.

Main Findings (a)

Progress has been made in conserving and restoring ecosystems in China but sustainable ecosystem management faces serious challenges from the huge demand for socioeconomic development drawing upon finite ecological resources. We found:

Some advances have been made in ecosystem conservation and restoration, however the capacity of China's ecosystems to generate multiple services is too low

Low awareness of ecosystem services and poor ecosystem management remain as great challenges

Main Findings (b)

- Less land is left in China for the expansion of forests, grasslands and wetlands, so China now needs to enhance the quality of ecosystems and their capacity to generate a range of services
- Cross-sectoral coordination and public participation mechanisms are crucial for improving ecosystem management
- Scientific support (e.g. long-term monitoring) and capacity building needs to be strengthened for better ecosystem management
- Financial compensation mechanisms should be established for generation of services that are not yet market-based – to achieve greater equity between rural areas and urban consumers

Rec. 1: A new *National Plan*

Adopt a new *National Plan on Ecological Conservation an Development* to guide and integrate sectoral and regional measures:

provide a mandate and guide consistent ecosystem management across China

establish a comprehensive assessment mechanism for the maintenance and optimization of ecosystem services applied within the national planning system and to all programs and projects.

prioritize regions for ecosystem conservation, set overall targets and adopt measures to conserve natural forest, grassland and wetland ecosystems

implement the principles of the 'ecosystem approach' of the *Convention on Biological Diversity*.

overseen by a leadership group and expert panel.

Rec. 2: Improve generation of ecosystem services

Improve generation of ecosystem services from forests, grasslands and wetlands through sustainable management in priority regions:

balance generation of provisioning and regulating services to maintain ecosystem health

strict protection of natural forests

improve the quality of secondary forests and protect forests from conversion to other land uses

stop and reverse degradation of grasslands, particularly through better livestock management

conserve wetlands with more nature reserves, environmental flows, and control of over fishing

more effective regulations for nature reserves

renewed focus on western and central China.

Rec. 3: Establish coordination institutions

Establish coordination institutions for sustainable ecosystem management at central, provincial and county levels, and to increase public participation

successful ecosystem management largely depends on enhancing government coordination mechanisms and leveraging the role of social groups

cross-sectoral coordination agencies are needed at the provincial level, and at the local and county level for greater stakeholder involvement

positive examples include the Mountain – River – Lake Office of Jiangxi Province and the ecosystem management system of Baoxing County.

Rec. 4: Eco-compensation mechanisms & investment

Promote the establishment of eco-compensation mechanisms and long-term investment in ecosystem management:

government investments have restored forest, grassland and wetland areas: more is required

expand programs, especially in: ecologically fragile central and western China, river sources, areas with water or wind erosion, water sources, grasslands and nature reserves

establish a new regulation of the State Council on eco-compensation to realize rural area's values and contributions to national welfare

the compensation rate for non-commercial forest management should be raised

stewards of ecosystems should receive incentives

Rec. 5: A stronger knowledge base

Strengthen ecosystem monitoring, long-term research and training for better knowledge-based support of ecosystem management:

the Loess Plateau shows how science and long-term research contributes to good management

new challenges and risks are emerging that affect China's national interests

examples are climate change and excess emissions of reactive nitrogen and phosphorous from agriculture and fossil fuel combustion

long-term research and monitoring is needed to manage risks

a national ecosystem inventory is proposed to inform development of national five-year plans.

Thank you:

- CCICED and the EU-China Biodiversity Conservation Program for funding and other support
- CCICED Chief Advisers, Secretariat and International Support Office
- Task Force members, consultants and secretariat
- Over 20 supporting experts, 100 officials and experts, and many organizations that supported the Task Force's work