



## Framework for integration of urban planning, strategic environmental assessment and ecological planning for urban sustainability within the context of China

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### ABSTRACT

Sustainable development or sustainability has been highlighted as an essential principle in urban master planning, with increasing recognition that uncontrollable urbanization may well give rise to various issues such as overexploitation of natural resources, ecosystem destruction, environmental pollution and large-scale climate change. Thus, it is deemed necessary to modify the existing urban and regional administrative system so as to cope with the challenges urban planning is being confronted with and realize the purpose of urban sustainability. This paper contributed to proposing a mechanism which helps to make urban planning with full consideration of issues with respect to sustainable development. We suggested that the integration of urban planning, SEA and ecological planning be a multi-win strategy to offset deficiency of each mentioned political tool being individually applied. We also proposed a framework where SEA and ecological planning are fully incorporated into urban planning, which forms a two-way constraint mechanism to ascertain environmental quality of urban planning, although in practice, planning and SEA processes may conditionally be unified. Moreover, as shown in the case study, the integration of the three political tools may be constrained due to slow changes in the contextual factors, in particular the political and cultural dimensions. Currently within the context of China, there may be three major elements which facilitate integration of the three political tools, which are (1) regulatory requirement of PEIA on urban planning, (2) the promotion or strong administrative support from government on eco-district building, and (3) the willingness of urban planners to collaborate with SEA experts or ecologists.

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### 1. Introduction

The 1987 Brundtland Commission and its report “Our Common Future”, which called for “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”, placed the issue of sustainable development at the core of urban policy and planning concerns (Waston, 2009). The concept of sustainable development in turn gave rise to the “green agenda” in planning and the subsequent development of environmental strategies such as Strategic Environmental Assessment (SEA) and ecological planning which improve environmental quality of planning at initiative stage.

SEA is a mechanism for incorporation of environmental consideration into policies, plans, and programs (PPPs). In countries where the SEA system is adopted, the environmental assessment on urban planning or spatial planning and the preparation of a SEA report are compulsorily required. Ecological planning is also widely applied in

the fields of urban planning as an integrative and comprehensive planning to coordinate the relationship among regional social development, economic growth, technological innovation and environmental protection (Wang, 2002; Shu et al., 2006a).

Though SEA and ecological planning are widely used for environmental protection, their capabilities to influence urban planning and achieve urban sustainable development are often constrained. Throughout 1990s, both planners and environmentalists grappled with the problem of integrating the issue of sustainability into planning agendas, and in many parts of the world this has yet not been satisfactorily achieved. For one reason, planning and environmental management often operate in different government departments with different interests and political or legal framework. For the other reason, there are increasing conflicts between the green agenda (environmental concerns), the brown agenda (urban development) and the red agenda (issues of environmental justice). Moreover, Urban Planning potentially stands at the intersection of these conflicts (Allen and You, 2002). Thus it is important for both environmentalists and urban planners to collaborate and develop new approaches and systems for urban planning as well as environmental assessment to address the conflicts underlying the planning.

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On one hand, new urban forms were promoted which responded to environmental concerns (Breheny, 1992), and new approaches and measures in the field of urban ecology and environment were applied into urban planning (Ong, 2003; Pickett, 1995; Li et al., 2005). On the other hand, environmentalists tried to propose a mechanism to incorporate environmental consideration into the initiative stage of decision-making process. Shu et al. (2006a,b) explained that the persistent failure of urban planning to deliver environmental sustainable development is closely linked to the separation of environmental assessment and urban planning system. Lacking of integration, the effectiveness of SEA to influence urban planning is quite limited.

Therefore, we proposed a framework in which SEA and ecological planning are fully integrated into urban planning within the context of China. Under this framework, ecological planning provides ecological principles or requirements to guide the planning at a very early stage whilst SEA works as an appraisal tool in the end to ensure that environmental issues are considered in the preferred option(s).

Six parts were contained in this paper: (1) The first part briefly introduced the background of this research; (2) Then the definitions of “urban planning”, “SEA/Planning Environmental Impact Assessment (PEIA)”, “ecological planning” and “integration” are elaborated in the second part; (3) Drives for the integration are analyzed from two aspects, i.e. the changes in the context of urban planning and the evolving understandings of the relationship among them; (4) We then proposed integration framework from six aspects, including the integration of objectives, processes, contents, methodologies, institutions and policies. Then, we designed the process which lies largely in the realm of urban planning, including nine steps, e. g. objective and content definition, scoping, option proposal, and environmental assessment on options, etc.; (5) Subsequently, a case study of “Eco-district Plan of the Chengnan New District of Jintan County in Jiangsu Province” is briefly introduced in the fifth part, which approved that the integration framework is applicable and practical within the context of China; and (6) Conclusions.

## 2. Definitions

### 2.1. Urban planning

While most cities and settlements show forethought and conscious design in their layout and functioning, urban planning, as an organized profession, has only existed for the last 60 years. Urban planning pertains to the category of spatial planning, which gives geographical expressions to the economic, social, cultural and ecological policies of a society. In the mean time, being a combination of a scientific discipline, an administrative technique and a policy, urban planning has been developed as an interdisciplinary and comprehensive approach for a balanced regional development and physical organization of space in accordance with an overall strategy. Normally, the aspects of urban planning include populations, scales, land uses, urban aesthetics, safety, municipal infrastructures, transports, environmental factors, industries and cultures. However, the contents often vary in different cases. By far, there are two different mainstream processes applied in urban planning. One is “top-down process” by which plans are created by the urban planners who typically work for national or local governments. The other is expressed as “collaborative process”. Its distinctive features include active involvement of the stakeholders and long-term flexible programming that may be intervened by different stakeholders.

In China, a set of urban planning system has been developed, which was confirmed by the *Law on Urban and Rural Planning (2008)* (see Fig. 1). Five plan categories are included in the planning system, and three of them are legislated by the relevant laws or regulations. Urban planning at state- or provincial-level refers to the Urban System Plan which defines the population size and spatial distribution of

urban and suburban districts to achieve the rational productivity distribution and function definition. It usually follows the requirements of land use plan, and provides principles or rules for the Urban Master Planning to follow. Urban planning at municipal- or county-level usually includes two parts, i.e. Master Plan and Detailed Plan. Master Plan guides overall city development and spatial arrangement in a relatively long time span ranging from 5 to 20 years, whilst the Detailed Plan, based on the requirements from Master Plan as well as sectoral plans, if any, guides to achieve the rational use of space and land in the near future (i.e. normally 1 to 3 years) through regulating land use and directing the design and construction of buildings or projects.

### 2.2. Strategic Environmental Assessment

SEA is a system for incorporation of environmental considerations into policies, plans and programs (PPPs) (EU2001/42/EC). By far there has been a wide range of applications of SEA throughout the globe, mainly in Organization for Economic Cooperation and Development (OECD) countries as well as in client countries of World Bank, to promote sustainability by influencing planning and decision-making processes at an early stage. Amongst them, 25 countries have formally set up the SEA system in the form of legislation and developed SEA framework to some extent. In existing SEA systems, SEA mainly applies to plans or programs, although it can be applied to policies if needed. Thus in most countries like China, SEA can also be referred to as Planning Environmental Impact Assessment (Wang et al., 2003; Bao and Shang, 1999; Xu et al., 2000). Furthermore, according to China's *EIA Law (2003)*, environmental assessment on Urban Planning is a compulsory requirement. Therefore, environmental assessment could be considered as a mandatorily indispensable procedure in planning process, and urban planning is a key assessment target for PEIA (Li et al., 1998).

In countries where SEA system has been adopted, it is a compulsory requirement to conduct SEA for certain types of plans (i.e. PEIA) or even policies (e.g. PoEA). In China, PEIA for urban planning is legislated in the *EIA Law (2003)*. Moreover, it is specified in the newly promulgated *Regulations on Planning Environmental Impact Assessment (2009)* that urban planners and organizations should apply PEIA during plan-making process (Articles 2 and 7), prepare a planning environmental impact statement (PEIS) prior to submission of the plan for approval (Article 10), and take responsibilities for the quality of the PEIS (Article 10). As shown in Fig. 1, the characteristics of a plan may differ significantly between a state-level plan and a village plan, or between Urban-system Planning and Detailed Planning, particularly in terms of the range of options, the level of uncertainties to be managed, the level of details that might be contained, and the nature of impact predications (Holger et al., 2004; Au and Lam, 2008). Moreover, these plan attributes have significant implications for accompanying assessment. Hence, the requirement on PEIA for large-scale or macro-scope plans (e.g. state-level Urban System Plans) will inevitably vary from that for small-sale or micro-scope plans (e.g. Village Plan or Detailed Plan). As is stipulated in *Regulations on PEIA (2009)* for Urban Master Plans and Detailed Plans, a detailed PEIA report must be prepared during the planning process; however, only a chapter or note should be prepared for conceptual plans or strategic Urban System Plans (Articles 15 and 16).

### 2.3. Ecological planning

Currently there has been no common definition for ecological planning. In China, ecological planning is a joint name of urban ecological planning, eco-province/-city/-town/-village planning (“eco-district planning” in general), or ecological urban planning (Ma and Yan, 2004; Huang, 2001; Jin, 2002). Broadly speaking, the concept means an integrative and comprehensive planning to

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