GMS Core Environment Program Yunnan's Biodiversity Landscape & Livelihood Project Result Reports

# Results from Land-use Planning for the Nabanhe-Mangao Pilot Biodiversity Corridor



The Core Environment Program (CEP) supports the Greater Mekong Subregion (GMS) in delivering environmentally friendly economic growth. Anchored on the ADB-supported GMS Economic Cooperation Program, CEP promotes regional cooperation to improve development planning, safeguards, biodiversity conservation, and resilience to climate change – all of which are underpinned by building capacity. CEP is overseen by the environment ministries of the six GMS countries and implemented by the ADB-administered Environment Operations Center. Cofinancing is provided by ADB, the Global Environment Facility, the Government of Sweden, and the Nordic Development Fund.The Yunnan Environmental Protection Department (YEPD) is the focal agency for CEP implementation in Yunnan Province.


Yunnan Environmental Protection Department
www.ynepb.gov.cn

GREATER MEKONG SUBREGION
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# 1 Planning Background and Significance

In 2006, CEP and YEPD began establishing biodiversity conservation corridors in Xishuangbanna prefecture to protect and enhance habitat linkages between important protected areas. Since then pilot activities have included socioeconomic and biodiversity research, corridor and land-use planning, policy advocacy and legislation promotion, and integrated community conservation and livelihood development. A master plan was developed for eight biodiversity corridors to connect Xishuangbanna's six nature reserves. Two main corridors were determined in 2008: the Nabanhe-Mangao corridor and the Mengla-Shangyong corridor.

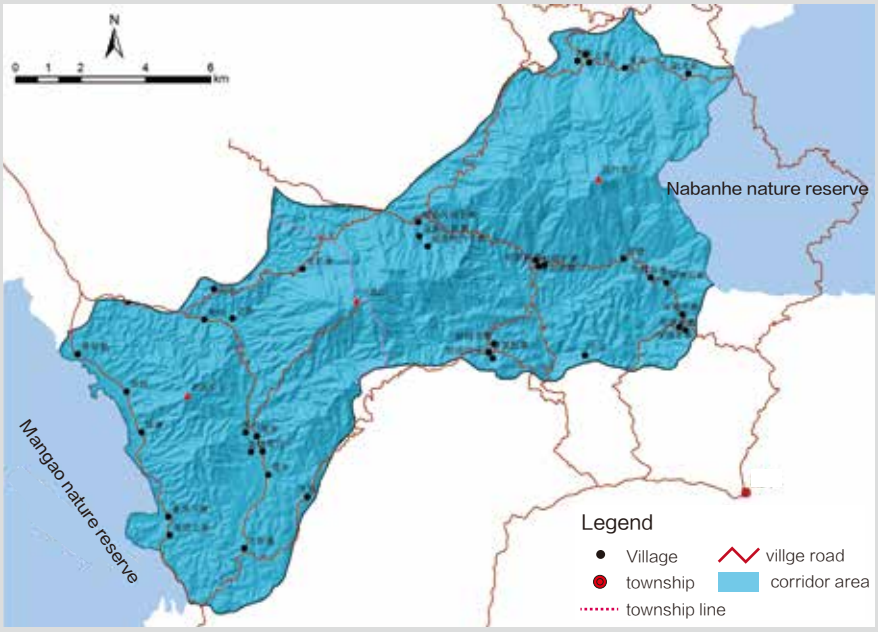
In 2014, the biodiversity-rich Nabanhe-Mangao corridor was selected as the pilot site for demonstrating the biodiversity conservation corridor construction approach. Within the 15,458 hectare Nabanhe-Mangao corridor, natural forests currently cover around 57% of the area while farming plus plantation forestry uses 41% of the land. The corridor is home to 40 villages, with a total population of 8944. In terms of land classification, 49% is of the corridor is designated as forest land (both natural and plantation), while drylands comprise 26.4%, and paddy farming and garden plots together total 32.6%.

To better ensure sustainable land use and management in the corridor, a land use plan was developed. Its aim is to guide the land use activities of local communities, restore and maintain natural habitat connectivity and biodiversity, promote sustainable use of natural resources, and balance conservation with livelihood development.

# 2 Area of the Plan

The plan encompasses the entire Nabanhe-Mangao biodiversity corridor which stretches northeast to southwest and crosses Mengsong township and Menghai County. The corridor connects the Mangao Sub-reserve of the Xishuangbanna National Nature Reserve and the Nabanhe National Nature Reserve.

Nanbanhe–Mangao Corridor Location Map




# 3 Planning Contents

1. Analyze the type and spatial distribution of ecological factors, ecological sensitivity and ecological service capability;

2. Propose a zoning scheme for management and control of ecological functions;

3. Propose land-use classification and zoning control rules in the corridor area;

4. Determine an overall land use plan for the corridor and monitoring indicators;

5. Propose key implementation steps.

# 4 The Evaluation Conclusion for Current Land Use

- Around 80% of the corridor land area has some form of human utilization, but overall the productivity and intensity of land use is low.
- Within the corridor, around 64% of agriculture land is on sloping areas and most of the natural forests are concentrated in high-altitude areas and is quite degraded due to tea plantations. As a result of forest degradation and agriculture, erosion is a major issue in steeper areas with landslides and debris flows frequently occurring after heavy rainfall.
- Illegal farming on steep slopes (forbidden over 25°) as well as illegal deforestation and encroachment often occur in the corridor. Land use management needs to be enhanced to address these issues.

# 5 The Evaluation Conclusion for Ecologic Service Function

The natural forests distributing in the zone of Huazhuliangzi, Huopan Mountain, Wengnan and Mangun Back Mountain take around 48.1% of the corridor area, these sections are the main habitat area for flagship species such as the Gaur and are very important for biodiversity conservation.

At the same time, the slopes in these sections generally >25° and are very important to maintaining the water supply in local and surrounding areas and controlling soil erosion.

# 6 Corridor Area Eco-function Zoning

Based on the"Ecological Function Zoning of Yunnan Province"and"Ecological Construction Plan of Menghai County", the corridor zoning plan subdivides the corridor area into three ecological zones. These are determined by criteria including ecosystem types and main services, ecological function, ecological sensitivity and particular ecological problems.

The three zones are called the biodiversity maintenance zone, the water and soil conservation zone, and the human residence zone.

## Eco-function Zones in the Biodiversity Conservation Corridor

| Eco-function Zones | Main Ecological Features | Main Ecological Problems | Eco-environmental Sensitivity | Dominant Eco-service Function | Eco Zoning & Conservation and Development Direction | Area & Percentage |
|---|---|---|---|---|---|---|
| Biodiversity Maintenance Zone | Medium & low mountainous natural vegetation cover areas of monsoon evergreen broad-leaved forest, mossy evergreen broad-leaved forest, warm deciduous broad-leaved forest, warm hot pine forest | Natural landscape fragmentation and natural resources destruction caused by poor land-use | Highly sensitive habitat | Biodiversity conservation, water conservation, soil conservation, non-wood products production | Prohibited development area; Enforce protection and ban development, closed for conservation, artificial afforestation | 9784ha (63%) |
| Water & Soil Conservation Zone | Mountain garden land and dryland farming area above 25° slope | Common steep slope cultivation and serious soil erosion | Poor water conservation capacity and high propensity for soil erosion | Bamboo timber and tea production; water & soil conservation | Optimized development area; Return farmland to forest Eco-forest & Eco-agriculture Forbid farming on steep slope. | 3994ha (26%) |
| Human Residence Zone | Gentle-slope valley dryland and water farming area mainly on grain, sugar, tea, livestock and poultry | Drought and scarcity of water; serious soil erosion | Medium propensity for soil-erosion and serious non-point source pollution of chemical fertilizer and pesticide | Production of grain, oil, vegetables, livestock and poultry products | Key development area; Eco-forestry & eco-agriculture, Eco tourism | 1679ha (11%) |

# 7 Land-use Adjustment Objectives

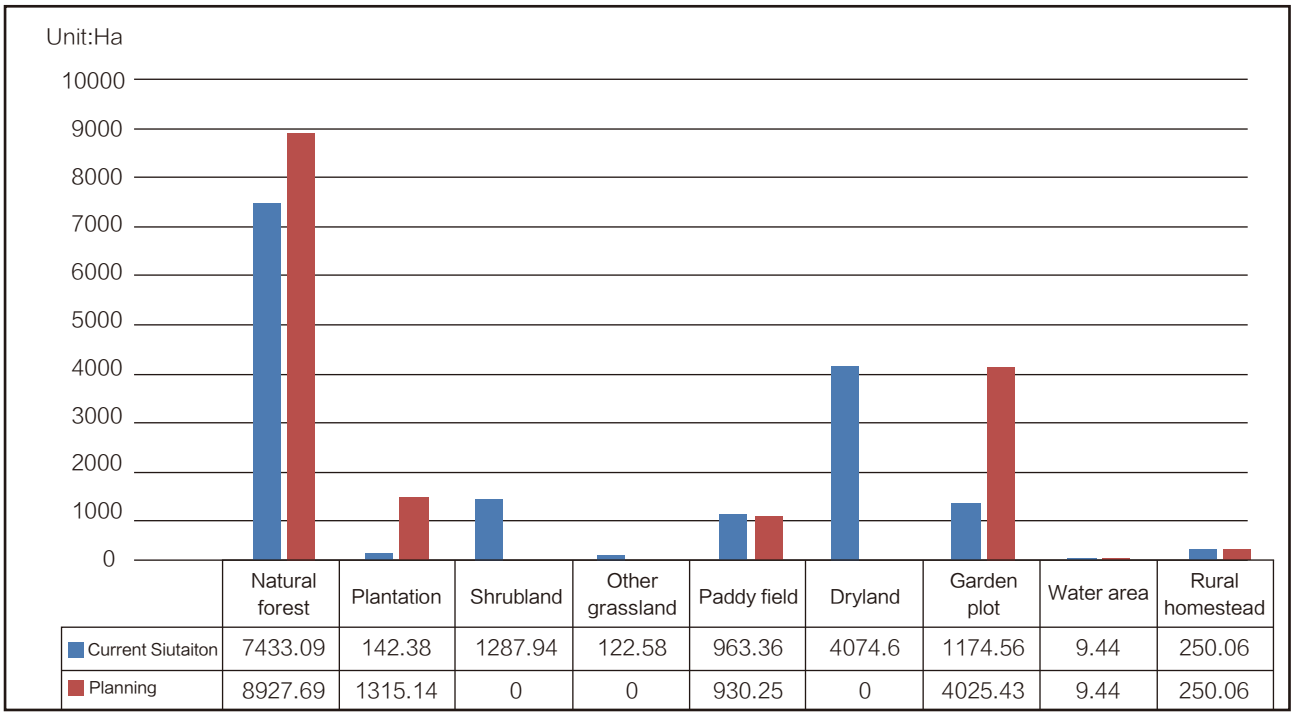
Land-use indicators for the corridor were proposed to guide the sector development plans and the corridor land-use plan. The ecological corridor's industrial development plan and land-use plan is based on (1) the condition of land resources and usage and existing problems (2) rules for classifying and allocating various ecological protection measures, (3) and planning objectives in the corridor area.

## Land-use zoning control objectives:

**(1)** Protect and enhance natural forests so that they cover 57.8% of the corridor land area (8,928 hectares).

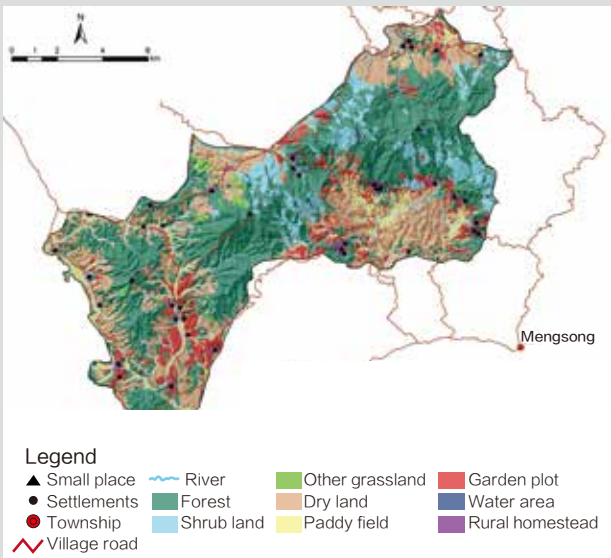
**(2)** Transform steep slope dry land and grassland, which occupies 31.7% of the corridor (4842 hectares), into natural forest, plantations, and gardens and improve land management to address soil erosion issues.

**(3)** Improve the ecological environment by increasing total forest coverage (natural forest and plantation) by 17% to 66% of the corridor area.




| | Natural forest | Plantation | Shrubland | Other grassland | Paddy field | Dryland | Garden plot | Water area | Rural homestead |
|---|---|---|---|---|---|---|---|---|---|
| Current Siutaiton | 7433.09 | 142.38 | 1287.94 | 122.58 | 963.36 | 4074.6 | 1174.56 | 9.44 | 250.06 |
| Planning | 8927.69 | 1315.14 | 0 | 0 | 930.25 | 0 | 4025.43 | 9.44 | 250.06 |

### Nabanhe-Mangao Corridor Land-use Present-status Map




### Nabanhe-Mangao Corridor Land-use Planning Map