Strategic Environmental Assessment – a promising instrument for sustainable urban development in China!?

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Abstract

Urbanisation will be one of the major problems especially in transition countries like China. Dealing with this growth in a sustainable manner is a major challenge. Strong instruments to integrate ecological, economic and social aspects early in the planning and decision-making process are needed to deal with the major upcoming problems like resource and energy consumption, waste disposal, as well as air and water pollution. This paper discusses the strengths and weaknesses of Strategic Environmental Assessment (SEA) as a leading tool for integrating sustainability during the urban development planning process.
Based on European perspectives, an urban planning process in China (Jiading District Shanghai) is analysed and opportunities for an early integration of environmental issues will be developed. The paper is based on projects the author carried out in Europe and China on sustainable development and environmental integration. Finally, recommendations for the application of SEA recognising existing Chinese legislation (EIA law 2003) will be provided.

1 Background: Urbanisation, environmental challenges and SEA

Growing urbanisation and the increasing size of metropolitan regions present both opportunities as well as challenges for the economic development and social balance of societies, in particular in developing countries. The United Nations (UN) expects that the share of the world's population living in urban areas will rise to around 60% in the year 2030 (United Nations 2006). Among the many new opportunities, urban areas offer improved possibilities for infrastructure development, increased productivity, business competitiveness, higher income, urban lifestyles, cultural dynamism, and health care development. On the other hand, the rapid urbanisation lead to severe changes in the physical, social and environmental conditions, which in turn lead to an increasing awareness of threats to sustainable development (Takano 2002).

The urbanisation process in China has experienced rapid growth over the last three decades and the consequences of this process are the growth of new towns and the sprawl of urban areas, affecting the natural and physical environment of Chinese cities deeply. In the last years a growing concern has been observed in the administration of China's cities over the rates of air pollution, municipal waste-water treatment, solid waste management and encroachments on agricultural land (World Bank 2001). Cities in China are among the most polluted in the world and the main reason for the increases of highly polluted urban areas is caused through the rapid industrialisation that have taken place since the

1950s. Most of these industries have been located in urban centres and the problem of air and water pollution has rapidly become the main environmental concern of these areas.[7]
The dynamic of the evolution of highly-populated regions implies special requirements for integrated urban planning concepts. This should get in line with the established concept of sustainability as a central guideline for future policy-making (Brundtland Commission, BMZ 2004). Strategic Environmental Assessment (SEA) is a promising instrument to implement the idea of sustainable development (Therivel 2004).

"SEA is a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiative in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage at the decision-making on par with economic and social considerations. (Sadler and Verheem 1996, 62)"

Since the early 1970s it was recognised that taking environmental effects into an early consideration is crucial for a substantially environmental friendly process. In most of the countries, it has taken a long time to establish a preventative planning system by developing tiered environmental planning, which meant to add an assessment on the effects of plans, programmes and policy in addition to the well-established Environmental Impact Assessment (EIA), which is carried out regularly on project level.

Therivel (2004) has called attention to two SEA systems in particular: the European Union's Directive 2001/42/EC (SEA Directive) and the United Nations Economic Council for Europe's (UNECE) SEA Protocol. Both systems apply to many countries and a wide range of strategies.[8]

According to Fischer (2002), transport and land use planning are sectors with great SEA experience and this facilitates SEA implementation in the respective sectors. Based on the information presented above the implementation of SEA could be defined as an appropriate approach for promoting environmental integration in China.

2 SEA and the Master Plan in Jiading District (Shanghai)

Rapid urbanisation and industrialisation processes were followed by an increasing growth of motorisation rates and constraints on the urban environment. Motor vehicle emissions have been identified as a major source of air pollution in some large cities such as Shanghai. In response to the limited experience of China's local administration with integrated approaches, a study aims at developing a strategy for implementing SEA in Jiading master planning as a means for promoting the integration of environmental concerns into local planning strategies in China.[9,10]

[7] As the cities reach their capacity limits, suburban settlement and industrial towns are growing, thus imposing specific challenges on transport planning and mobility services in these conurbations. The density of the road network is low and 45%-60% of the road area is used for pedestrians and bicycles, thus imposing specific safety problems. Land-conversion, noise, air-pollution and energy demand have to be tackled in order to improve the living conditions of city inhabitants. As an example the contribution of vehicle emission to air pollution in Shanghai in 2002 was 87% of CO, 97% of HC and 74% of NOx (Fulcheri 2004).

[8] The SEA Directive sets a minimum baseline for SEA implementation in the EU and points out the importance of aspects such as: the preparation of an environmental report, consultation with the public and authorities, the consideration of the assessment's findings into the decision-making, monitoring the significant environmental effects of the implementation of the strategies, and on the exchange of information on the experience gained in applying SEA.

[9] In response to the concern about the sustainable development of megacities, the "Metrasys" (Mega Region Transport Systems for China) project was proposed by the German Aerospace Centre (DLR) in cooperation with the Wuppertal Institute, DaimlerChrysler AG (Society and Technology Research Group and Fraunhofer (Institute for Computer Architecture and Software Technology). The project is for German partner financed by the German Federal Ministry of Education and Research (BMBF), and spans a period of 11 years. It is divided into seven working areas and four phases. The project will investigate how the solutions developed could be transferred to large conurbations that are likely to develop around megacities in other global regions. In order to provide the stability of concept, special attention will be given to knowledge for self-sustained production and maintenance of technologies, planning tools and procedures. The presented results are based on the ongoing research carried out by the author and his team at the Wuppertal Institute.

[10] The study is empirically oriented and has used qualitative research methods. It has involved mainly in-depth and group interviews, field observations and a literature review. Jiading District has been defined as the case-study area and a field research was carried out during February and March 2006. The major contributions of the study are the identification of relevant aspects of China's planning system that may affect SEA implementation in transport planning, and the suggestions on how to consider these aspects in the SEA process.

Jiading district is embedded in the vast Metropolis of Shanghai in rapidly industrialising China with a total area of 463.9 km^2. Its population is expected to grow to 1.2 million inhabitants by 2010 and together with Shanghai, this metropolitan region would have a total population of about 15 million. Jiading District Government has actively worked for a new Strategic District Development Plan (Master Plan), which aims to make Jiading a model area for Shanghai's suburban development strategy (see Figure 1).

The main aim of the study of the Wuppertal Institute was to analyse the ongoing decision-making process for the urban master plan and provide recommendations for implementing SEA. This kind of research requires good contacts to Chinese partners. The Mayor of the Government of Jiading District is involved as a project partner. Through established contact it was possible to carry out a series of stakeholder interviews with representatives of the public administration in high positions. The Tongji University School of Transportation Engineering hosted and supported a master student from the Wuppertal Institute, who stayed for 4 weeks in Jiading and carried out the interviews. In addition, there was strong support from the Chinese Academy for Transportation Science when discussing the empirical design of the study.

The importance of the qualitative research method to this study is based particularly on its ability in exploring practices, understanding lay behaviour, exploring people's perceptions of the quality and appropriateness of interventions, understanding organisational culture, and evaluation complex interventions (Spencer 2003).

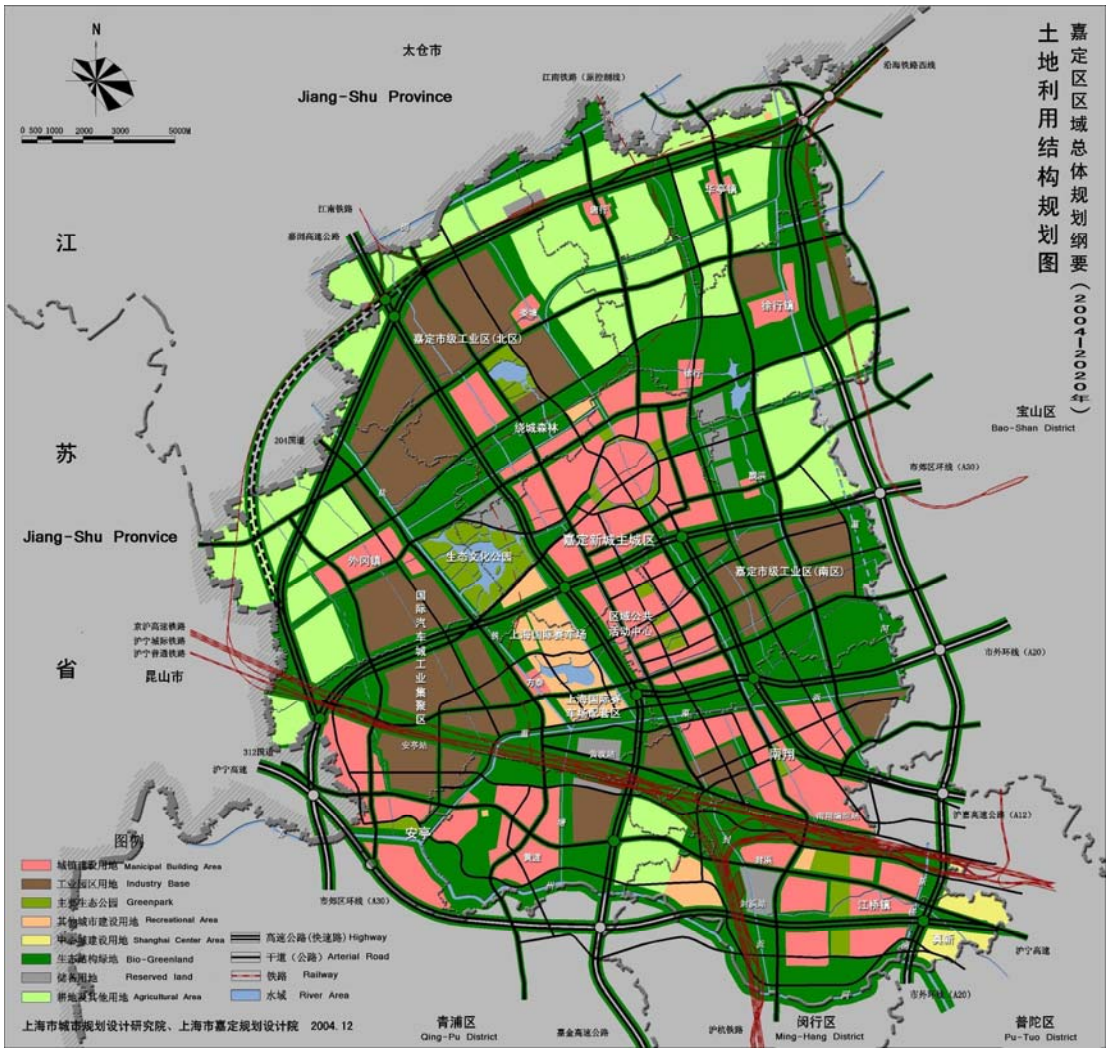

Figure 1: Land use plan (2004-2020) according to the Strategic Development Plan of Jiading District

The study presented aims at establishing SEA in Jiading as a tool to improve the planning process by means of considering SEA as a learning process. The progress and effectiveness of SEA seem to be directly related to aspects such as democracy, equity, participation and institutional capacity, confirming the importance of the objectives defined above to the development of SEA in the district.

The limited experience of Jiading government in developing comprehensive plans, in implementing SEA and involving the public in the planning process, and also the district limited autonomy were aspects that had significant influence on the definition of the objectives presented above. In addition the restrictions on financial and personal resources identified in local administrations in general, particularly in local Environmental Protection Bureaus (EPB), and the lack of experience of local governments in China in dealing with urban environmental planning were also relevant aspects considered in the strategy.

The identification of the key aspects that should be incorporated in the strategy was based mainly on the aspects considered in the analysis of existing SEA strategies in Europe, and the importance given to stakeholder and public involvement, and SEA procedures as primordial to an effective SEA process. Figure 2 gives an overview of the strategy proposed as an interactive process, which involves a set of

complementary activities. The major differences to the existing planning procedures are the following key issues:

- Set clear targets and objectives (especially environmental targets like air pollution, CO_2, land consumption);
- Develop different alternative scenarios and assess them according to the targets;
- Develop a reasonable data base to monitor the real effects; and
- Implement a tiered (public) participation approach.

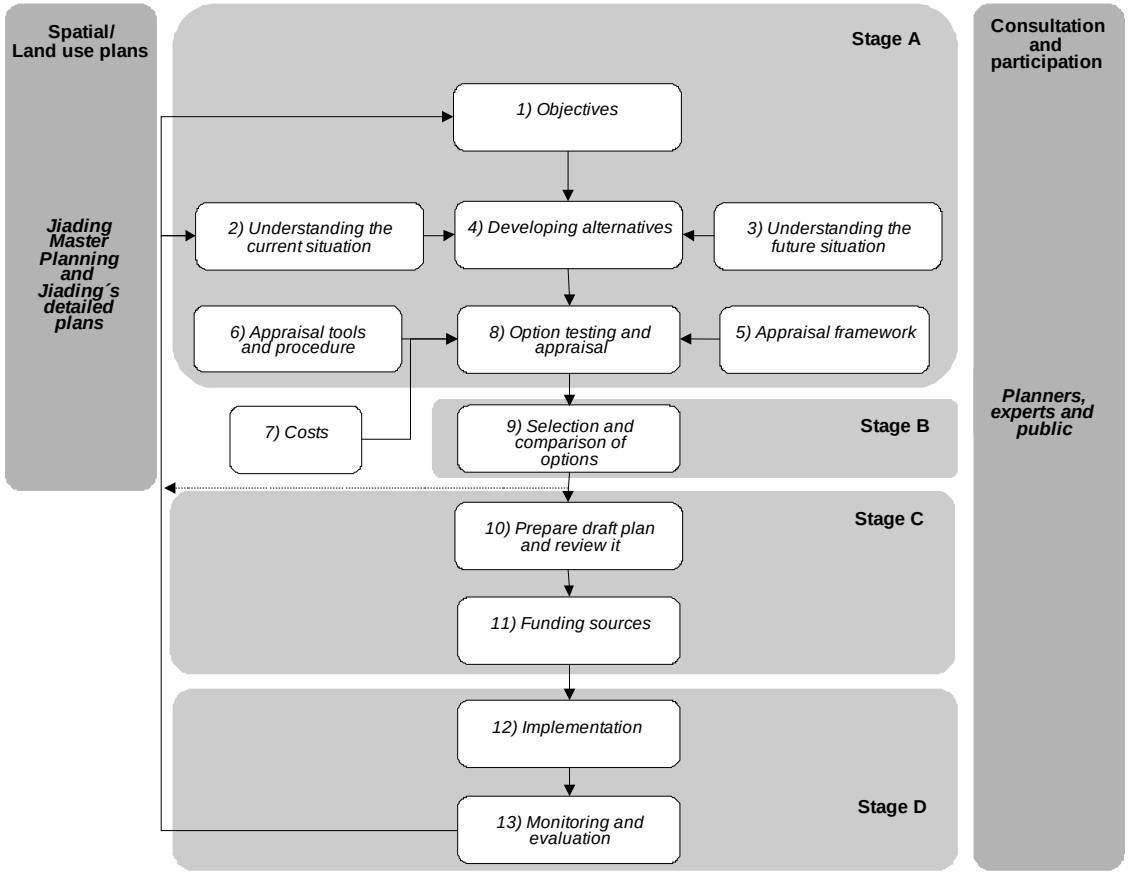

Figure 2: Strategy for implementing SEA in Jiading master planning underneath the figure or table

Benefits related to institutional and governance performance in particular had a significant role in the definition of the main objectives of the strategy.

In this context the strategy for implementing SEA should mainly:

1. enhance administrative capacity, cooperation, and efficiency of the whole Jiading planning system;
2. enhance administrative capacity of planning authorities;
3. raise the profile of key issues for urban planning, by means of promoting better understanding of the interrelationship between land use measures and other specific plans like transport or waste management and their environmental, economical and social impacts; and
4. encourage public participation.

As an outlook the formulation of SEA guidance for urban plans using Jiading´s experience as a basis for implementing SEA may contribute to the effective incorporation of SEA in Jiading planning

system. The guidance may incorporate best practice experience in future SEA implementations. In addition, general guidance, based on preliminary SEA experiences, shall be worked out and complemented in future years. This seems particularly valuable in the implementation of SEA as a continuous learning process. Finally, the establishment of a working group to follow and register SEA key issues is recommended. This working group should involve representatives of the planners and expert teams.

3 Future role of SEA in Urban Planning

This final chapter draws key results based on the field research conducted in Jiading and provides conclusions for the future integration of SEA in urban planning in China. To evaluate the strengths and weaknesses for establishing an SEA, it is crucial to understand the decision-making process (Dalkmann *et al* 2005). Therefore the planning process and the organisational structure were analysed.

Generally speaking, the "flexibility" of SEA process is important in the "adaptation" of the assessment to different administrative cultures and planning practices. The key role of this "adaptation" is to promote the consideration of the assessment results in the decision making process as an ultimate goal of SEAs. In this context the formulation of a strategy for implementing SEA that considers assessment procedures and planning practices is a major determinant of the assessment's effectiveness.

Table 1 summarises the major drivers and identifies the barriers for an effective implementation in China.

Table 1: Potential for SEA in China

Dimensions/topics	Status	Remarks
Political will	+	Interest/willingness of the government for SEA application.
Legal mandate	+	The current EIA law is SEA inclusive but does not cover policy.
Administrative framework	+	SEPA is responsible for overall coordination nationwide while sector ministries involved in sectoral guideline.
SEA procedure/guideline/methodology	+	SEA procedure is prepared for trial use by SEPA.
Technical know-how	0	Quite some expertise existing.
Experience in SEA implementation	-	Only some applications available.
Public involvement	-	Legally mandated in the EIA law but with few concrete requirements.

The existing barriers to the effective implementation of SEA observed in local administrations include the predominance of economic objectives, the little importance given to public participation, and the lack of experience in formulating city plans. However, China's government has stimulated and asked for more attention to be given to environmental issues in the policy and plan-making processes. The promulgation of the Environmental Impact Assessment (EIA) Law of 2003 is one of the most significant examples of China's government concern about the environmental impacts of its strategies. In Article 8 of the EIA Law, an environmental assessment of a plan is required. However, according to the information of the State Environmental Protection Agency, only a few EIAs for plans have been undertaken so far.

Despite the novelty of the law some experiences can already be identified in the country, reflecting the request and acceptance of China's government for "new" approaches to promote environmental integration. In general, China's planning system supports and encourages the implementation of SEA in China's strategies. Particularly challenging is the weak capacity and the few instruments available in the local administrations to manage the urban environment appropriately.

The experience in China in general and the described case study in specific shows that there are opportunities due to the raising awareness of environmental problems. However, there is a need for some improvements in the Chinese planning culture. Communication and interaction are some of the major key words for the future. SEA is a tool to promote the interaction inside the administrative structures, but also the better involvement of the public and therefore could lead to a more sustainable urban future in China.

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