The Study of Cumulative Impact Assessment System Based on the Regulatory Detailed Planning

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Aim of Research

Conducting Cumulative Impact Assessment (CIA) in the process of Regulatory Detailed Planning (RDP) in China

Focus

CIA, RDP, Environmental Impact Assessment (EIA)

Study and Methodology

From the aspects of the legal framework, review components, technical measures, and procedural design, the paper establishes a threshold of the Cumulative Impact Assessment within the existing framework of the Regulatory Detailed Planning in China.

Quantitative and Qualitative Research Integration

Presentation index

Background

- Urban development and urban sprawl
- Cumulative impact

The Main Problems of the Existing EIA System

- Neglecting the **indirect and cumulative environmental impacts**
- Neglecting the impact on **artificial environment**
- Neglecting the impact of **small scale projects**

The Main Problems of the Existing RDP

- Indicators related to environment protection are too rough and fragmental
- None looks from the perspective of cumulative impacts

- 1 Introduction
- 2 Establishing CIA Based on RDP
  - 2.1 Review Components
    Impactor and Impactee / the Relationship between
  - 2.2 Legal Framework
    Assessment Components / Assessment Range / Legislative Institute
  - 2.3 Technical Measure
    Indicators / Measures / Technical Specifications / Incentive Policy
  - 2.4 Procedural Design
    Strengthening Implementation / Coordinating Power and Responsibility
- 3 Conclusion

2.1 Review Components

Impactor and Impactee

- **Impactor**

  Project — building engineering / site engineering

  Behavior — traffic activity / user behavior / waste disposal.

- **Impactee**

  Natural Environment — soil / geology / air / water / vegetation and wildlife

  Artificial Environment — municipal infrastructure / transportation facility / public facility

  Social Environment — community characteristics / community network / human psychology.




2.1 Review Components

The Relationship between

- **Project** mainly acts on the **natural environment**.
- **Behavior** mainly impacts on the **artificial** and the **social environment**.

The Relationship between the Impactor and the Impactee

		Impactee		
		Natural Environment	Artificial Environment	Social Environment
Impactor	Project	×	○	—
	Behavior	○	×	○

Note: × means serious; ○ means moderate; — means slight or none.

2.2 Legal Framework

The Assessment Components

- **Impactor** combines the function of project with the environmental targets
- **Impactee** mainly corresponds with

The natural environment — quality control

The artificial environment — capacity control

The social environment — community network and cultural continuity

The Assessment Range

Geographic boundaries

Time period

The Legislative Institute

State Environmental Protection Administration (SEPA)

Urban Planning Department

2.2 Legal Framework

The Components and Emphasis of CIA Based on the RDP

	Environmental Goal	Regional Boundary	Time Period
Natural	Protect quality	Large	Long
Artificial	Control capacity	Small	Short
Social	Preserve Characteristics	Small	Long

2.3 Technical Measure

Indicators

- **Topography**
  where is permitted or not
  How much is permitted

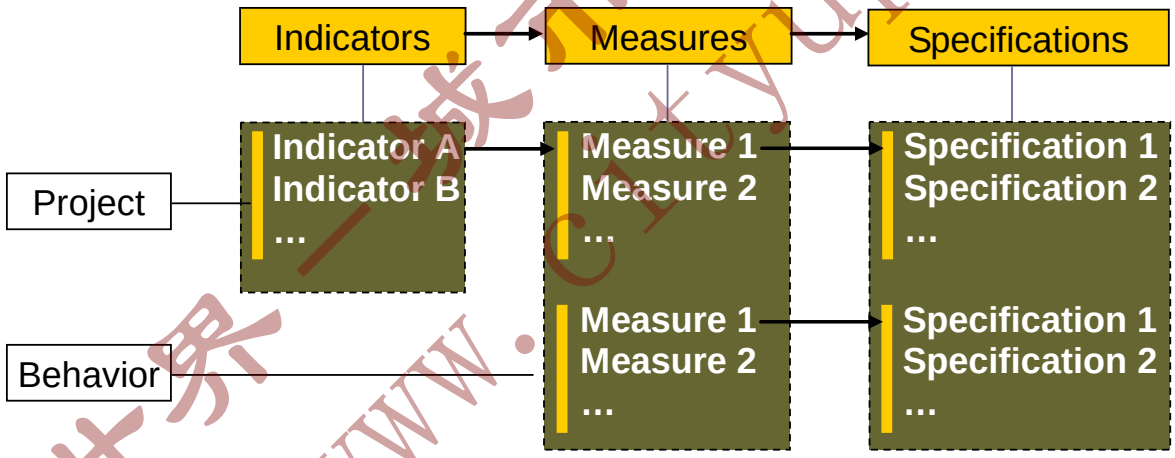

- **Soil**
  Earthwork Balance Rate — Equalize the cut volume and the fill volume
  Sealing Area Rate — Minimize the sealing area / maximize the soil area
- **Vegetation and Wildlife**
  Tree Cover Percentage — Control the amount of trees and shrubs
- **Water Balance**
  Permeability Rate / Runoff Rate — Improve infiltration ability of the ground
  Stormwater Reuse Rate — Strengthen the stormwater collection and reuse



2.3 Technical Measure

- **Measures**
  - Mitigation Measures
  - Compensation Measures
- **Technical Specifications**

The Relationship between Indicators, Measures, and Specifications



- **Incentive Policy**

2.3 Technical Measure

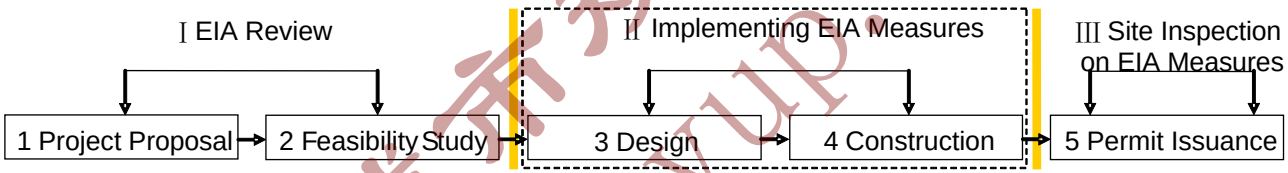
A general guideline book should be developed, offering the most comprehensive and useful information on practical methods for addressing cumulative effects.

2.4 Procedural Design

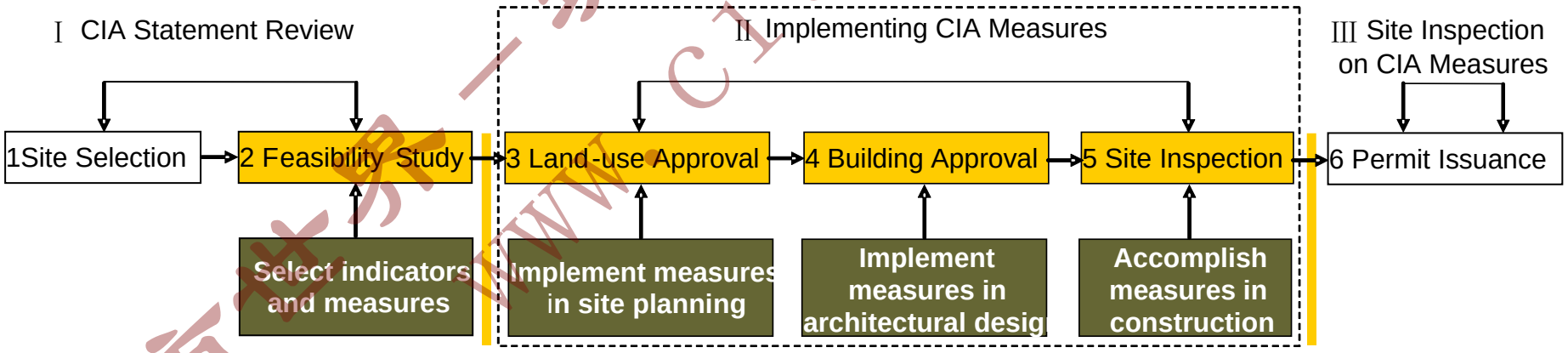
Strengthening Implementation

Problem

Weakness of Implementation Stage



Solution



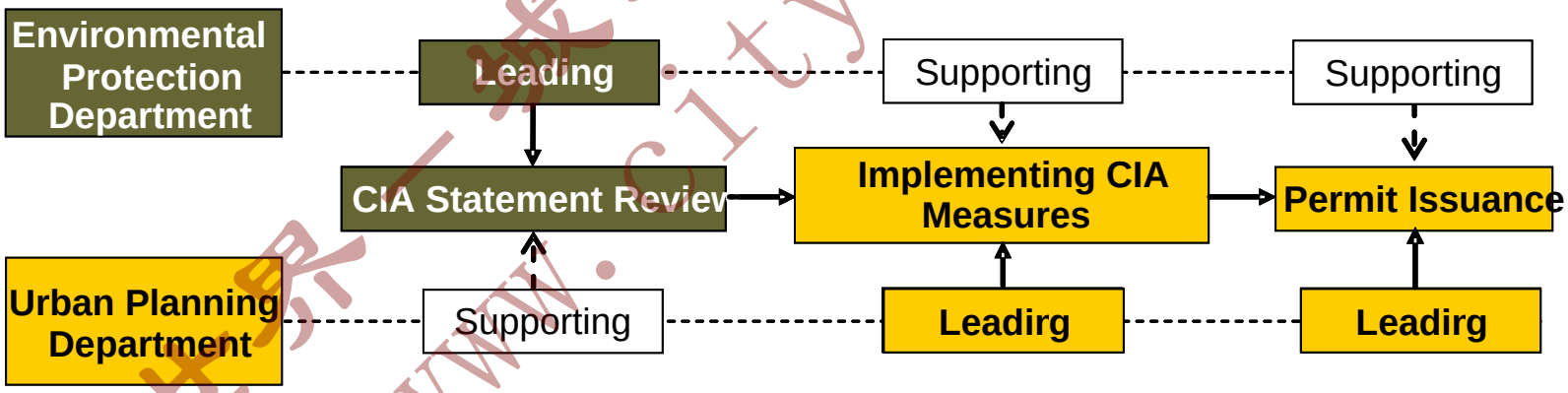
2.4 Procedural Design

Coordinating Power and Responsibility

- **Problem**

  Lack of Coordination

- **Solution**



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- The CIA system consists of two fundamental players — impactor and impactee. The purpose of CIA is to alleviate the cumulative impacts by the control of impactor.
- A general guideline book should be developed based on indicators, measures, specifications and incentive policy.
- Eight indicators are proposed. They can be applied to alleviate the cumulative impacts and integrated with the existing RDP indicator system.
- CIA should focus on both natural, artificial and social environment in order to prevent cumulative impact effectively and promote sustainable urban development.

THE END

WHAT IS CIA?

"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.... Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

WHAT IS RDP?

The major planning tool in the Chinese land use control, originated from zoning technique. It may regulate the types, classes, floor area ratio, density and scale of development and land use, and aesthetic aspects of buildings, etc.