



**公共政策与管理学院**

School of Public Policy and Administration



**西安交通大学**  
XI'AN JIAOTONG UNIVERSITY

# **Conservation and Development Policies and Human Wellbeing in West China: A Case in South Shaanxi**

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**On behalf of**

**Xi'an Jiaotong University:** Shuzhuo Li, Jie Li, Cong Li, Weihong Zeng, etc.

**Chinese Academy of Sciences:** Zhiyun Ouyang, Hua Zheng, etc.

**Stanford University and Natural Capital Project:** Gretchen Daily, Marcus Feldman,  
Mary Ruckelshaus, etc.

**University of Minnesota:** Stephen Polasky, etc.

# Outline

◆ **Background**

◆ **Framework**

◆ **Major Work**

◆ **Summary**

# Progress in China

- **Concept changed:**

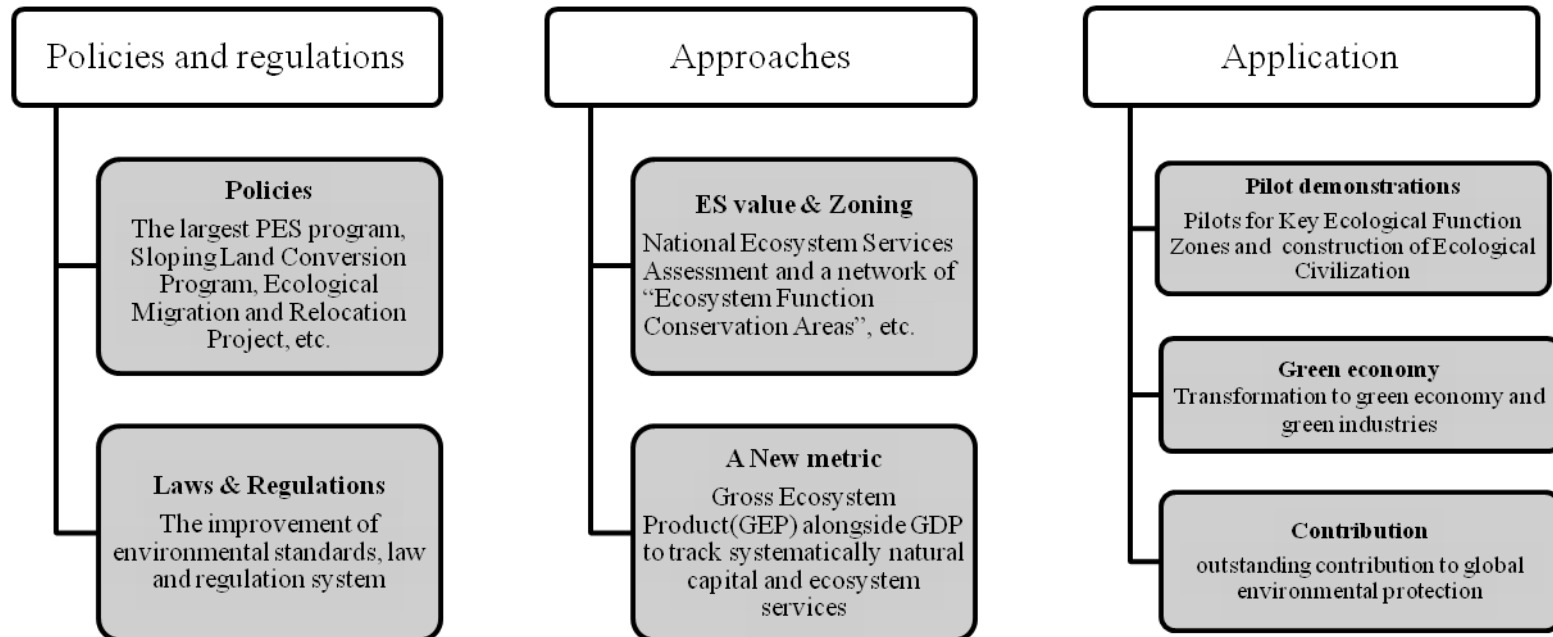
Pollution First, Treatment Later before 21<sup>st</sup> C

→ Sustainable Development Strategy in 2002

→ Scientific Outlook on Development in 2003

→ Ecological Civilization in 2007

- **Major progress to secure nature and HWB:**



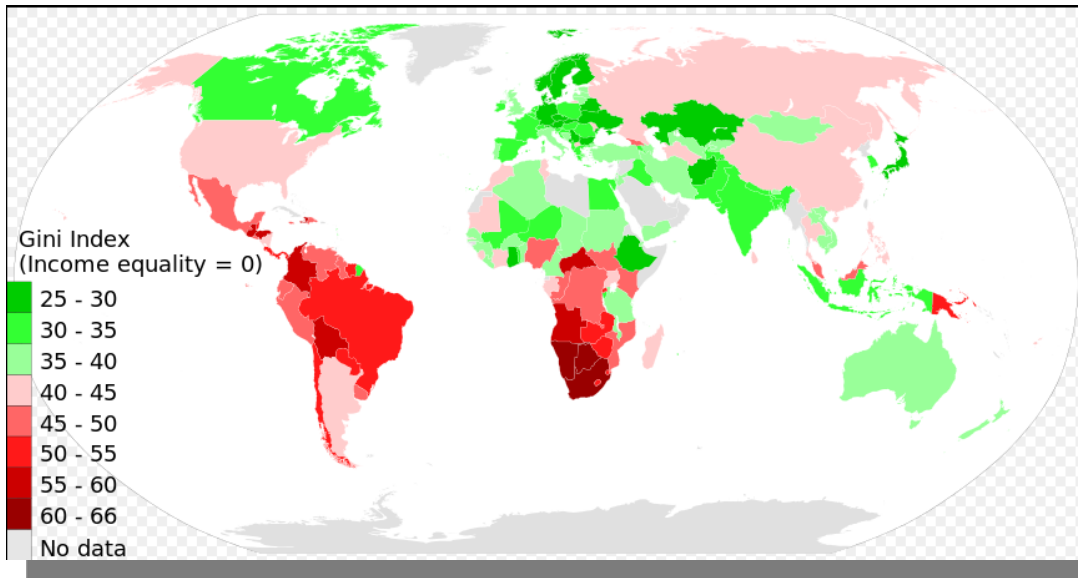


Fig. 1 2014 World Map of World Bank Gini Coefficient

## Large Income Gap between Rich and Poor



## Severe Poverty Problem

**Declined poverty rate:** 8.5% by 2013;

**Large poor population:**

- 200M (International Poverty Line: \$1.25 per day);
- 82M (Chinese Poverty Line: ¥6.3 per day);

**Concentrated poverty:**

- 14 poverty-stricken areas,
- 832 poor counties,
- 129 T villages

(1<sup>st</sup> 10-17Forum Shared Prosperity through Poverty Alleviation, 2014)

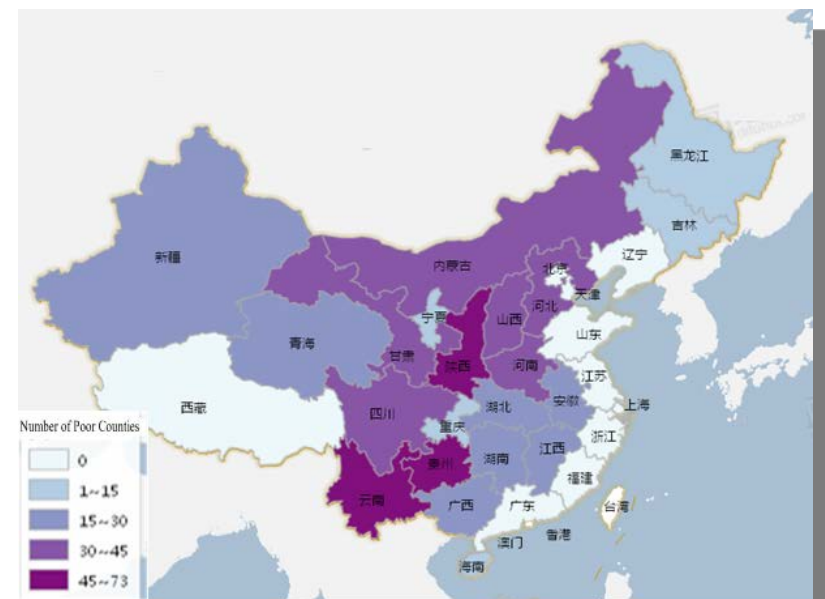


Fig. 2 Distribution of Poor Counties in China

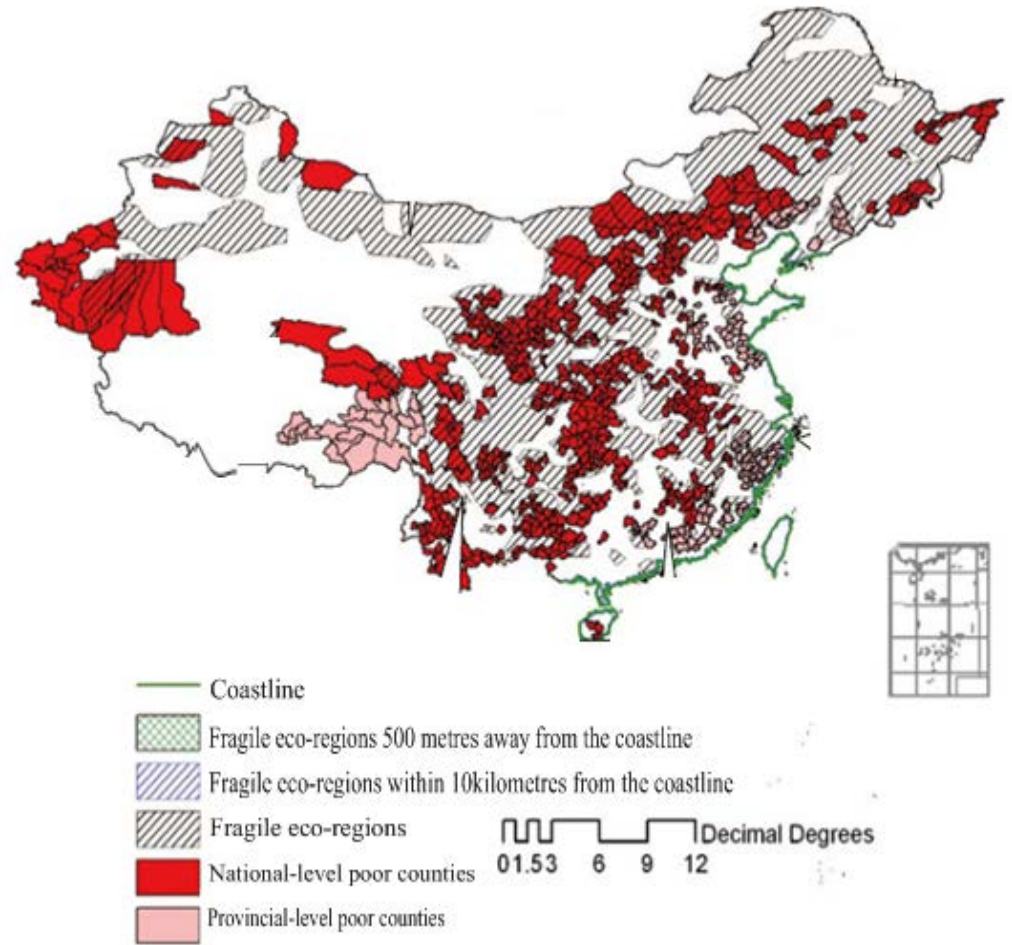
(2012 List of Counties of Key National Anti-poverty & Development)

# Poverty-stricken Areas Coupled with Fragile Ecology

## Areas with Dual Poverty poor economy and poor ecology

Over 95% of people in absolute poverty live in extremely fragile ecological areas.

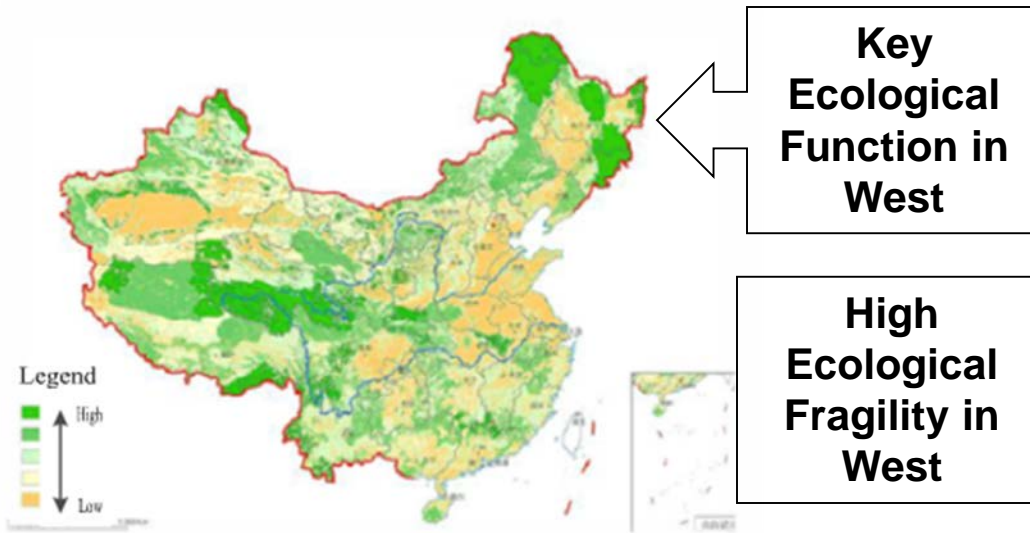
(Planning of National Fragile Eco-region Protection, Ministry of Environmental Protection, 2008 )



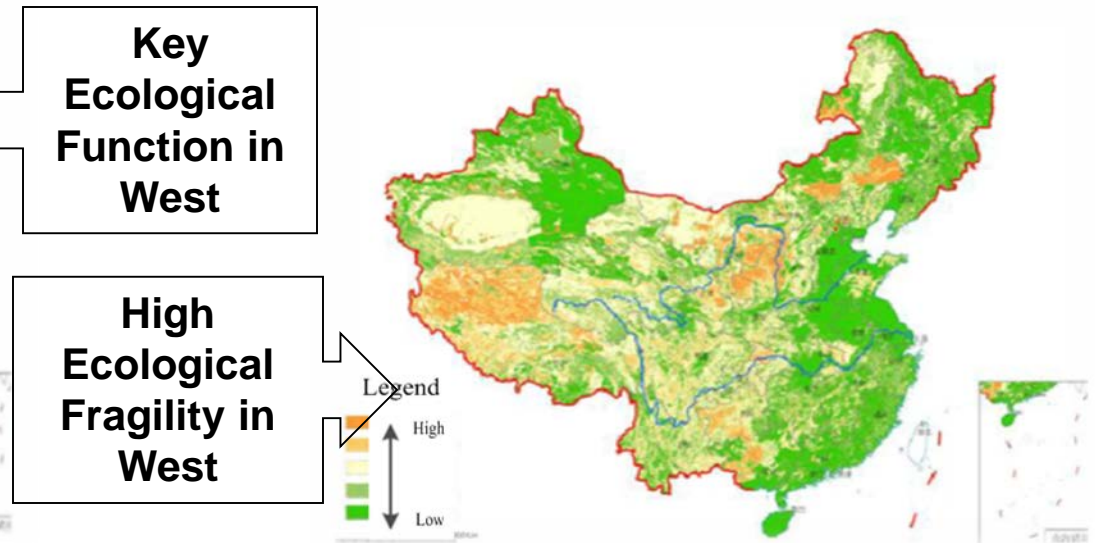
**Fig. 3 Distribution of Fragile Ecological Areas and Poverty Counties**

(Yuquan Tong, Hualou Long. China Population Resources and Environment, 2003)

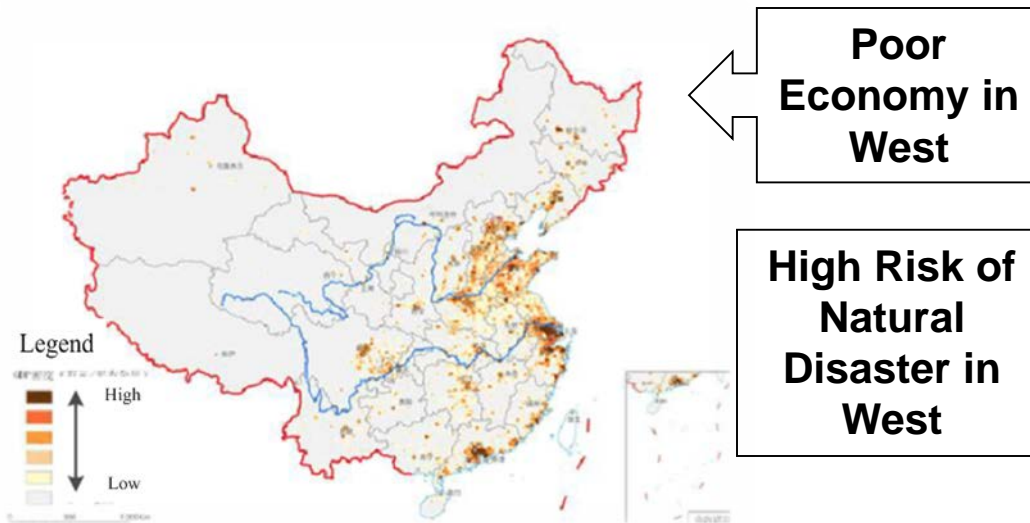




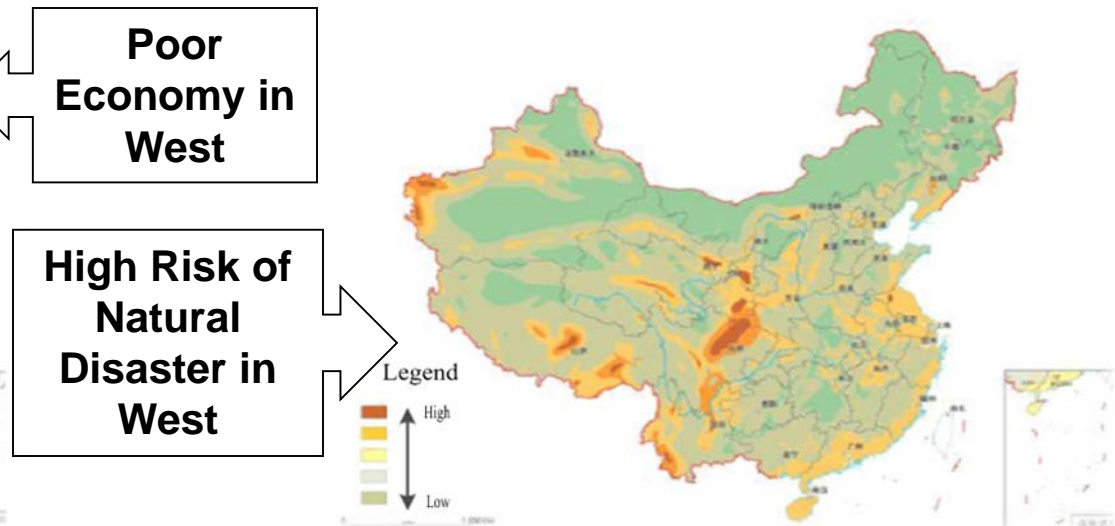
**Fig. 4 Importance of Ecological Function**



**Fig. 5 Ecological Fragility Evaluation**



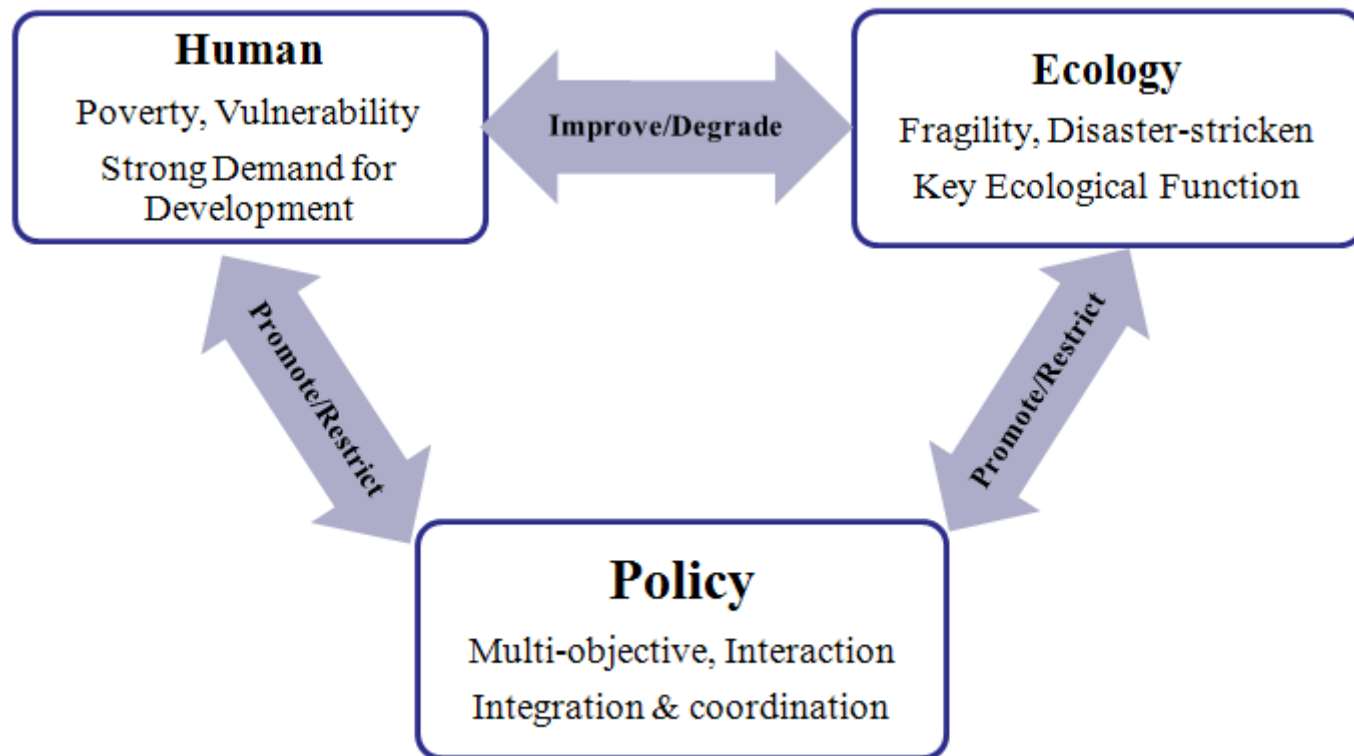
**Fig. 6 Average Level of Regional GDP**



**Fig.7 Risk Evaluation of Natural Disaster**

# Features and Challenges in West China

Western China is most critical area for development and conservation policies



# Challenges in West China

In the progress of development,

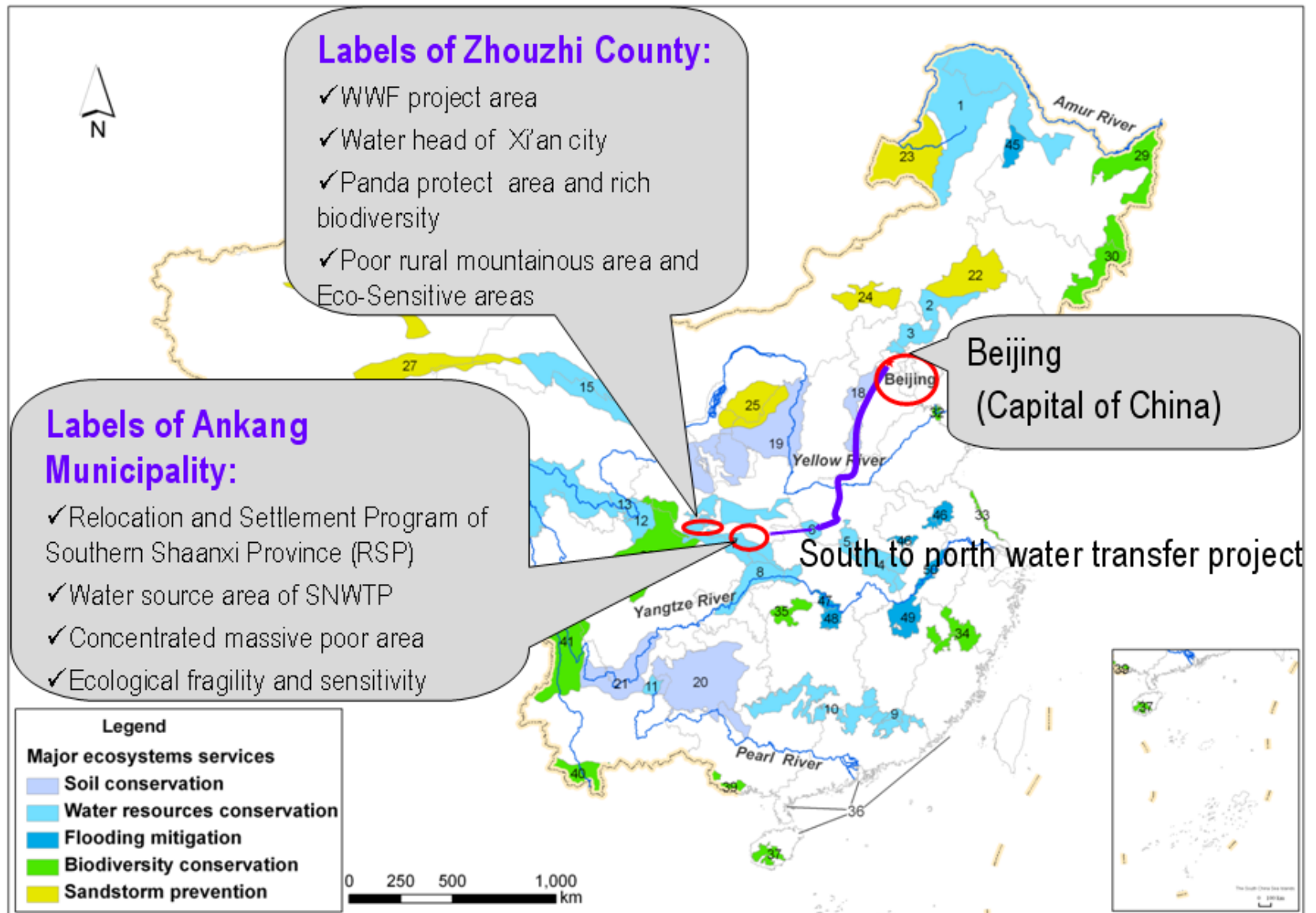
Policies to Harmonize Human and Nature?

Esp. for Western China with vulnerability from ecology,  
economy and human

Esp. for the disadvantaged, the poor and the elderly



# Demonstration Site: Ankang



# Typical features of South Shaanxi

## Ecosystem Service

- Fragile Eco-region, National Nature Reserves, Nature Reserves for Giant Pandas, TNC, WWF
- Water source of South to North Water Transfer Project (SNWTP);
- Pilot demonstrations for National Major Function Zoning and Ecological Civilization Development

## Development

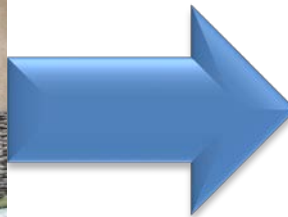
- PES programs、ICDPs、Anti-poverty policies, etc.
- Relocation and Settlement Program of Southern Shaanxi Province (RSP) for ecological restoration, poverty reduction, disaster, infrastructure
- Pilots for national development and reform, etc.

## Human Well-being

- Natural resource-based livelihood, poor conditions for production and living, etc.
- Concentrated poverty-stricken areas

# Relocation and Settlement Program of South Shaanxi Province (RSP)

- 10-year project from 2011-2020
- 2.4 million people from 0.6 million HHs in 28 counties of 3 Municipalities  
(Ankang Municipality: 880 thousand people of 226 thousand HHs)
- About ¥ 100 Billion investment totally
- Three steps
  - Moving out
  - Settling down
  - Living sustainably



# Metrics

## Livelihoods and Human well-being

- Questionnaire surveys
- Focus group discussions
- Individual in-depth interviews

### Econometric Model



- Ecosystem service Hydrologic Survey

### InVEST Model





# Our Challenges

- From reality,

How policies for ecological conservation affect human?

How to integrate human and ES for development?

How to care about the disadvantaged?

- From science:

How to relate the ES at macro level to HWB at micro level?

How to implement policies and institutions effectively for households and individuals.

How to convert academic achievements into effective policy interventions

# Our Objective

General objective:

## Build A West China Model?

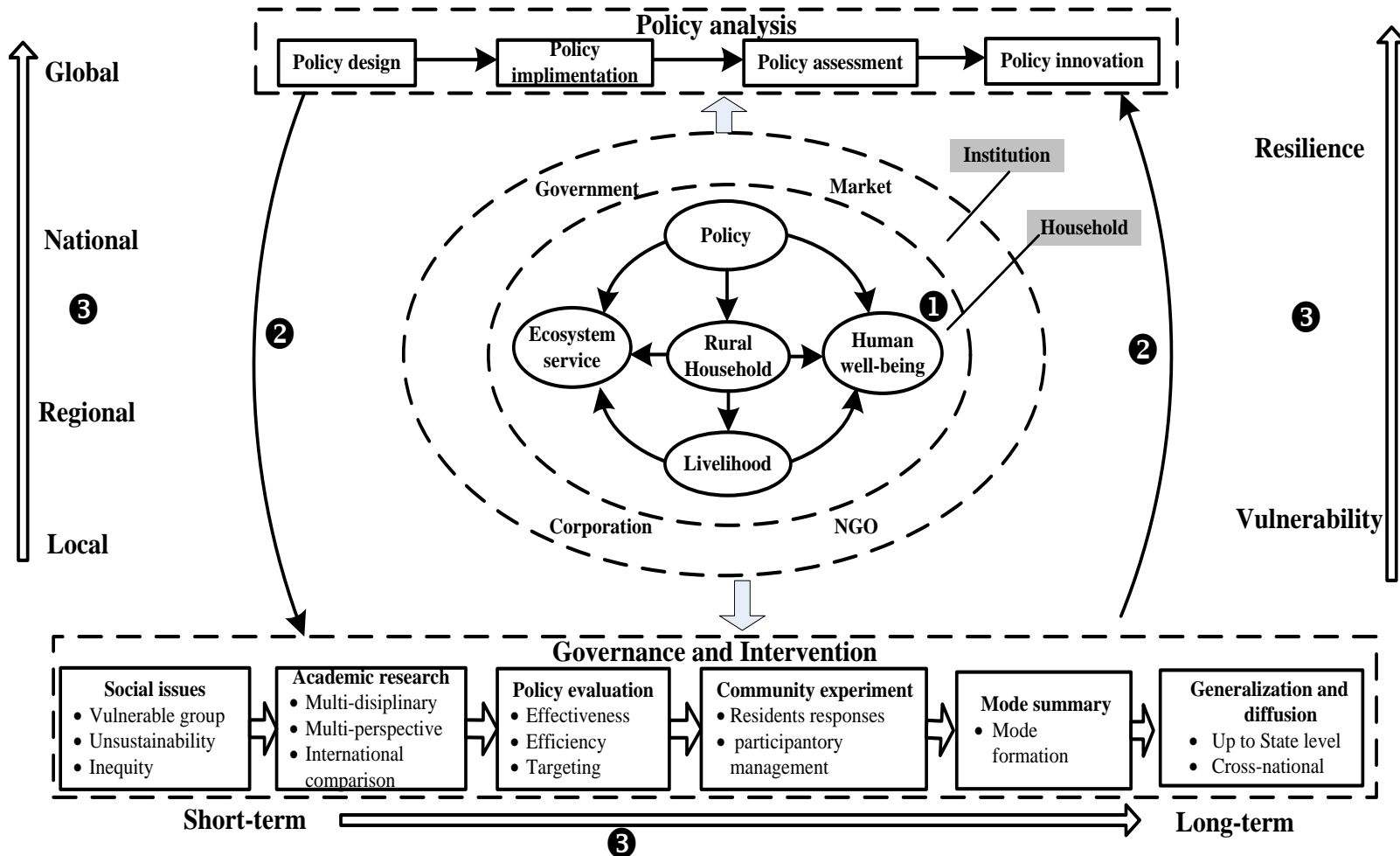
- for effective integration of ES and HWB by policy instruments in line with innovations of the Natural Capital Project.

Sub-objectives:

- Advancing science-based and practical tools
- Applying the tools in Western China
- Building and scaling of the model



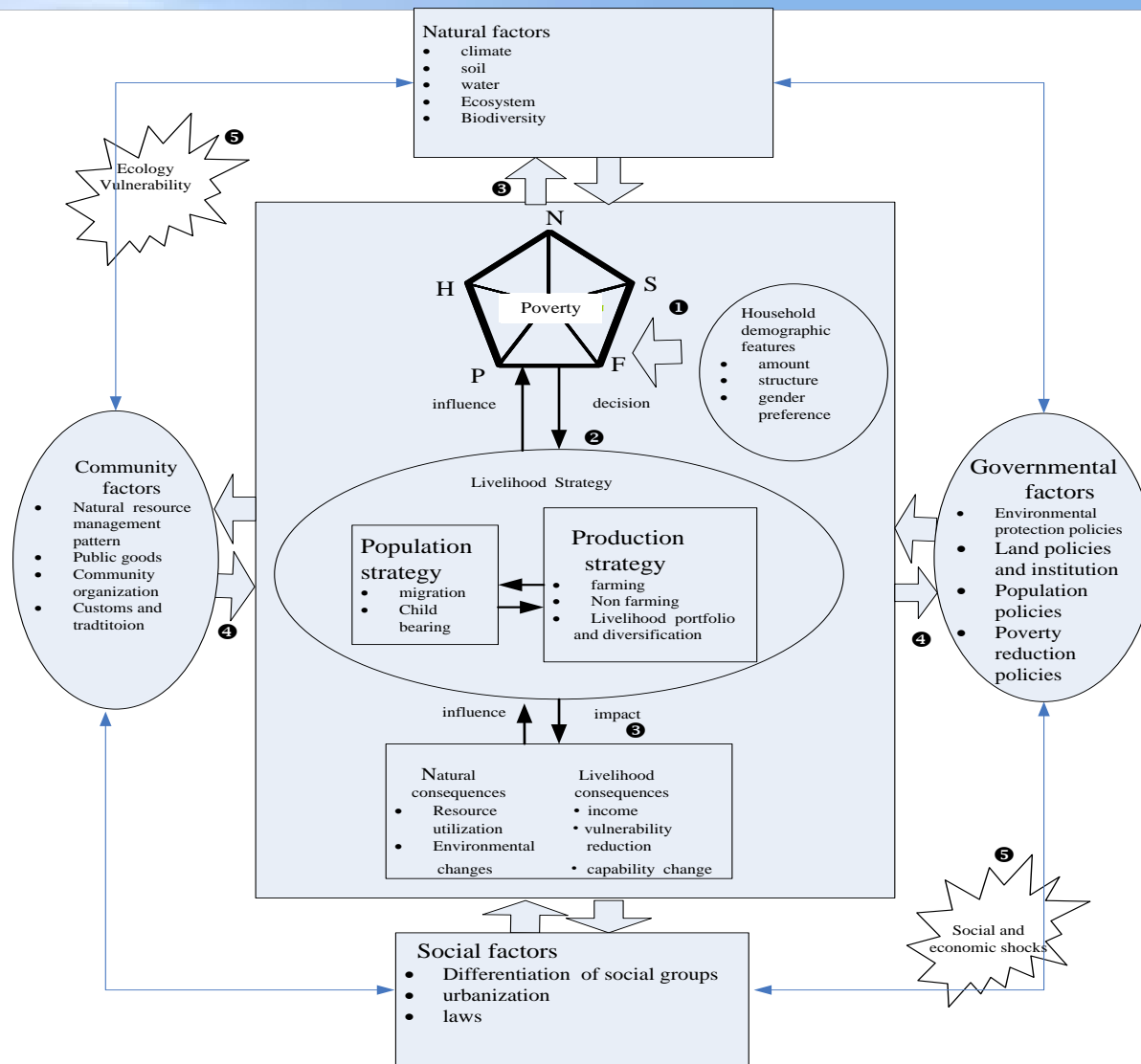
# Framework



## A General Framework to present

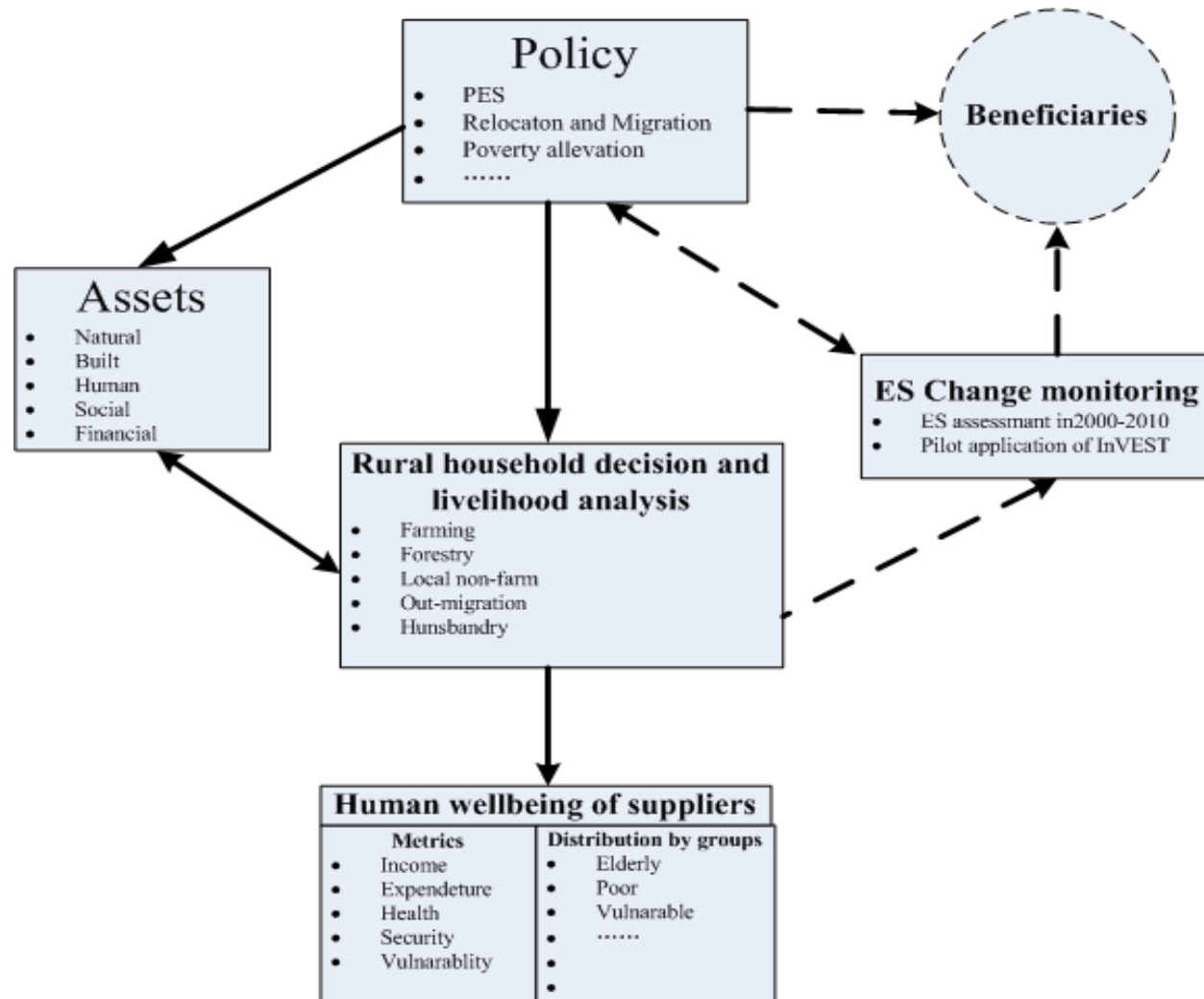
- ① The relationships among multiple governance subjects
- ② Mechanism of policy impact on ES and HWB
- ③ Multi-level aims and requirements

# Research Frameworks



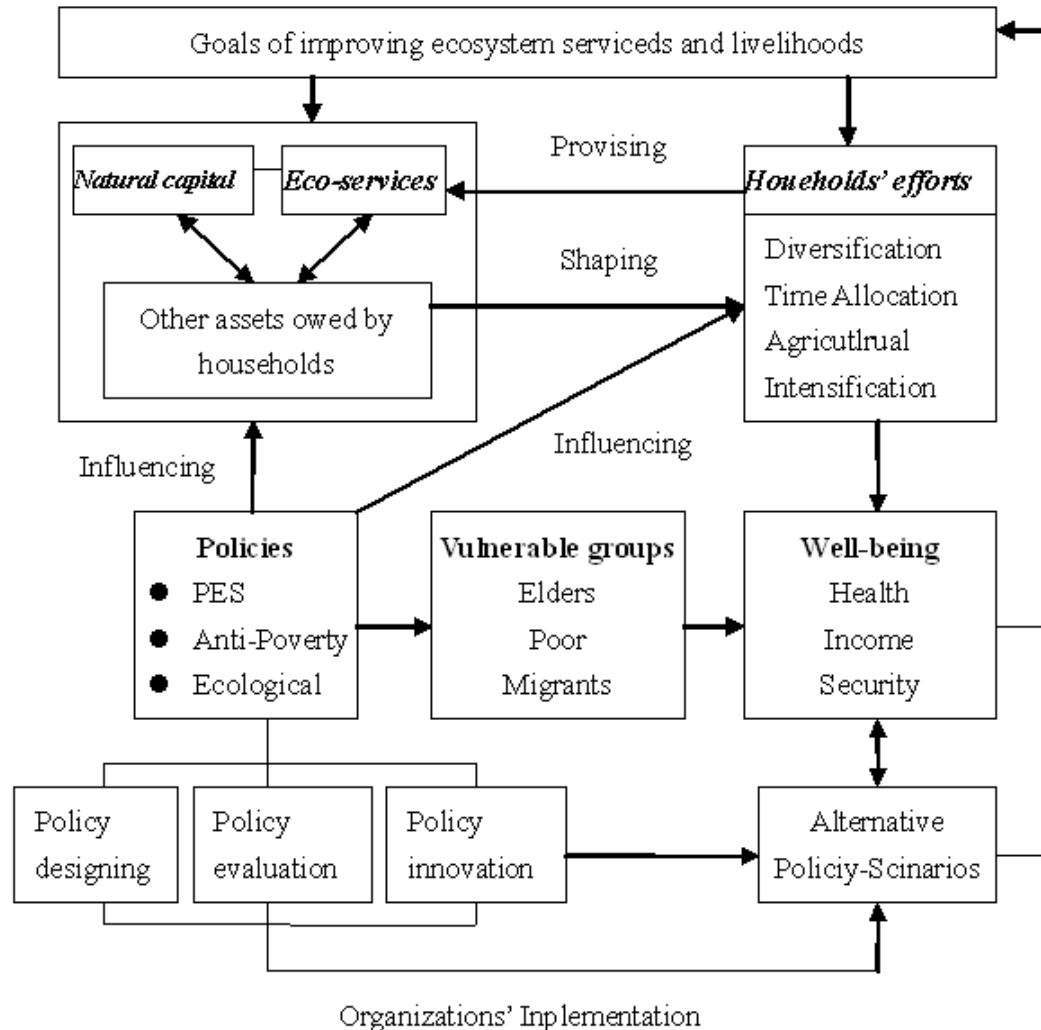
**Research Framework (1) presents the mechanism of rural household livelihood.**

# Research Frameworks



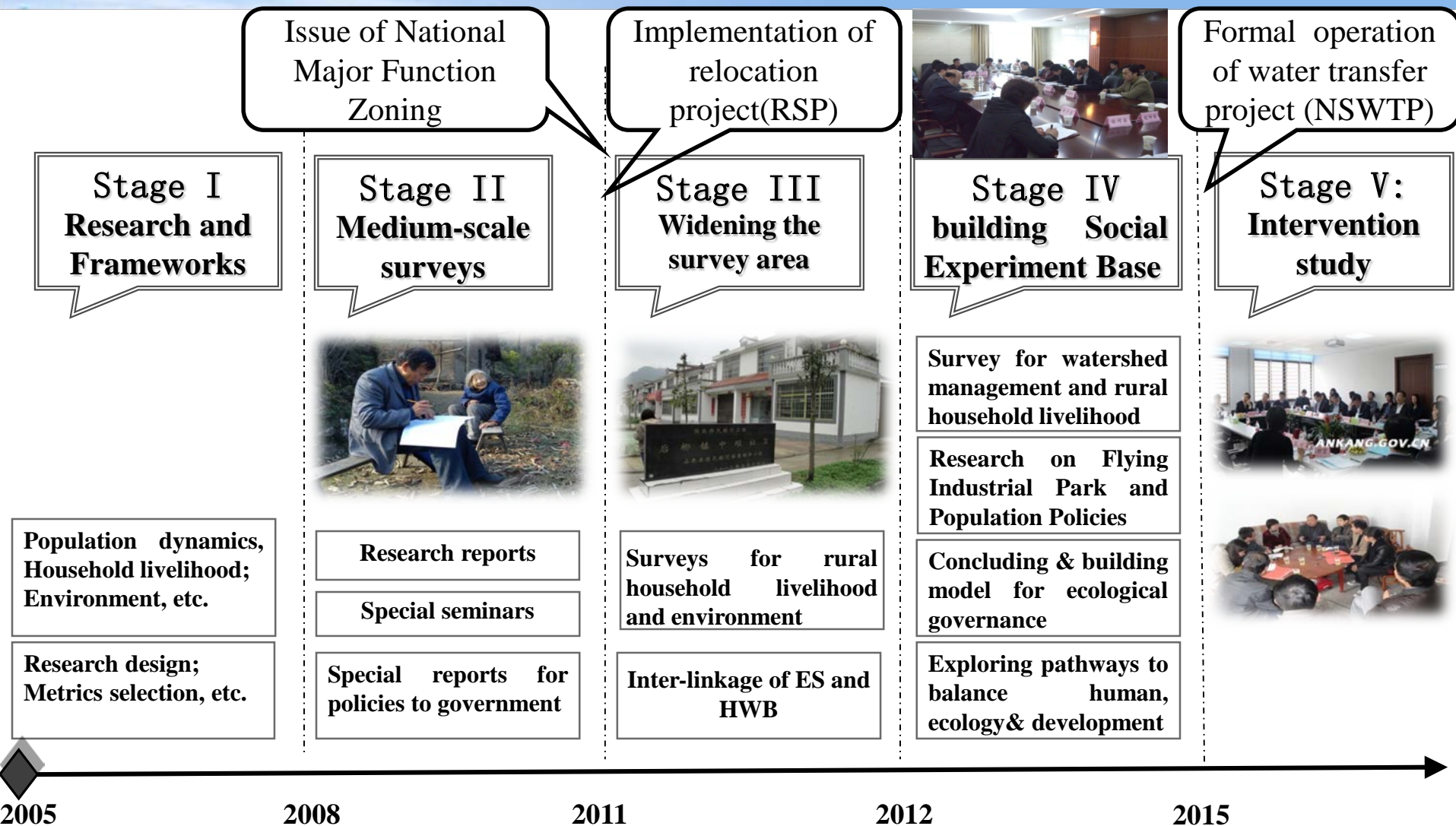
**Research Framework (2) presents the importance of rural household decision and livelihood.**

# Research Frameworks



**Research Framework (3) is for analyzing interactions between rural household livelihood and ES under various policies.**

# Major Work



From sub-project of Natural Capital Project to Social Experiment Base

# Academic Research Cases

## Case I

- Ecological Conservation and Rural Development

## Case II

- Links between Development, Economy and Ecology

## Case III

- The Disadvantaged: Wellbeing of the elderly in Relocation Project



# Case I: Rural Household Income and Inequality under the Sloping Land Conversion Program

SLCP, as the largest PES program implemented in the poor mountainous areas for the longest time, may be the key policy mechanism for aligning individual economic incentives with protection and restoration of natural capital.

**Question:** Can SLCP improve rural household and foster transitions to livelihoods that are sustainable in the long term?

**Objective:** Assess the impacts of SLCP on rural household income, income distributions, and the Gini decomposition from different income sources.

**Methods:** Survey data on rural households' livelihoods in southern mountain area in Zhouzhi County; Statistical analysis; Econometric models; Gini decomposition

# Case I: Findings

## SLCP's Impacts on

- **Income:**

positive; but different at different income levels

- **Livelihood transition:**

not increased the transfer of labor toward non-farm activities

- **Inequality:**

income inequality is less among the participating households than non-participating ones

# Case I: Significance

- Evaluate the PES program's effects on rural households' income and equality.
- Provide evidence that the PES program can improve rural household income and decrease income equality.
- Policy is the possible pathway to harmonize environmental conservation with human development

*Jie Li, Marcus Feldman, Shuzhuo Li, Gretchen C. Daily, Rural household income and inequality under the Sloping Land Conversion Program in western China, Proceedings of the National Academy of Sciences of the United States of America , 2011, 108(19):7722-7726.*

# Case II: Impacts of Conservation and Human Development Policy Across Stakeholders and Scales

Innovative policies are tried by governments in China to secure ES and HWB. Thus, policy evaluation from ES and HWB perspective is the key to see whether multi-goal and multi-win can be achieved.

## ***Question:***

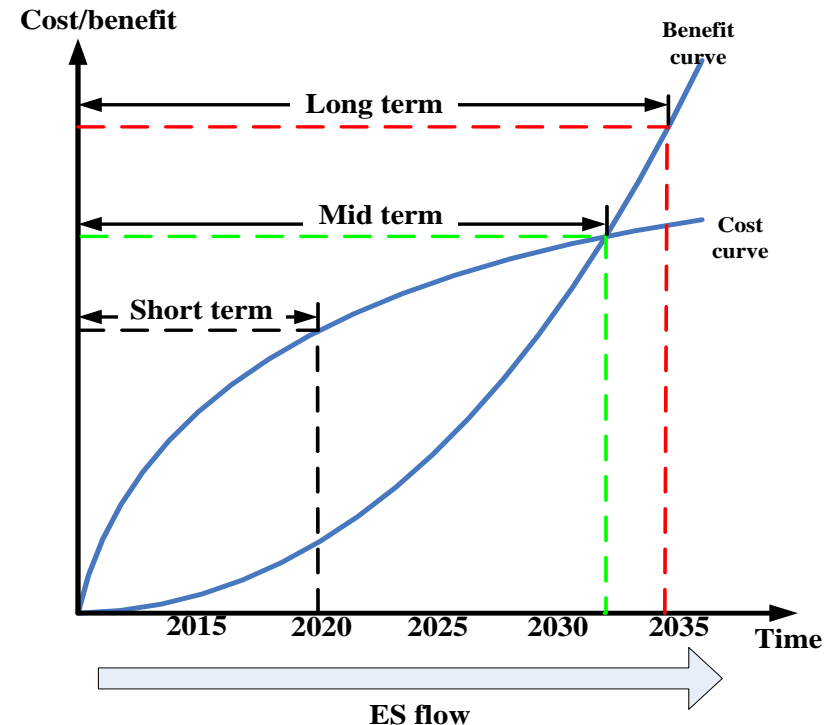
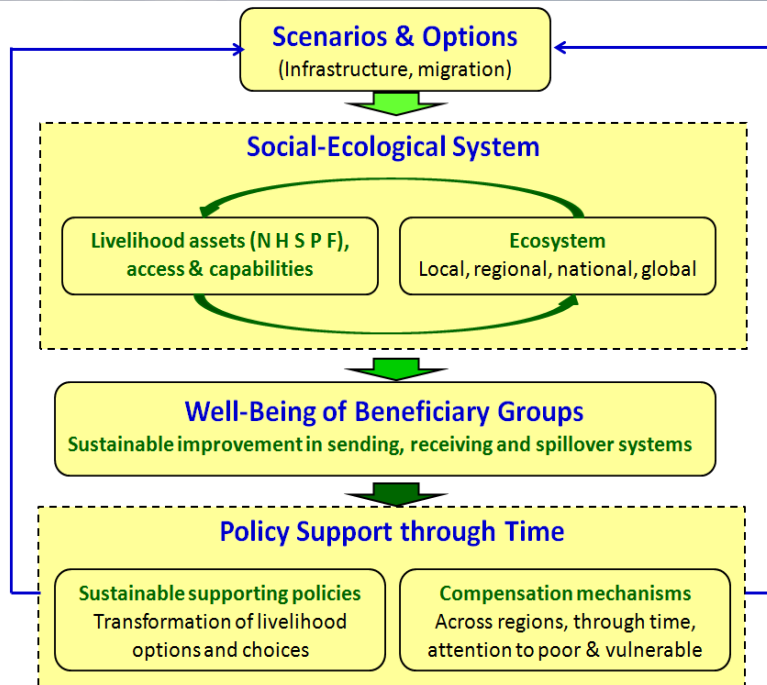
- Can these policies reach the expected goals? What's the impact on ES and HWB? The benefits and losses.
- Whether and how to design or improve the policy to achieve the multi-goal and multi-win?

***Objective:*** Integrating ES and HWB through policy evaluation and explore its mechanism and pathways.

- Quantify the effects of these programs on ES and
- Integrate ES and HWB into policies/program assessment

***Methods:*** Taking Relocation and Settlement Program of Southern Shaanxi Province as an example, analyze costs and benefits to multiple stakeholders from multi-scale to test the policy sustainability.

# Case II: Framework and Findings



- **Rural household:** Short-run costs is far outweigh benefits.
- **Regional level:** Providing nutrient retention and erosion control for the water-receiving areas.
- **Global level:** Contribution to carbon sequestration.

# Case II: Significance

- Understanding costs and benefits to multiple stakeholders and how they change through time;
- Integrating ES and HWB into policy assessment;
- Exploring coupling mechanism of rural household livelihood and ES flow;
- Exploring the rural household livelihood's impact mechanism on ES from micro-perspective;
- Support paths for policy assessment;
- Evidence and reference for policy design and improvement.

*Cong Li, et al. Impacts of Conservation and Human Development Policy Across Stakeholders and Scales, Proceedings of the National Academy of Sciences of the United States of America, under review.*



# Case III: Mass Relocation and Depression among the Elderly in West China

## *Questions:*

- How does the mass relocation effect the psychological well-being for elderly involved in?
- Is there any difference of influences to the depression of elderly due to the different types of relocation?
- Is there any favorable choice for the types of resettlement?

## *Objectives:*

- Compare migrants with non-migrants to investigate the correlation between relocation and depression for elderly.
- Consider that relocation associates with losses of social support (emotional, instrumental, financial), and to consider if the gap in depression between migrants and non-migrants.
- Examine whether the reason for migration influences the difference between migrants and non-migrants.
- Examine whether differences in resettlement patterns among migrants have implications for their levels of depression.

*Methods:* The stress process model (SPM)

# Case III: Findings (1)

- Migrants have higher levels of depression than non-migrants.
- Social support does not mediate the relationship between relocation and depression. Social support has significant effects, but it does not explain much of the gap between migrants and non-migrants.
- Especially, migrants who were relocated because of ecological conservation have significantly higher levels of depression than non-migrants.

## Case III: Findings (2)

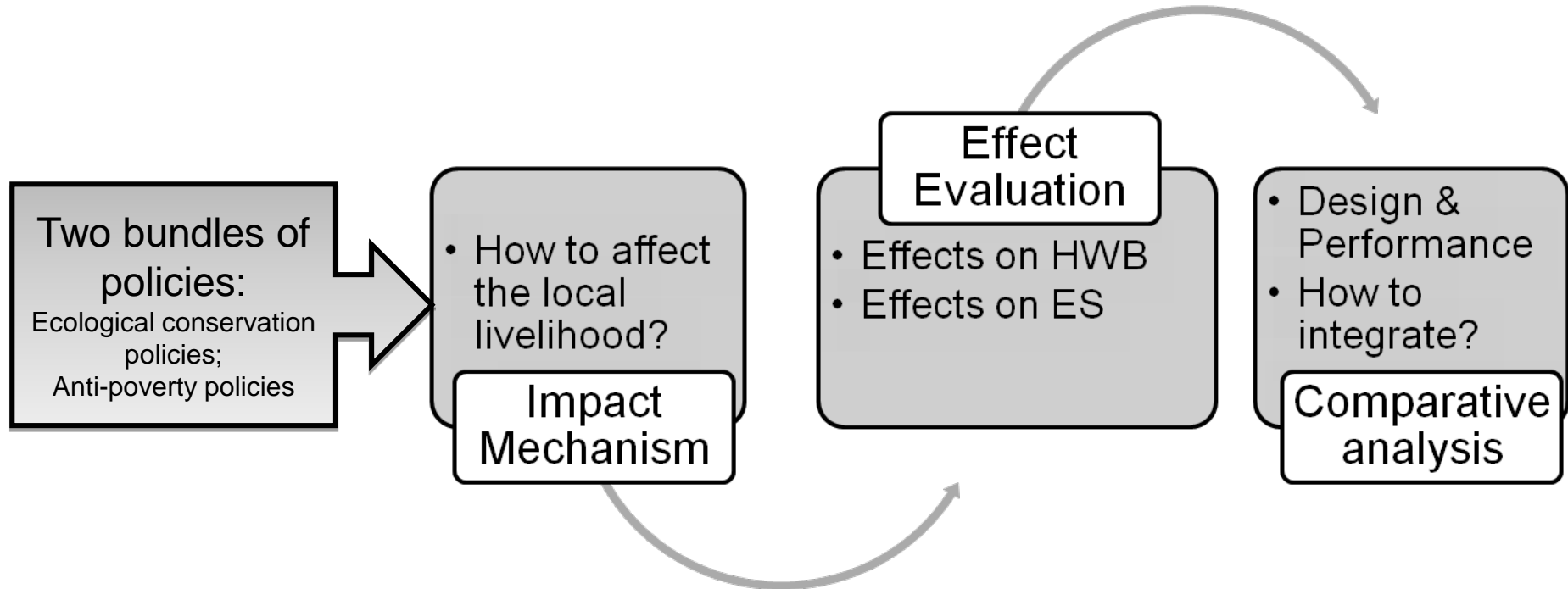
We compared five categories of relocation, including: centralized, scattered, township/urban, self-determined, and other.

- In comparison to self-determined place of migration, migrants from all other relocation categories have higher levels of depression.

## Case III: Significance

- examined the correlation between relocation and depression for older Chinese people.
- our focus on all reasons for migration adds breadth to these findings.
- provided new insights about the consequences of relocation for the elderly
- losses of social support are not the primary explanation for the gap in depression between elderly migrants and non-migrants.

# Policy Studies



# Main Findings and Suggestions

## Impact mechanism

- Various factors mattered when the policies affected household livelihood,
- e.g. household composition, market constraints, population dynamics, etc.

Suggestions for targeting of policies, esp. the anti-poverty programs aiming at different types of rural poverty, etc.

## Effect evaluation

- Policy consequences were tangled and integration is needed.
- High vulnerability to poverty, especially the disadvantaged, etc.

Suggestions for financial and land policies to promote livelihood assets accessibility, etc.

## Comparative analysis

- Many differences between the ICDP, PES and poverty alleviation programs,
- Anti-poverty programs without explicit goals on conservation had indirect impacts on environment, etc.

Suggestions for design and implementation of policies to integrate conservation and development, etc.



# Work/Governance Model

## Governance Objective:

ES and HWB Win-win,  
Sustainable Development

## Governance Pathway:

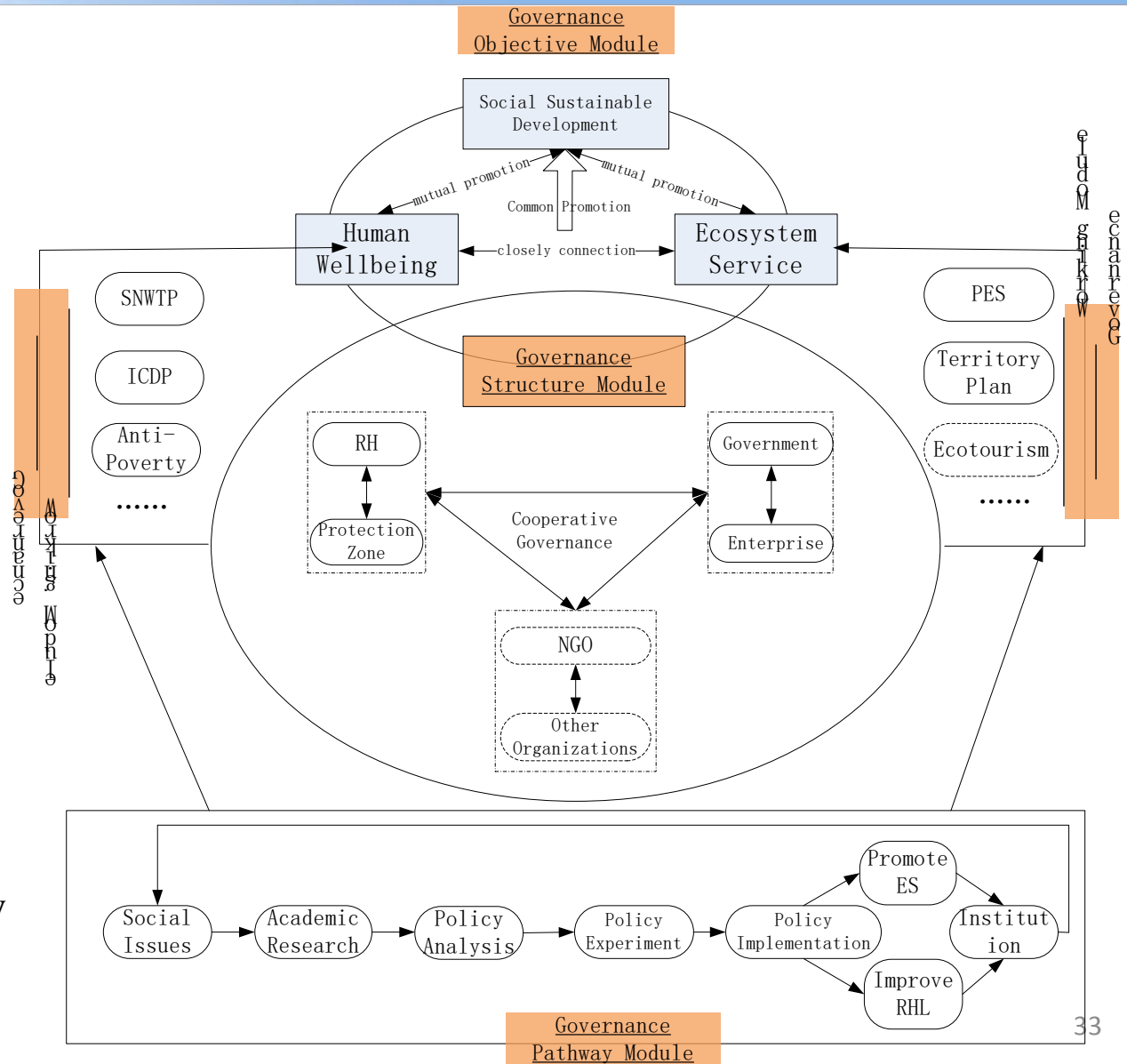
The wheel of the public  
policy innovation

## Governance Structure:

The multi-agent  
governance (Government,  
Enterprise, Rural  
Households, NGO etc.)

## Governance Work:

SNWTP, PES, Anti-Poverty  
etc.



# Conclusions/Reflections

- Human and nature can be harmonized in west China;
- In China, the eco-related development programs and policies are more effective to achieve dual goal than the direct conservation ones;
- Policy evaluation can bridge ES and HWB. Thus, proper interventions are effective and efficient ways to advance policy performance;
- Coordination of different stakeholders is of great necessity during design and evaluation with multi-goals in western China and also an effective way to protect nature through capital;

# Conclusions/Reflections

- Rural household-oriented livelihood and strategy are key to integrate ES and HWB in west China;
- Wellbeing of vulnerable people should be guaranteed;
- Governance and multi-win are crucial in ecological and development as multi-subject exists.
- Modernization of state governance system and governance capability, social governance system/approach
- InVEST model can be widely applied in west China

# Next Step Work

- **Different dimensions of human wellbeing**, e.g. vulnerability, poverty, health, etc. and **impact mechanisms** of all kinds of policies on rural household livelihood;
- Research on **policy interventions** in Social Experiment Base, submission of policy proposals, special reports, collecting their demands and responses, preparing for a large-scale survey;
- **Influencing policy design and adjustment** at provincial and national level, and **promoting Ankang Model** for Ecological Governance applied in the areas with similar problems and background;
- **Comparing** governance model in western China with other countries, and developing **international cooperation** with developing countries.



**THANK YOU**