



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

## **Environmental Performance Assessment in Xishuangbanna Prefecture**



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 (YEPO) is the focal agency for CEP implementation in Yunnan Province.



**Yunnan Environmental  
Protection Department**  
[www.ynepb.gov.cn](http://www.ynepb.gov.cn)



**GREATER MEKONG  
SUBREGION  
CORE ENVIRONMENT  
PROGRAM**

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**Definition:** Environmental Performance Assessment (EPA) is a policy and management tool that enables governments to measure degree of success in achieving established sustainable development targets at national and sub-national levels, critically review development and planning processes which can undermine overall progress, and guide efforts to mitigate negative impacts of development activities with appropriate policy and management decisions.

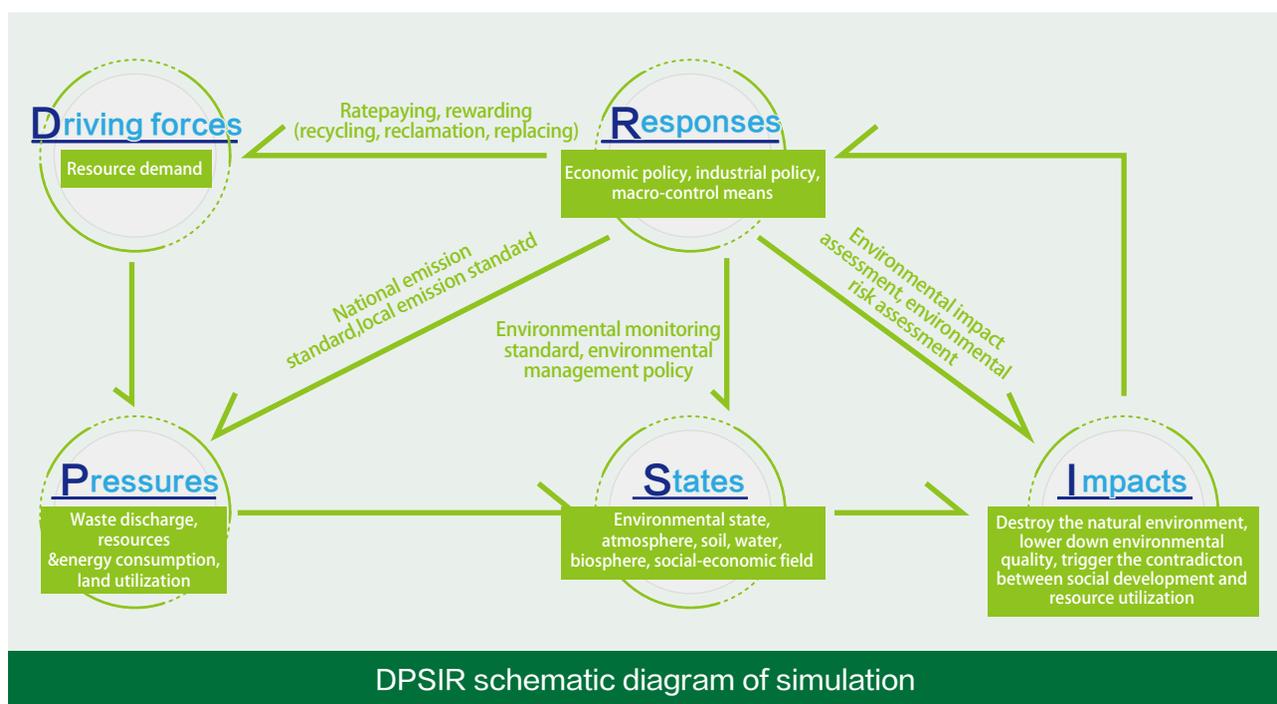
# 1 Background

The Greater Mekong Subregion (GMS) Core Environment Program (CEP) has successfully conducted environmental performance assessment (EPA) in Yunnan Province and at the national level, respectively. EPA was conducted at the provincial level in Yunnan Province for the periods 2003-2005 and 2006-2010 under the ADB GMS Strategic Environment Framework, Phase II program. The initial round of EPA reporting utilized a pressures-states-responses (PSR) analytical framework while the subsequent round of EPA reporting utilized a driving force–pressures–states–impacts–responses (DPSIR) analytical framework to provide improved insights into environmental performance in the province. This EPA reporting exercise was undertaken at the prefecture level in Xishuangbanna under the CEP as a demonstration of the usefulness of this analytical approach in understanding environmental performance and the potential to institutionalize its application.

# 2 Research Method

The DPSIR analytical framework was applied in the Xishuangbanna EPA exercise to help understand causal relationships between economic developments and the environment and natural resources, and human health and well-being.

This analytical framework distinguishes between the drivers of economic growth, the pressures placed by such growth on the environment and natural resources, the resulting state or status of the environment and natural resources, the impacts to the environment and human health and well-being from changes in state, and government responses made to sustainably manage economic development, maximizing benefits while minimizing adverse environmental and human impacts of such development. The structure of the DPSIR model is shown in the following figure.



In applying the DPSIR analytical framework in the Xishuangbanna context, the research team constructed a unique and comprehensive indicator system to analyze available data and information so as to compare current environmental status with intended environmental management objectives, and to identify any defects and deficiencies in environmental management strategies that could be addressed in improving future performance.

Key elements of the EPA reporting exercise were a review of the achievement of planning targets, establishing an EPA indicator structure and system, analysis of environmental performance using relevant indicators, and application of EPA as part of Xishuangbanna Prefecture annual environmental reporting. Underlying the whole exercise was a focus on capacity building and creation of guideline for expanded application of EPA in prefecture level reporting.

# 3 Research Results

## Establishment of EPA indicator system

An indicator system is the core of environmental performance assessment reporting. Based on the DPSIR analytical framework and the resulting causal relationships, the research team reviewed the indicator system used in the 11th Five-Year Plan for Development of Ecological Construction and Environmental Protection in Xishuangbanna Prefecture and selected indicators based on policy relevancy, representativeness, comprehensiveness, data availability and scientific and practical principles using a broad consultative process. The system adopted consisted of 32 indicators organized in to five categories as shown in the following table.

DPSIR Indicator System

Ref.	Fact	Indicator
1	Driving forces	Population (person)
2		Gross domestic product GDP (RMB 10,000/present price)
3		Agricultural fertilizer application amount (t)
4	Pressures	Discharge of domestic sewage in the whole prefecture (10,000t)
5		Discharge of Industrial Wastewater (10,000t)
6		Discharge of COD (10,000t)
7		Discharge of ammoniacal nitrogen (10,000t)
8		Discharge of industrial exhaust gas (10,000 nm3)
9		Discharge of sulfur dioxide (t)
10		Discharge of flue dust and industrial dust (t)
11	States	Number of days with good air quality in Jinghong City (indicators NOX, SO2 and PM10)
12		Average equivalent sound level of urban environmental noise in Jinghong (dB(A))
13		Average equivalent sound level of urban road traffic noise in Jinghong (dB(A))
14		Comprehensive water quality classification of Lancang River and its seven main tributaries
15		Percentage of wild vertebrate species in the nationwide species (%)
16		Percentage of wild higher plant species in the nationwide species (%)
17	Impacts	Acid rain frequency and intensity in Jinghong (%)
18		Percentage of standard urban drinking water source (%)
19		Forest coverage rate (%)
20		Percentage of public welfare forest area in forest area (%)
21		Percentage of rubber plantation area in forest area (%)
22		Percentage of nature reserve area in the prefecture's land area (%)
23		Urban per capita public green area (m2)
24	Responses	Industrial wastewater discharge qualification rate of key pollution sources (%)
25		Water qualification rate of the state/province-controlled sections in Lancang River system meeting the standards of water environmental functions (%)
26		National-level ecological townships and towns (Number)
27		Urban domestic sewage treatment rate (%)
28		Urban garbage harmless disposal rate of county (city) (%)
29		Comprehensive utilization rate of industrial solid waste (%)
30		Construction of environmental law enforcement system
31		Monitoring network construction
32		Environmental publicity and education

## Local EPA capacity building

### EPA concept dissemination and involvement of practice

The research team held a workshop with representatives from the Xishuangbanna Bureau of Environmental Protection, Management Bureau of Nabanhe River Basin National Conservation Area, Xishuangbanna Environmental Monitor Station, Xishuangbanna Institute of Environmental Science and Xishuangbanna Environmental Monitoring Detachment. The workshop generated good discussion and inputs and consensus on indicator selection and the analytic hierarchy process that was used to calculate indicator scorings.

### EPA guidebook development

In support of future planning processes, the research team developed a guideline for the Xishuangbanna Bureau of Environmental Protection to apply EPA reporting in support of the Construction Planning for Ecological Xishuangbanna Prefecture) during the period 2011-2015 and held a training seminar on use of the guideline.

### Discussion on institutionalized EPA in Xishuangbanna

In order to systematically analyze the achievements and deficiencies of ecological construction in Xishuangbanna Prefecture, the research team suggested adding an EPA indicator to the Annual Report on the State of the Environment in Xishuangbanna and to the Annual Statement of Xishuangbanna Environmental Statistics, both of which are released to the public by the Xishuangbanna Bureau of Environmental Protection on its official website.



# 4 EPA Results and Assessment

## Analyzing the realization of planning targets

The research team analyzed and assessed the realization of the main 25 targets in five categories set out in the 11th Five-Year Plan for Ecological Development and Environmental Protection in Xishuangbanna Prefecture, using series data for 2005-2010 and the development trends over these six years.

Results showed that nine of the 25 indicators, those with orange background in the following table, failed to achieve set targets, including those for air quality, water quality and industrial discharge of wastewater, dust and solid matter. Nineteen indicators showed achievement of targets, with an overall 64% of targets being achieved. Four indicators with a yellow background were eliminated due to unavailability of data.

**Main Indicators and Evaluation Results of the 11th Five-Year Environmental Plan for Xishuangbanna Prefecture**

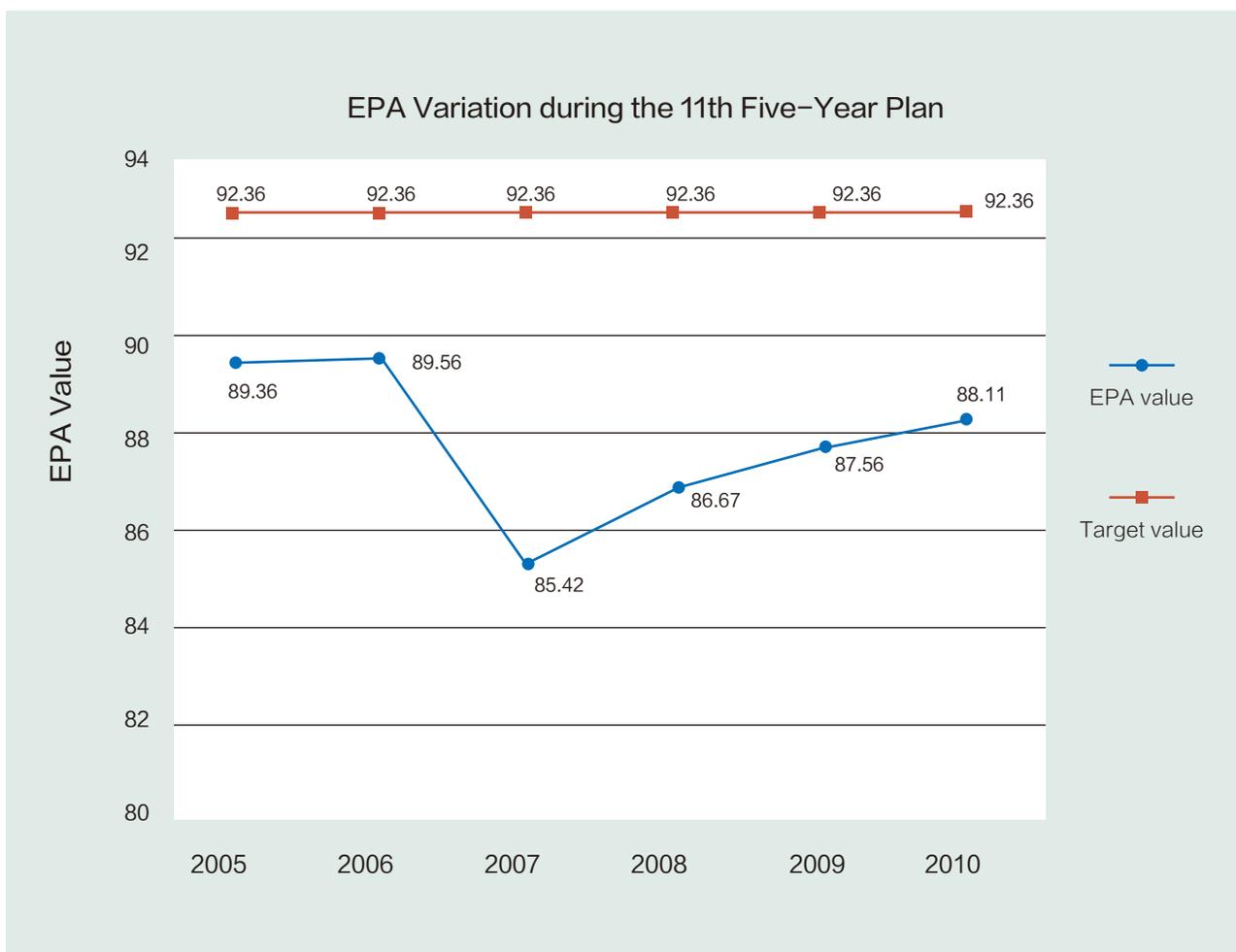
Indicator	Indicator System	Unit	Base Year	Planning goal	Realized in
			2005	2010	2010
Urban environment quality indicator	<b>Water environment</b>				
	Percentage of urban drinking water sources meeting the requirements for centralized drinking water source	%	100	100	100
	Water qualification rate of the state/province-controlled sections in Lancang River system meeting the standards for environmental water functions	%	91.7	91.7	100
	Discharge of domestic sewage in the whole prefecture	10,000t	1491	1540	2068
	Urban domestic sewage treatment rate	%	43.9	65	37.05
	<b>Atmospheric environment</b>				
	Number of days with good air quality in Jinghong City (indicators: NO <sub>x</sub> , SO <sub>2</sub> and PM <sub>10</sub> )	Day	329	347	208
	Acid rain frequency and intensity in Jinghong	%	19.1	6	0
	<b>Sound environment</b>				
	Percentage of key cities with urban regional environmental noise ≤55dB(A)	%	82.4	100	-
	Percentage of key counties (cities) with urban road traffic noise ≤70dB(A)	%	11.1	100	-
	<b>Solid waste</b>				
	Harmless disposal rate of urban garbage in counties (cities)	%	49	60	100
Pollution prevention and control indicator	<b>Wastewater</b>				
	Discharge of industrial wastewater	10,000t	1543	4000	1947
	Discharge of COD	10,000t	2.1	2.7	2.3
	Discharge of ammoniacal nitrogen	t	720.3	940	831
	Discharge qualification rate of wastewater from key pollution sources	%	87	90	91.37
	<b>Exhaust gas</b>				
	Discharge of industrial exhaust gases	10,000 nm <sup>3</sup>	14.1	21	23.76
	Discharge of sulfur dioxide	t	952.2	1240	1104
	Discharge of flue dust	t	551.9	720	637.1
	Discharge of industrial dust	t	100.9	130	325.2
	<b>Solid waste</b>				
	Safe disposal rate of medical waste	%	15	70	100
	Comprehensive utilization rate of industrial solid waste	%	99.7	100	66.7
Comprehensive excrement utilization rate at large-scale livestock farms (centralized breeding area)	%	91	95	-	
Ecological construction indicator	Forest coverage rate	%	67.7	70	78.3
	Percentage of nature reserve management institutions above the provincial level meeting standard construction requirements	%	14	100	-
	Urban per capita public green area	m <sup>2</sup>	9.6	13	13.27
	National townships and towns with beautiful environments	Nr.	0	3	1
Environment management capacity indicator	Construction of environmental law enforcement system	✓ Law enforcement team and its capability up to national standards			
	Monitoring of network construction	✗ only 16 of 25 on-line monitoring systems for major pollution sources are installed			
	Radiation environment safety monitoring	✓ Organizations involved with pollution manage radioactive sources legally and safely			
	Environmental publicity and education	✓ good information transparency and awareness raising			
Water quality indicator of Lancang River and its main tributaries	Comprehensive water quality indicator of Lancang River and its seven main tributaries (Nanguo River, Liusha River, Buyuan River, Nanla River, Nanlan River, Nan' a River and Dakai River)		III	III	III

Failed to achieve targets items
  Unanalysed items



## Synopsis of Xishuangbanna Prefecture EPA Results

The combined indicator score, or composite index, for the 32 selected EPA indicators provided a score of 88.11 in 2010 compared to the specified target of 92.36, agreeing with the result of 11<sup>th</sup> Five-Year Plan realization of planning targets.



Trend data for the 2005-2010 period show that following a decline during 2006-2007 the index had a steady rise in the succeeding period. This reflects a downwards trend in drivers and pressures, a somewhat declining state but increasing impact, and a rising response. Such trends show that despite the mounting pressures on the environment and natural resources associated with rapid economic growth, and the resulting state consequences, responses from the prefecture government have proved satisfactory in regaining a generally upward trajectory in environmental and human health.



# 5 Suggestions for Xishuangbanna Environment Management and Planning



**In terms of Driving forces,** Xishuangbanna Prefecture should explore low-carbon and a recycling economy and develops organic agriculture.

**In terms of Pressures,** Xishuangbanna Prefecture should promote cleaner production and technical innovation to reduce the discharge of pollutants.

**In terms of States,** Xishuangbanna Prefecture should further strengthen environmental quality monitoring, specifically in relation to atmospheric quality, surface water quality of the Lancang River and its main tributaries, and research on biodiversity.

**In terms of Impacts,**

- Further optimization of Xishuangbanna's overall urban development planning and design to increase the urban per capita public green area.
- Intensified management of nature reserves and further strengthening of the role of the nature reserves in environmental protection.
- Further consolidation of the protection and monitoring of drinking water sources.
- Reinforcement of research and popularization of the construction of environmentally friendly ecological rubber plantations.

**In terms of Responses,** Xishuangbanna Prefecture should promote the construction of national-level ecological townships and towns, further improvement of the construction of environmental monitoring networks and the environmental law enforcement system, further strengthening of environmental publicity and education and regular conduct of a survey on the satisfaction rate of the public concerning the environment, gradual improvement of the municipal sewage treatment rate and urban garbage disposal rate, the introduction of advanced technologies, and the adoption of incentives to encourage enterprises to recycle and reuse valuable waste.

# 6 Significance of Research

- The adoption of the DPSIR EPA analytical framework can facilitate systematic analysis and identification of defects and deficiencies existing in ecological construction and environmental management in Xishuangbanna Prefecture and thus has very important directive significance in promoting and optimizing planning and construction in the future.
- The EPA guideline can provide technical support for local environmental protection departments, enabling annual EPA reporting at the prefecture level.
- Demonstrating EPA application at the prefecture level further contributes to EPA adoption, institutionalization and mainstreaming at the provincial, national and regional (i.e. ASEAN) levels.

