



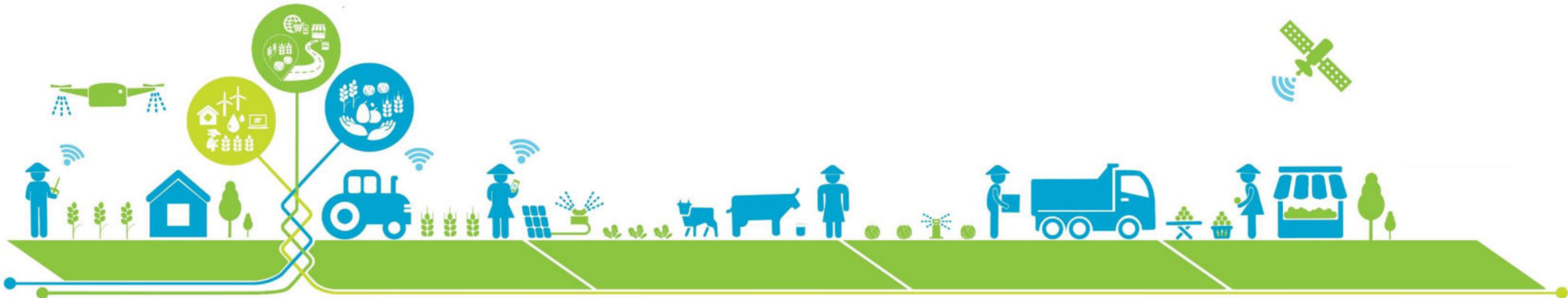
# Asia-Pacific Rural Development and Food Security Forum 2022

## Battling Climate Change and Transforming Agri-food Systems

22-24 March 2022

### Gretchen C. Daily

Professor, Stanford University  
Faculty Director, The Natural Capital Project



- Being the keynote speaker, you have an element of flexibility in what you say to set the tone. As mentioned in the invitation, the session revolves around innovative approaches to green financing. Hence, the build-up could revolve around the importance of nature and biodiversity, its linkages to climate change (Stockholm +50 chapter1), importance of environmental accounting and valuing nature, and how it could enable innovative financing approaches. This is, of course, only a suggestion and you may choose your topics to suit the session.
- 
- The audience would comprise representatives from Multilateral Development Banks, governments of our Developing Member Countries, our private sector clients, civil society organizations, impact funds, commercial banks, and other private and public investors.
- 
- You would have about 15 minutes for your keynote address

# Nature as an Engine of Prosperity



# Nature as an Engine of Prosperity



**ADB as an Engine of Innovation  
& Transformation**

# What is natural capital?

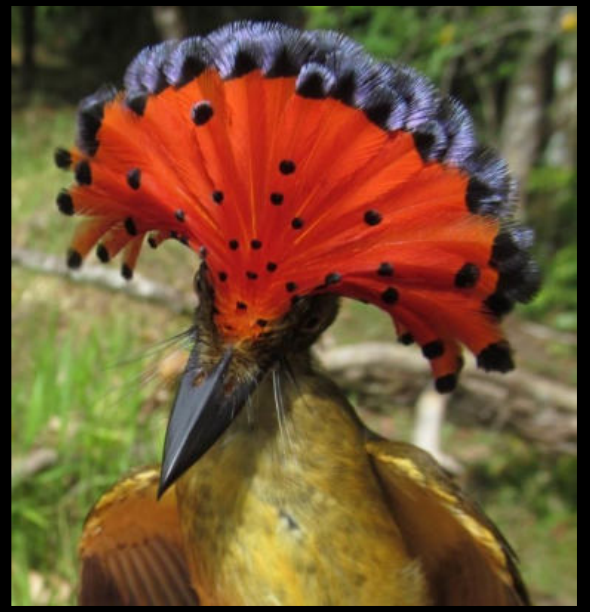


# What is natural capital?




Earth's lands, waters, and biodiversity



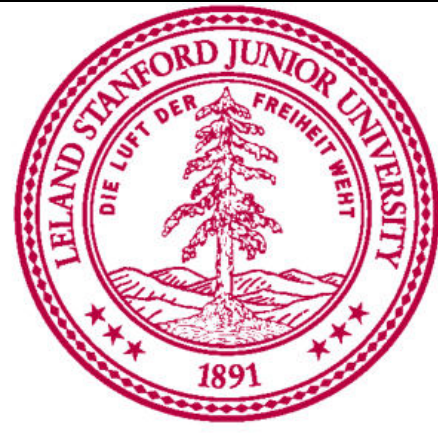






- 
- 1. How much and where to protect?**
  - 2. How to benefit people & nature?**
  - 3. How to move beyond GDP?**

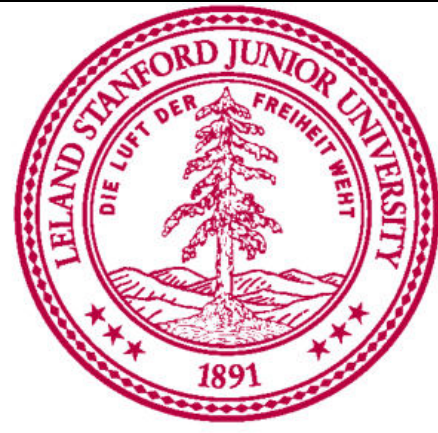
natural  
capital  
PROJECT



**100** RESEARCH  
INSTITUTIONS

**300** IMPLEMENTING  
INSTITUTIONS

natural  
capital  
PROJECT



**100 RESEARCH  
INSTITUTIONS**

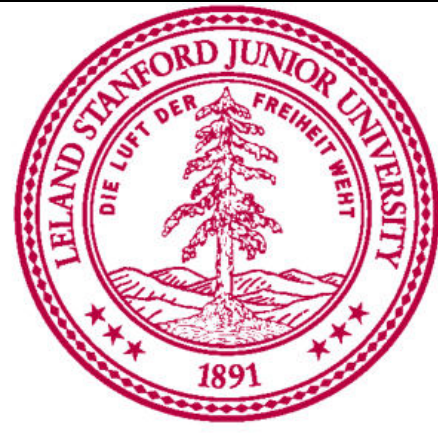
**300 IMPLEMENTING  
INSTITUTIONS**

**POWERFUL  
DEMONSTRATIONS**



**KNOWLEDGE PLATFORM**

natural  
capital  
PROJECT



**100** RESEARCH  
INSTITUTIONS

**300** IMPLEMENTING  
INSTITUTIONS

POWERFUL  
PARTNERS

**ADB**

**IDB**

**GEF**

**WB**

**UN**

PRIVATE  
SECTOR

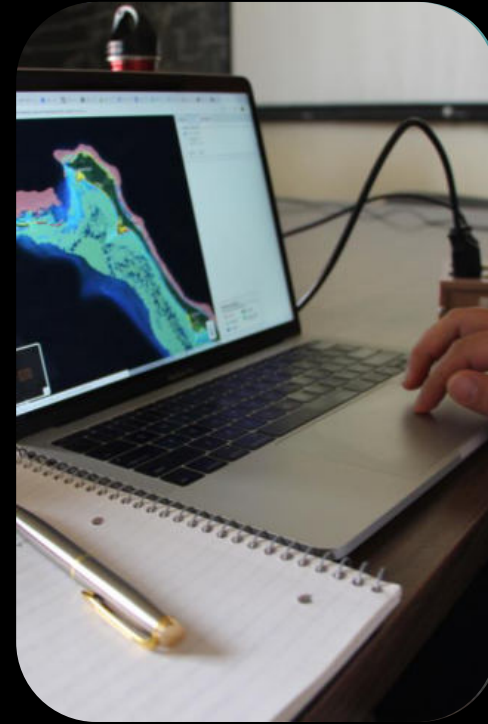
**KNOWLEDGE PLATFORM**



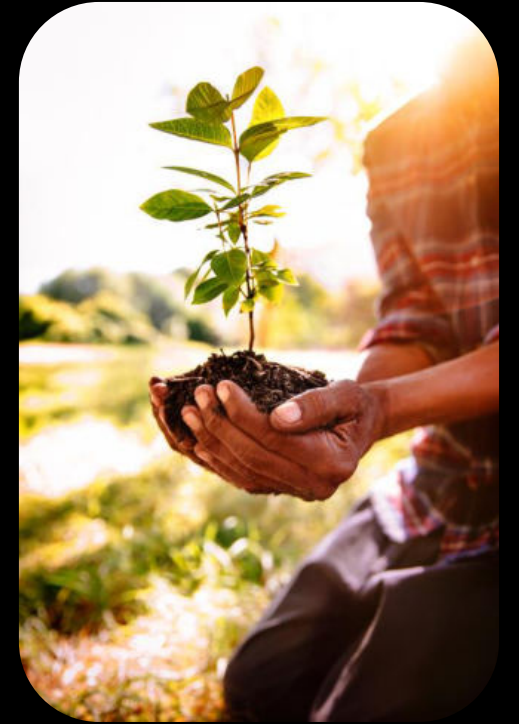
**ENGAGED  
SCIENCE**



**TECHNOLOGY**



**DECISIONS**



**STEWARDSHIP  
& WELL-BEING**



Coastal  
Protection



Clean Water  
& Energy



Climate  
Security

# InVEST

integrated valuation of  
ecosystem services  
and tradeoffs

Flood Control



Urban  
Cooling



Food  
Production



Health



Coastal  
Protection



Clean Water  
& Energy



Climate  
Security

**InVEST**

Flood Control



**>185 countries  
& first cities**



Urban  
Cooling



Food  
Production

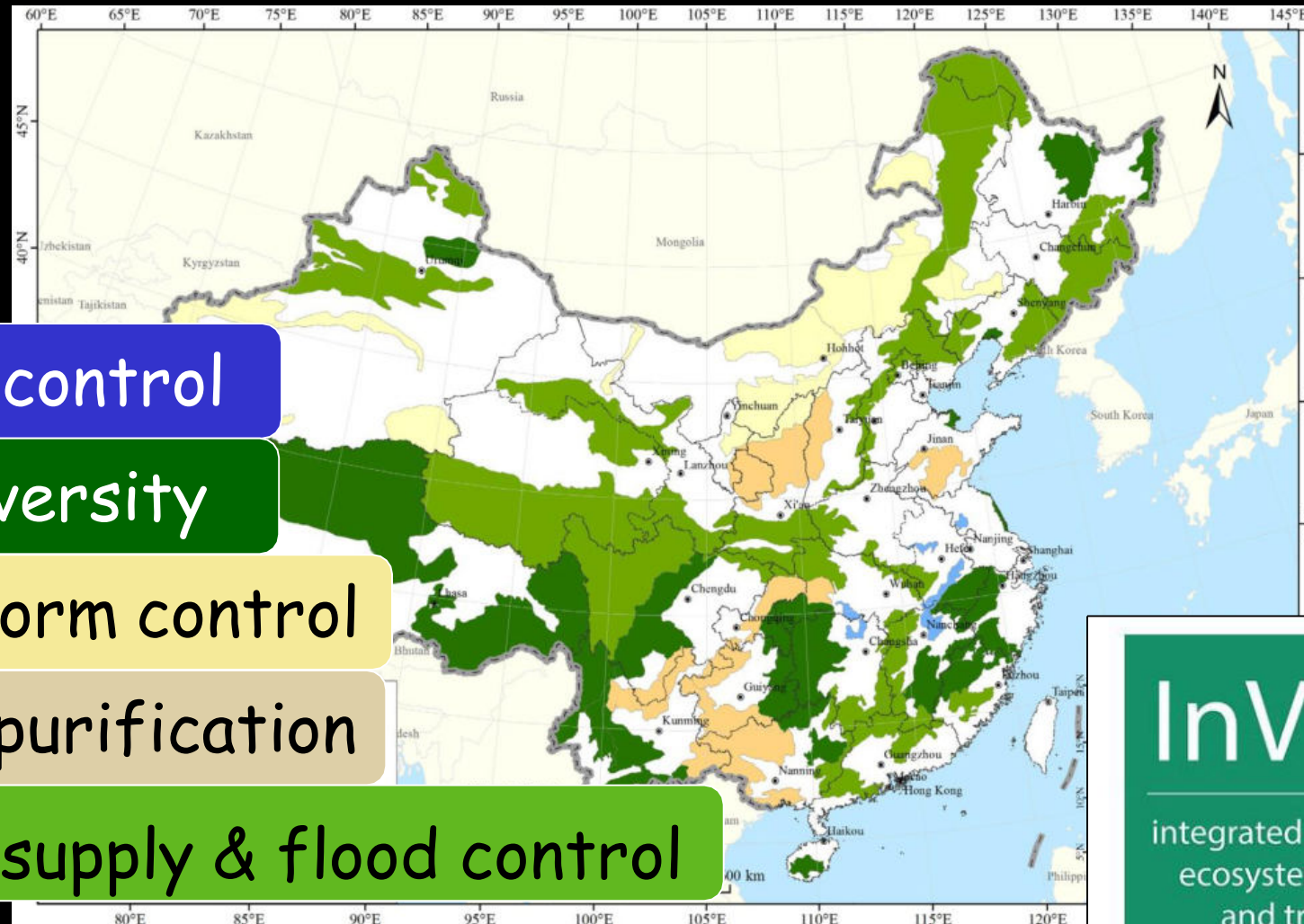


Health



# Key Ecosystem Function Zones

## 51% of land area



flood control

biodiversity

sandstorm control

water purification

water supply & flood control

**InVEST**

integrated valuation of  
ecosystem services  
and tradeoffs

# Hainan Island ~ 1<sup>st</sup> Eco-Province

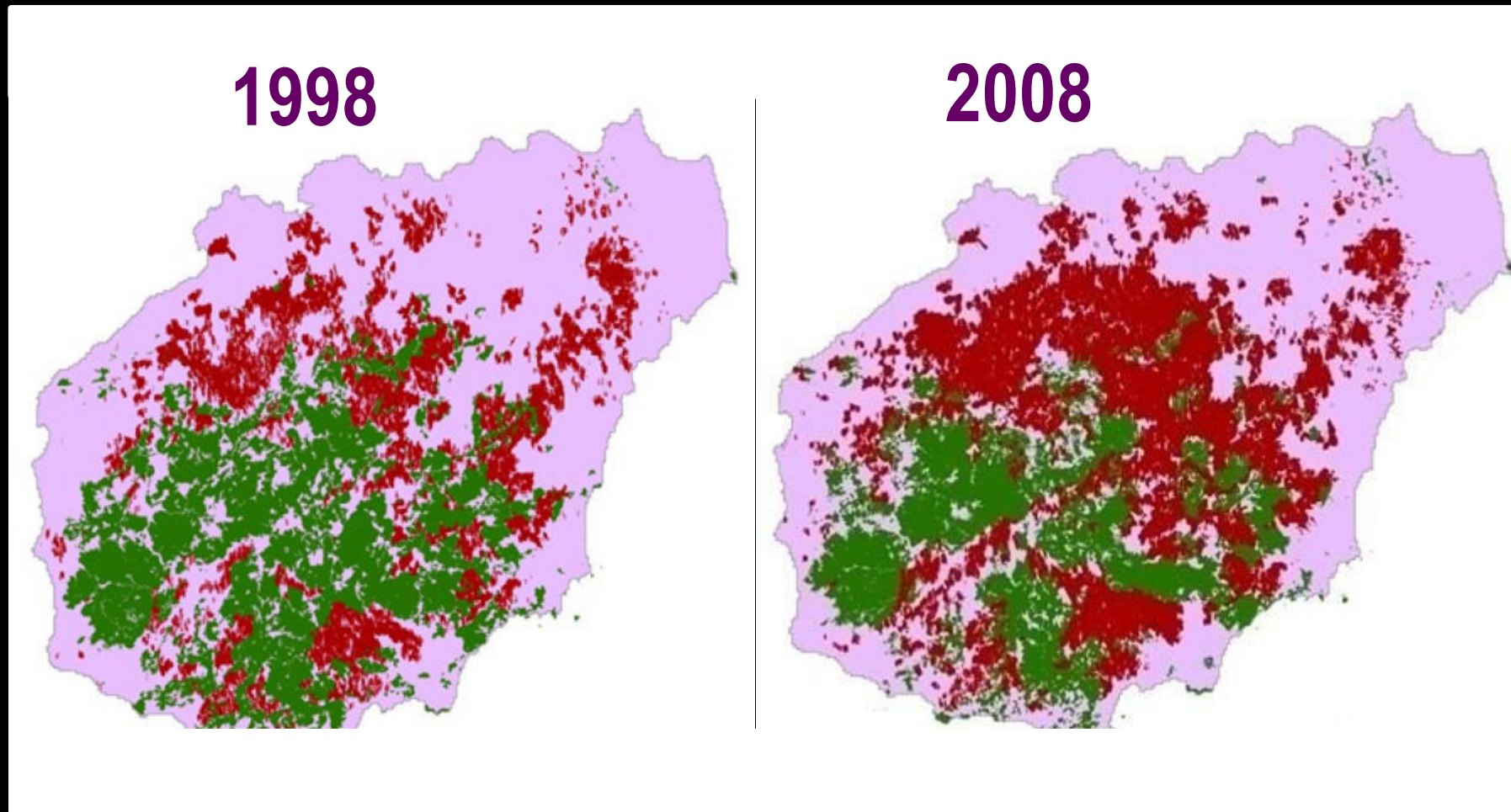


Priority ecoregion globally  
1998-2008: 2x rubber area  
2010: USD 2B flood damage





# Rubber Expansion on Hainan Island

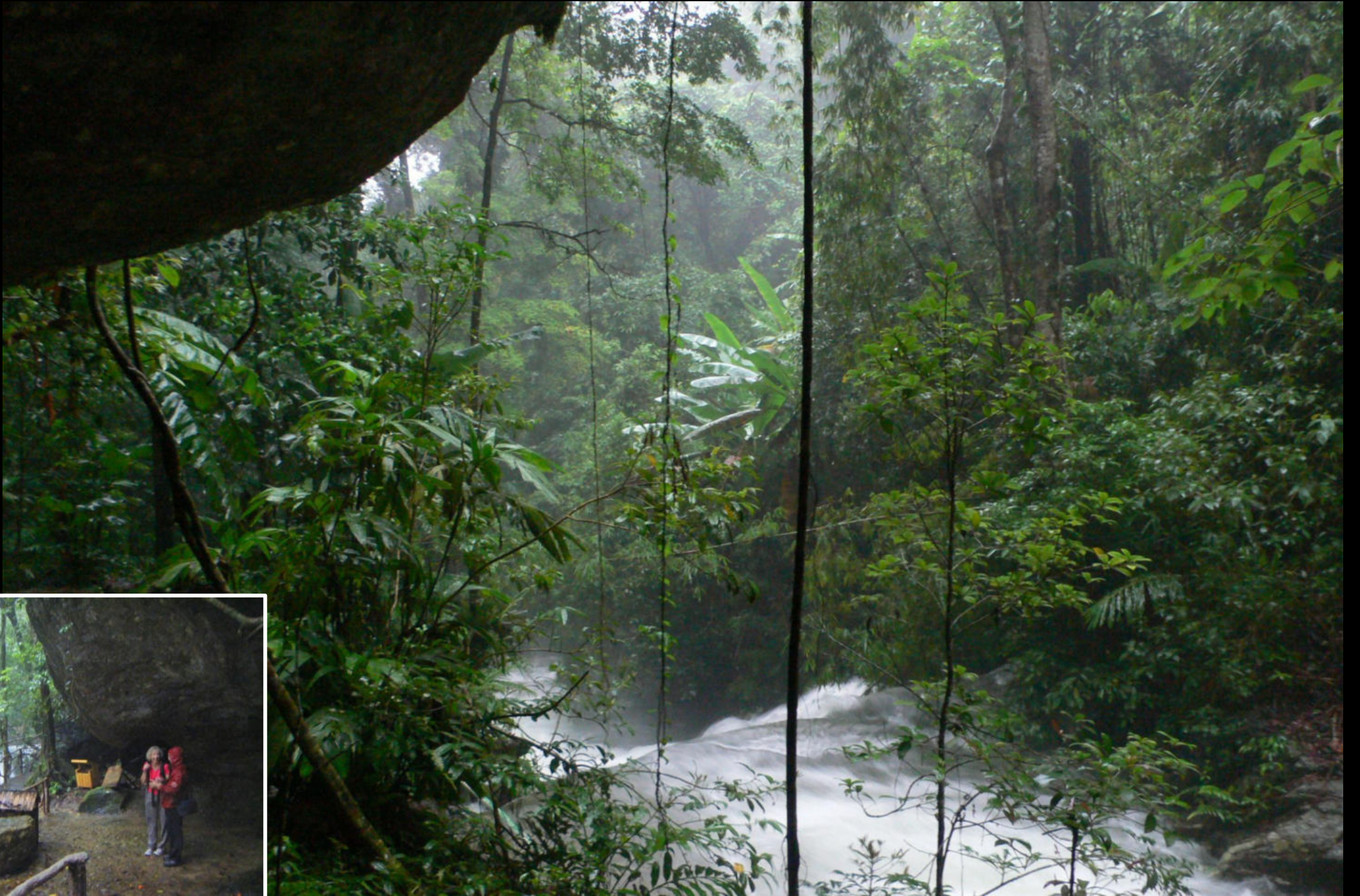


Natural forest



Rubber production



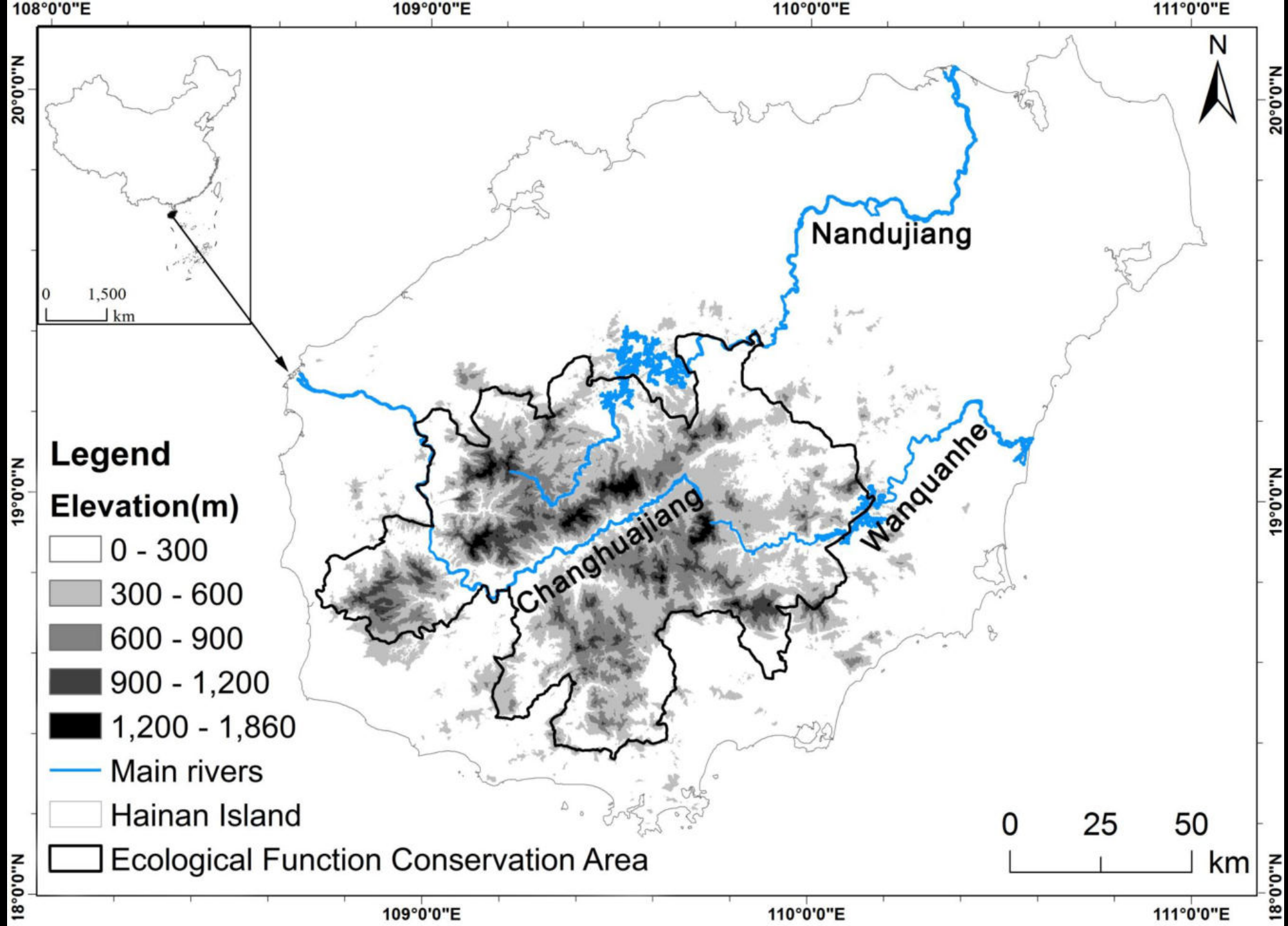




**Oct 2010 - Worst flooding in 50 yrs**

**130,000 people evacuated**

**USD 2 billion in damage**

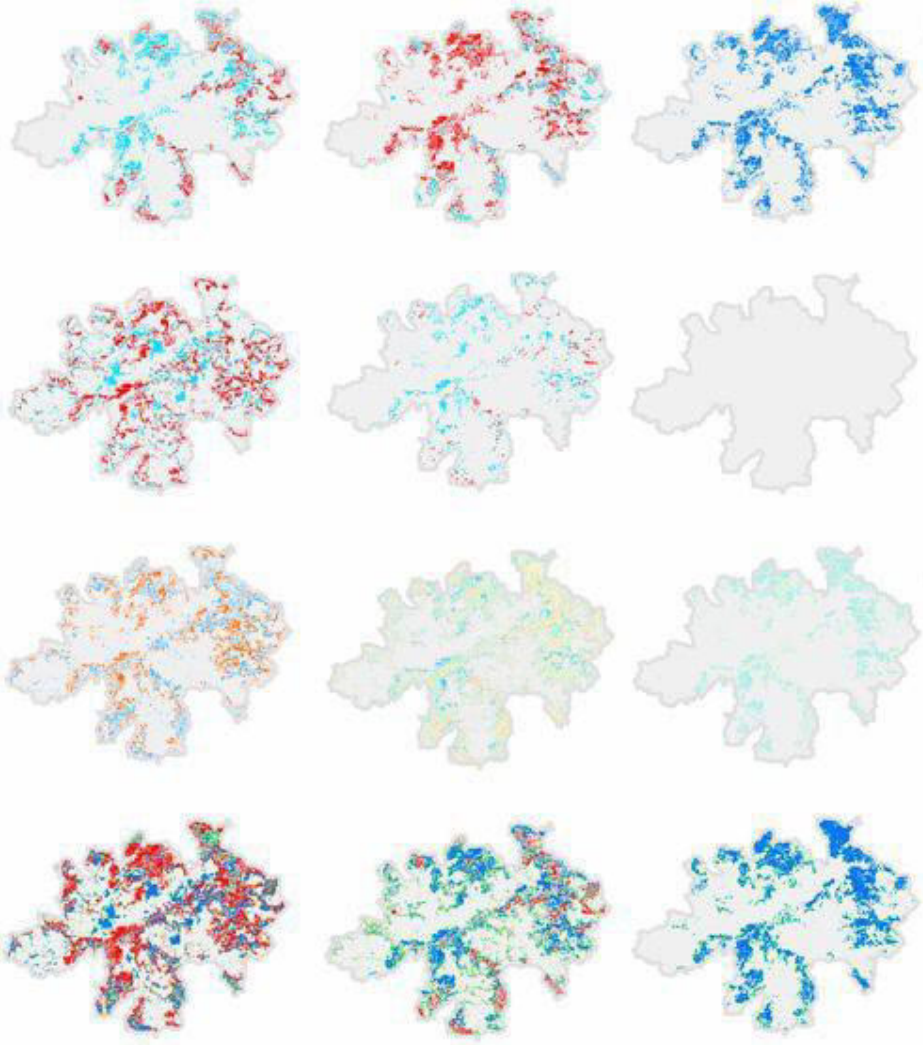




**A** 1998-2017 Actual LULC Change

**B** Difference between actual LULC in 2017 and No rubber Plantation Expansion Scenario

**C** Difference between actual LULC in 2017 and Intercropped Rubber Plantation Scenario



**Product Provision**

- Decline
- No Change
- Improvement
- Higher Improvement

**Natural Forest Habitat**

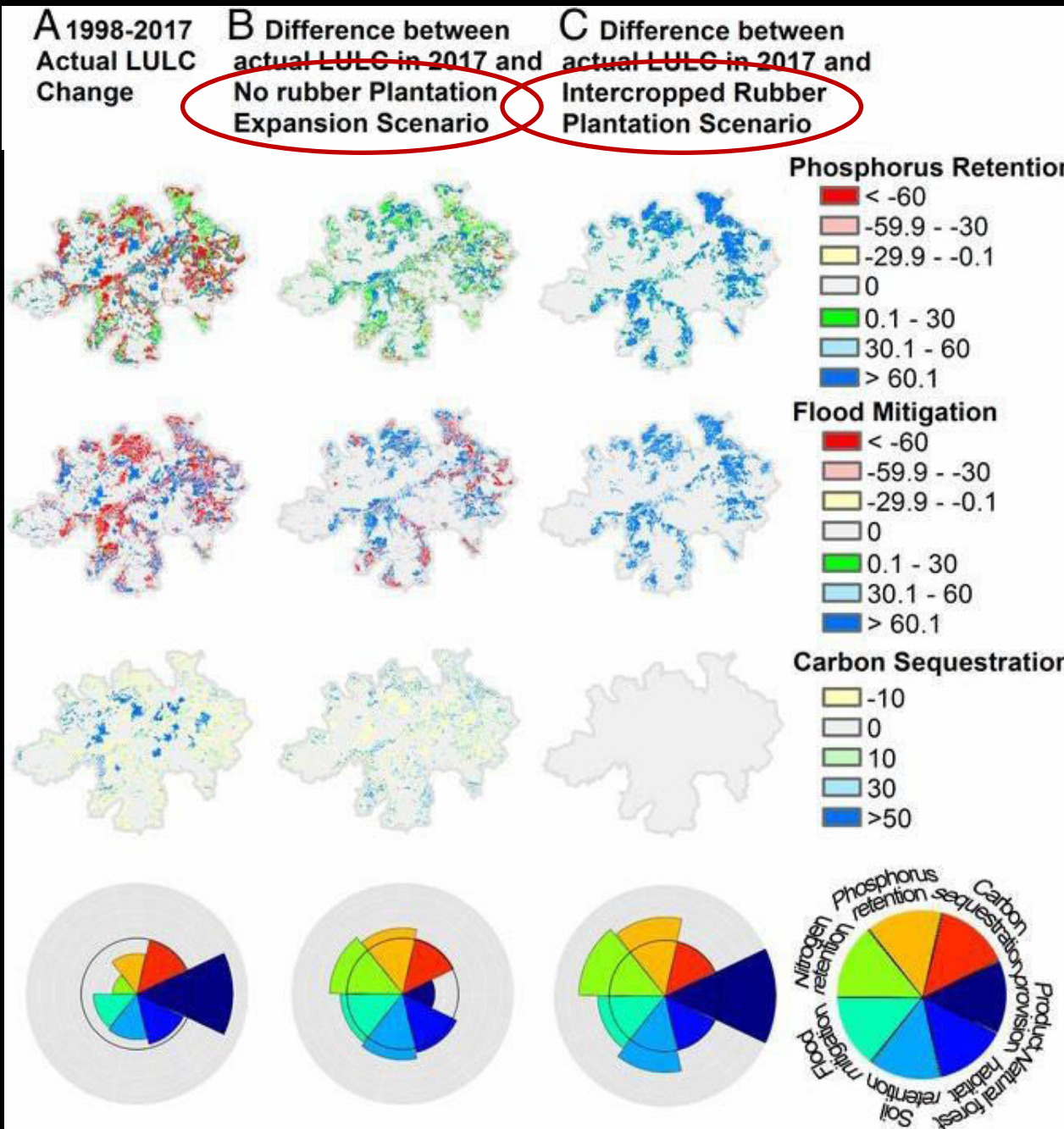
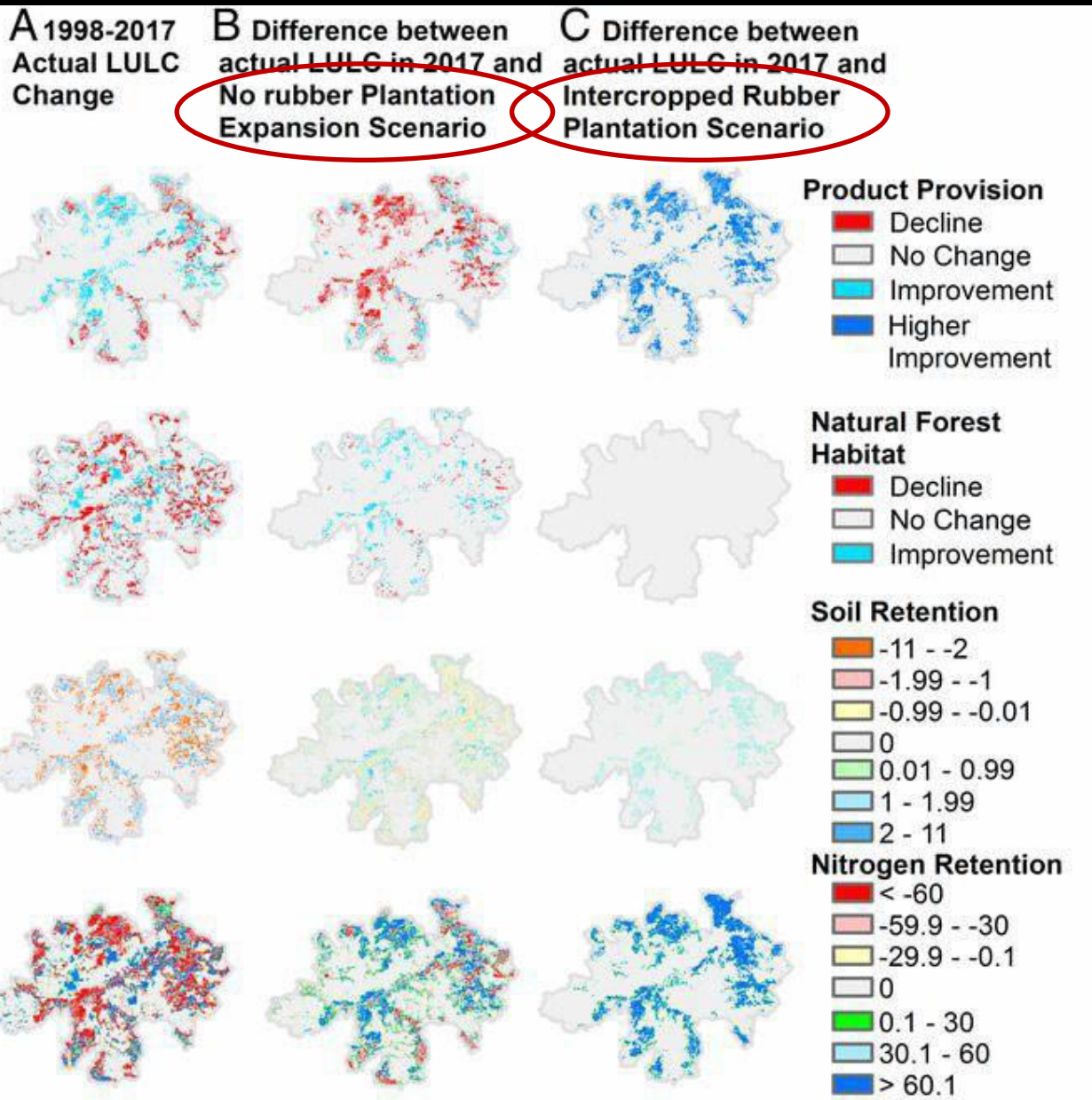
- Decline
- No Change
- Improvement

**Soil Retention**

- -11 - -2
- -1.99 - -1
- -0.99 - -0.01
- 0
- 0.01 - 0.99
- 1 - 1.99
- 2 - 11

**Nitrogen Retention**

- < -60
- -59.9 - -30
- -29.9 - -0.1
- 0
- 0.1 - 30
- 30.1 - 60
- > 60.1



**Improved Production + Other ES +  
Doubled Income**

(Zheng et al 2019 *PNAS*)

# National Ecological Development Strategy

(Zheng et al 2019 *PNAS*)



# Background

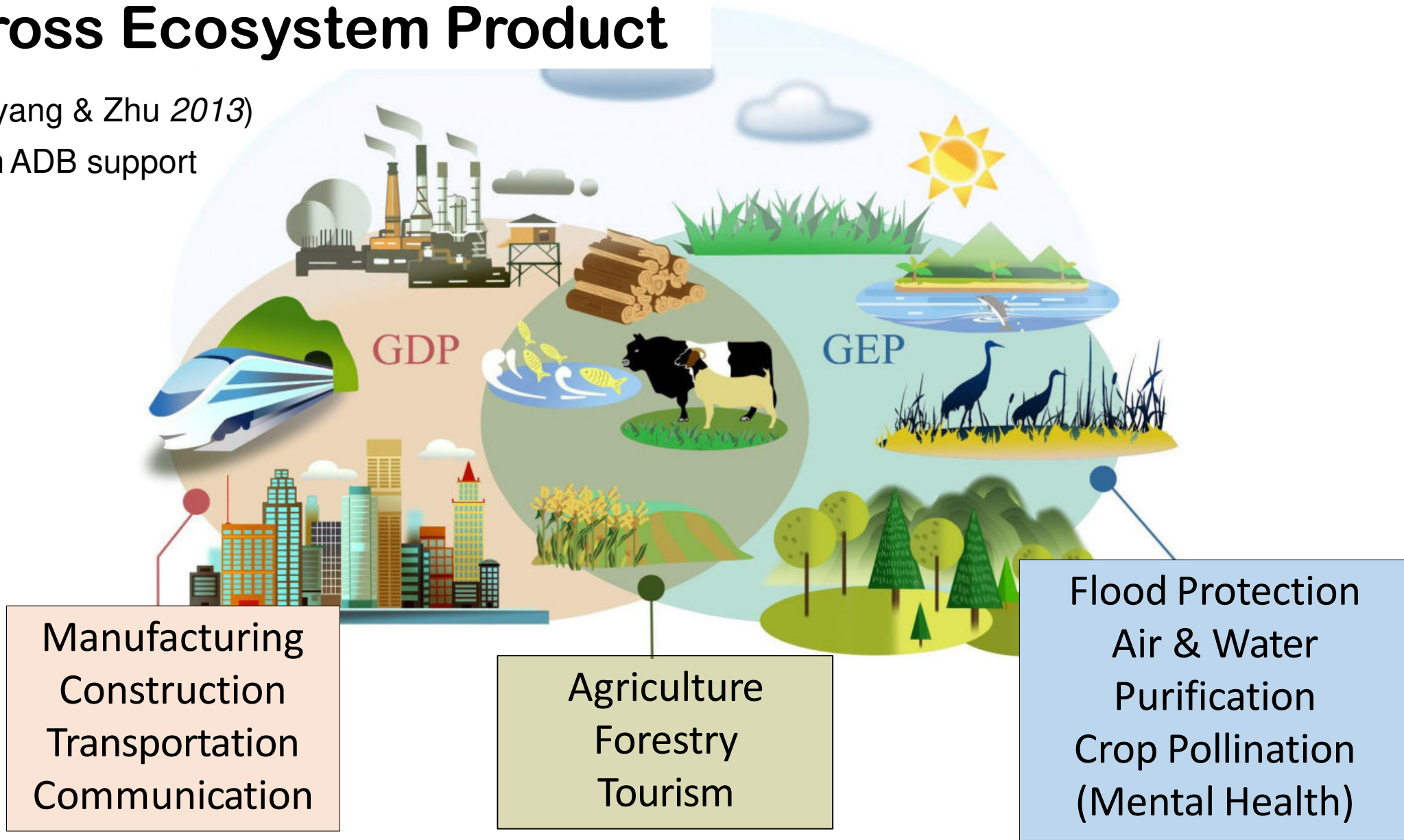
## To harmonize nature and people in China

- ✧ President Xi put forward the vision “**Clear water and green mountains are gold and silver mountains**”, to give prominence to nature’s value for people
- ✧ This involves:
  1. **Integration of ecological benefits** into criteria for performance evaluation of local governments
  2. Establishment of **eco-compensation policy & investment mechanisms** based on ecosystem services
  3. Establishment of a **natural capital accounting system** to support 1 & 2

# Gross Ecosystem Product

(Ouyang & Zhu 2013)

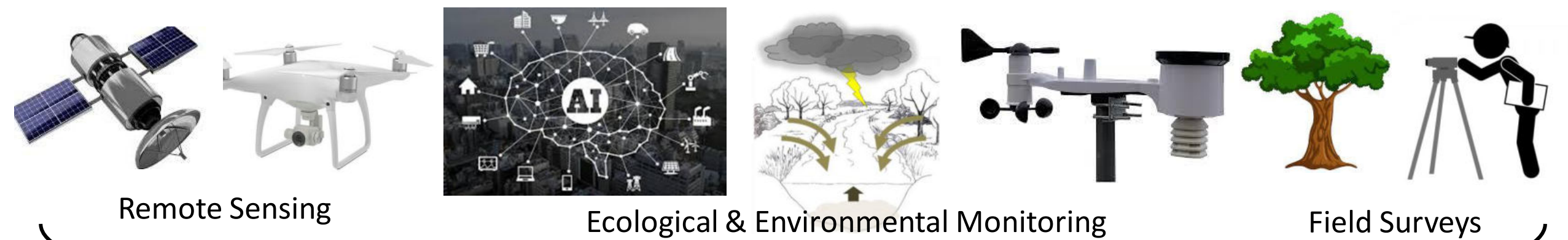
With ADB support





# GEP accounting framework





**Step 1:**

Data collection



**InVEST**

**Step 2:**

**Natural Capital Accounting**  
Valuation of ecosystem goods and services

**Where?**



**Step 3:**

**Beneficiaries: local, regional, global**

**To whom?**



**Step 4:**

**GEP: Nature's contribution to people**

**How much?**



# GEP Adoption Globally



**Colombia**

**Sri Lanka**



**Mongolia**

**More countries  
with support  
from ADB,  
IDB, ... GEF**

# Private Financial Institutions: Pipeline in development

High-resolution  
satellite imagery



Corporate asset locations

**S&P Global**

Corporate  
asset  
footprints



NatCap  
global  
data &  
algorithms  
(open  
source)

natural  
capital  
PROJECT

Environmental  
impact & risk  
metrics



# Financial Sector Leadership

## CAPITALIZE ON MOMENTUM FOR MAINSTREAMING TARGET INVESTMENTS

- Using new data & science in compelling demonstrations
- Integrating across multiple biophysical, economic & social benefits

## SCALE & ACCELERATE REGENERATION



# Thank You!

#RDFS2022

