



**Transition from Plan Environmental Impact Assessment  
to Strategic Environmental Assessment:  
Recommendations of the Project  
“Policy Instruments for a Chinese Sustainable Future”**

Olivia Bina, Ausra Jurkeviciute, and Zhang Hui



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Olivia Bina<sup>(1)</sup>, Ausra Jurkeviciute<sup>(2)</sup>, and Zhang Hui<sup>(3)</sup>

With contributions from Holger Dalkmann<sup>(2)</sup>, Andrea Ricci<sup>(4)</sup>, Daniel Bongardt<sup>(5)</sup> and Zhang Xiaofeng<sup>(6)</sup>

(1) Stockholm Environment Institute

(2) Transport Research Laboratory, UK

(3) Appraisal Centre for Environment and Engineering, Ministry of Environmental Protection, China

(4) Institute of Studies for the Integration of Systems

(5) Wuppertal Institute, Germany

(6) Chinese Academy of Transportation Science

Stockholm Environment Institute  
Kräftriket 2B  
106 91 Stockholm  
Sweden

Tel: +46 8 674 7070  
Fax: +46 8 674 7020  
E-mail: [postmaster@sei.se](mailto:postmaster@sei.se)  
Web: [www.sei.se](http://www.sei.se)

Publications Manager: Erik Willis  
Web Manager: Howard Cambridge  
Layout: Richard Clay

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Policy Instruments for a Chinese Sustainable Future: Environmental Policy Integration and Strategic Environmental Assessment for the Energy and Transport Sectors.  
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## PROJECT OUTLINE

**P**olicy Instruments for a Chinese Sustainable Future focuses on the integration of the environment into transport and energy planning in China, both at the policy level and in terms of concrete measures for the two administrative levels of provinces and municipalities. The outcomes of this project will help to build transportation and energy-use systems that are environmentally sound and capable of achieving sustainable development in China. As part of the Asia Pro Eco II Programme the project contributes to the programme's main themes for China: energy savings, improved air quality and reduced emissions of greenhouse gases.

At the heart of this project are two closely related mechanisms that are central to EU efforts to promote sustainability: Environmental Policy Integration (EPI) and Strategic Environmental Assessment (SEA).

The action targets the inadequate reflection on environmental policy objectives, the weakness of the environment as a cross-sectoral priority, and the need for technical/practical solutions that can lead to immediate improvements in the development of sectoral plans. The 30 months Action consists of four work packages and multiple activities.

For further information please look at:  
<http://www.epi-in-china.com/>

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## ABBREVIATIONS AND TERMS

ACEE	Appraisal Centre for Environment and Engineering, Ministry of Environmental Protection, China
ASIA PRO ECO II	An EC multi-year programme to promote sustainable solutions to urban environmental problems in Asia (2005-2007)
CATS	Chinese Academy of Transportation Science
CHINA-EPI-SEA	Project name "Policy Instruments for a Chinese Sustainable Future" acronym supported by ASIA PRO ECO II
CRAES	Chinese Research Academy of Environmental Science
DG TREN	Directorate General for Transport and Energy, European Commission
DRC	Development and Reform Commission, China
EC	European Commission, European Council
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau, provincial, municipal and country level
EPI	Environmental Policy Integration
EU	European Union
FP7	EU funded research platform
FYP	Five Year Plan
GONGO	Government-Organized Nongovernmental Organization
GTZ	German international cooperation enterprise for sustainable development with worldwide operations
ICPC	EU International Cooperation Partner Countries
MOC	Ministry of Communications, China
MEP	Ministry of Environmental Protection, China
NGO	Non-governmental organization
PEIA*	Plan Environmental Impact Assessment, which is required by the Chinese EIA Law, 2002 as a part of SEA
PPP	Policy, plan and/or programme
RTD	Research and Technical Development
SEA*	Strategic Environmental Assessment
SEI	Stockholm Environmental Institute, Sweden
SEPA	State Environmental Protection Administration, China
TRL	Transport Research Laboratory, UK
WI	Wuppertal Institute, Germany
WP	work package

\* see Preface for an explanation of how these terms are used in this report.

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BINA, Olivia<sup>(1)</sup>  
BONGARDT, Daniel<sup>(2)</sup>  
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DALKMANN, Holger  
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(1) Olivia Bina is the Lead Scientist for the CHINA-EPI-SEA project.

(2) Daniel Bongardt is Project Manager of CHINA-EPI-SEA.

## PREFACE

### THE PROJECT AND ITS TIMELINESS

The world's largest economies are facing major uncertainties with regard to their financial and economic future as the end of this new millennium's first decade approaches but, as many commentators have pointed out, the more serious long-term threats come from the widespread degradation of ecosystems (Millennium Ecosystem Assessment 2005) and the destabilisation of the world's climate (IPCC 2007). This project focuses on two critical sectors: energy and transport, which drive China's economy and – unless re-directed towards more sustainable paths – have severe impacts on ecosystems and climate.

*“Policy Instruments for a Chinese Sustainable Future: Environmental Policy Integration and Strategic Environmental Assessment for the Energy and Transport Sectors”*<sup>1</sup> (hereafter: CHINA-EPI-SEA) is a project supported by the European Commission's Programme Asia Pro Eco II, involving eight partners: four European research institutions and four Chinese organisations involved in planning and environmental protection.<sup>2</sup> The 27 month initiative (between 2007 and 2009), has been led by the Wuppertal Institute and focuses on the integration of environmental concerns in transport and energy planning in China, both at the policy level and in terms of concrete planning at China's two principal administrative levels: provinces and municipalities.

The project is based on the premise that sustainable planning depends on two closely related concepts: Environmental Policy Integration (EPI), which reflects European thinking about how to improve environmental governance (EEA 2005b), and Strategic Environmental

Assessment (SEA) - a mechanism intended to guide and evaluate policy and planning activities in order to take into consideration environmental and sustainability implications of development (Dalal-Clayton and Sadler 2005). The aim is to build capacity to promote energy savings, improved air quality and reduced emissions of greenhouse gases through the strengthening of environmental governance mechanisms such as SEA. Together, EPI and SEA ought to ensure that such priorities are systematically integrated into the planning and development of each sector, and that development promotes a 'moderately prosperous society' as advocated by Central Government (Hu Jintao 2007).

Worldwide, SEA-type practice has taken various forms since the late 1980s and early 1990s. This reflects the fact that the purpose and practical approach to SEA can vary significantly depending on the context and on the type of initiative it is being applied to. Dalal-Clayton and Sadler (2005) provide the most complete categorisation of SEA models (Table 0-1). In this framework both European and Chinese forms of strategic-level assessments fall within the 'formal models'. This is not surprising given that EU legislation for the assessment of the effects of certain plans and programmes on the environment (European Council 2001) was one of the sources of inspiration for the Chinese EIA Law (NPC 2002). The Law regulates the environmental impact assessment of projects and plans, referring to the latter as 'Plan Environmental Impact Assessment' (PEIA). Both models are inspired by EIA of projects and neither piece of legislation refers explicitly to the more common expression of 'strategic environmental assessment' (SEA).

Throughout this report current Chinese practice is referred to as Plan Environmental Impact Assessment (PEIA), to reflect the actual legal expression in the EIA Law, but also to distinguish this formal method (after Dalal-Clayton and Sadler 2005:46) from those which place greater emphasis on the strategic dimension of assessment in line with the basic principles set out by the International Association for Impact Assessment (IAIA 2002) (see Annex A).

The medium to long-term intention of the Ministry for Environmental Protection (MEP), known as the State Environmental Protection Administration (SEPA) until

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1 EC Asia Pro Eco project No. 122184

2 European partners: Wuppertal Institute for Climate (WI), Environment and Energy, Stockholm Environment Institute (SEI), Transport Research Laboratory (TRL), Institute of Studies for the Integration of Systems (ISIS); Chinese partners: Appraisal Centre for Environment and Engineering (ACEE), Chinese Academy of Transport Science, Ministry of Communication (CATS), Sichuan Provincial Appraisal Centre for Environment and Engineering (SACEE), and Xichang Municipal Environmental Protection Bureau (EPB).

**Table 0-1: SEA Models according to Dalal-Clayton and Sadler (2005)**

SEA models	Description and examples
Formal models	EIA based (e.g. US experience and the approach of Directive 42/2001/EC); EIA modified (e.g. Canada and Denmark);
Dual or two-track systems	Combining EIA-types and more strategic versions (e.g. The Netherlands and Finland)
Near-equivalent models	Environmental appraisal (e.g. appraisal of land-use plans in the UK); Regional assessments (e.g. Australia and Canada); and Sustainability appraisals (e.g. Australia and UK);
Integrated models	Procedural integration – no separate procedure for assessment and planning (e.g. New Zealand); Substantive integration – no separate procedure for environmental assessment (e.g. Impact Assessment in the European Commission); and Integrated Assessment and Planning (e.g. UK regional planning system);
Para-SEA models	Elements of SEA: procedures that have ‘some but not all of the features or characteristics of SEA’ (e.g. planning and assessments undertaken within sustainability-based development strategy processes).

Source: based on Dalal-Clayton and Sadler (2005:46)

March 2008, is to develop PEIA as a mechanism that can strengthen the capacity of sectoral institutions to integrate environmental concerns in their everyday activities of planning and implementation. Moreover, PEIA has the potential to become a key instrument for the implementation of a scientific outlook on development, and the pursuit of an increasingly harmonious society (Hu Jintao 2007).

The project has focused on the significant alignment of European and Chinese models and objectives, and explores the potential for mutual learning. It builds on two studies carried out in the central and western China’s provinces of Sichuan (a municipal energy plan) and Shaanxi (a provincial trunk road plan). A wide range of information related to the theory and practice of EPI and SEA has been exchanged between Chinese and European experts throughout the implementation of the project. The case studies, seminars and literature focused on:

- the SEA process (e.g. participation and environmental report elaboration),
- SEA outputs (e.g. SWOT report) and
- SEA methods (e.g. treatment of alternatives in SEA).

Details of Project seminars and results, recorded in the form of discussion papers (see Box 0-1), can be found on the project website: <http://www.epi-in-china.com/publications.html>

In addition to all the outputs, the project has contributed to the actual assessment of two plans: Shaanxi Provincial Expressway Plan and Xichang City Energy Plan. The case studies analyzed in the project are briefly described in the boxes 0-2 and 0-3.

## AIMS AND OBJECTIVES

This paper is the final output of the CHINA-EPI-SEA project, and has been published online in English and Chinese.<sup>3</sup> It provides an overview of the strengths and weaknesses of current PEIA practice in China, and presents a set of practical and regulatory recommendations aimed at improving the effectiveness of PEIA implementation. Today, given the pressures on China’s natural resources, and the implications of a deteriorating environment combined with the effects of

<sup>3</sup> The final Chinese version was presented at the closing seminar, 16 June 2009, and is available at: <http://www.epi-in-china.com/publications.html>

### **Box 0-1: Project outputs which present the core of the 'PEIA Recommendations'**

Project outputs on Environmental Policy Integration:

- *EPI Report – Energy Sector: An Outline of Contents* (No.1);
- *Understanding the relationship between EPI and SEA* (No.2);
- *EPI Report – Transport Sector (An outline of the contents)* (No.3);
- *EPI Report: Administrative Culture and Practice (Transport sector)* (No.11);
- *European experiences with EPI in transport and energy planning and policy* (No.15);
- *Memorandum – European experiences with Environmental Policy Integration (EPI)* (No.18);
- *Project outputs on Strategic Environmental Assessment;*
- *Proposal for the Contents of the Energy SEA Report* (No. 6);
- *Proposal for the integration of the planning and assessment processes (Xichang Energy Plan)* (No.7);
- *Scoping – an Outline of Contents* (No.4);
- *SWOT Analysis – Provincial Transport Plan (An outline of the contents)* (No.5);
- *SWOT Analysis - Provincial Transport Plan* (No.10);
- *Guiding principles for participation, consultation and coordination in SEA* (No.12);
- *Good practice principles for identification and assessment of alternatives in SEA* (No. 16);
- *Principles for Business-as-usual and Alternatives Assessment in SEA* (No.22);
- *Research on European Experience with SEA* (No.9);
- *European experience with SEA: addendum on organizational/institutional set up* (No.14);
- *Memorandum European experiences with SEA - Recommendations for China* (No. 17).

All the above documents can be downloaded from the project website at <http://www.epi-in-china.com/>

### **Box 0-2: An overview of the transport case study of the Provincial Expressway Plan Shanxi**

The transport case study of the Shaanxi Provincial Expressway Plan was aimed at identifying the main problems of current practice for EPI and PEIA in the transport sector in China. The proposed plan is a medium highway plan (up to 2020) and has not provided an assessment of a single transport sector (integrated). The elaboration of the plan has been approved in August 2005 by the government of Shaanxi Province. The aim of the plan was to further develop the expressway and to eliminate bottlenecks of traffic in the province. The New Expressway Plan has been undertaken by the Department of Communication of Shaanxi Province and was largely based on the National Expressway Plan and Provincial Socio-Economic Development Plan.

The layout integrating vertical-horizontal network and radial routes has been adopted for the expressway network in Shaanxi Province. The expressway network is composed of three vertical south-north routes, four east-west horizontal routes and five radial routes with Xi'an being the centre, and the total length of the expressway network is about 5,002 km, including 369 km of five liaison routes.

The elaboration of the plan and its PEIA were completed by the time the project started with PEIA taking place in 2006, and has been conducted by Shaanxi Environmental Provincial Administration. Public consultations took place in June 2006 by posting the environmental evaluation outcomes of the plan on China's Environmental Evaluation website. Consultations were undertaken with governmental authorities and experts from multiple fields. No objections were received during the period of online public announcement. Consultations with governmental authorities included the Provincial Development and Reform Committee, Provincial Environmental Protection Bureau, Construction Department of Shaanxi Province, Land and Resource Department of Shaanxi Province, Water Resource Department of Shaanxi Province, Tourism Bureau and Cultural Relics Bureau. The PEIA report has been reviewed by the Environmental Protection Bureau and in the final approval of the Plan it has been submitted to Shaanxi Development and Reform Commission (based on the CHINA-EPI-SEA Report No. 26)

### **Box 0-3: An overview of the energy case study of the Energy Saving Plan, Xichang City, Sichuan Province**

Xichang city energy plan has been developed by Xichang city's Development and Reform Bureau between 2008 and 2009. It covers the entire Xichang administrative area, which is located in Liangshan Yi Autonomous Prefecture of Sichuan province of China. The plan is a medium and long term (2010 and 2020) energy consumption plan, which aimed at increasing the utilization rate of clean energy such as solar energy, Liquefied Petroleum Gas or Biogas.

The energy plan of Xichang city is consistent with China's 11th National Five-Year Plan (FYP) for Economic Development, 11th National Five-Year Energy Development Plan, 11th National FYP for the Development of the Western Region as well as equivalent plans on the level of Sichuan province. The Plan proposes to replace coal briquette and firewood with cleaner renewable energy such as solar power, biogas and hydro-power. This is in line with the objectives set out by the above mentioned plans, which set objectives such as cutting energy intensity per unit of GDP by 20 per cent, reducing major polluting emissions by 10 per cent, and constructing a resource-efficient and environment-friendly society.

The environmental assessment of the Plan has been carried out by the Xichang Environmental Protection Bureau, the project partner. Consultations have been conducted and information was provided to various stakeholders on the Plan and the Assessment in the form of Advisory Council Meetings. Information has been posted on websites of the Xichang Environmental Protection Network and of the Xichang China Network. The latter resulted in no feedback. The Advisory Council has proposed the inclusion of solar energy, taking into account wind power generation since Xichang is in the Anning Valley and linking energy restructuring with the Panzhihua Iron and Steel Company's production base in Xichang (based on the CHINA-EPI-SEA Report No. 24).

climate change, many are hoping that China will make a forceful move towards sustainable development. PEIA can play a significant role in assisting the Government in such an endeavour, especially in the light of the significant stimulus package (RMB 400 trillion), of which almost two thirds will be directed to the sectors examined in this project: transport and energy (World Bank 2009). PEIA can assist Provincial and Municipal government in ensuring that investments in these two sectors are directed towards resolving, or containing, the threats to the biosphere and climate, while contributing to local development that is sustainable.

This report consists of three sections and a number of technical annexes. Section 1 introduces the Environmental Policy Integration (EPI) framework that provides the contextual basis for environmental integration instruments, such as SEA and PEIA. A separate paper sums up the EPI framework and equivalent developments in China (see CHINA-EPI-SEA<sup>4</sup> Report No. 28\_EN).

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4 CHINA-EPI-SEA is the acronym for the project "Policy Instruments for a Chinese Sustainable Future: Environmental Policy Integration and Strategic Environmental Assessment for the Energy and Transport Sectors".

Section 2 presents the empirical findings from the case studies, expert discussions and workshops held during the project. It characterises the current PEIA approach in China, highlighting the strengths and weaknesses of such applications to the Energy and Transport sectors at the end of the first decade of the 21st century. The section:

- points out the key national legal requirements as well as existing guidance;
- describes the present organisational, institutional and technical capacity for implementing PEIA and SEA processes in China;
- identifies the key stakeholders and partners;
- reveals the strengths and weaknesses of the PEIA approach applied to the given sectors;
- draws lessons learned from case studies carried out during the project on EPI and PEIA in energy and transport sectors; and,
- indicates the gaps which need to be addressed and gives recommendations based on the project's outcomes.

Section 3 provides recommendations to the Chinese regulatory framework and administrative structures in the given sectors. It suggests linkages with other projects and activities in China, which could strengthen the development of PEIA/SEA capacity. It identifies the need for further capacity development and elaboration of SEA-type standards, tools and techniques. This section draws from project experience, and insight from the numerous in-depth discussions and seminars held with Chinese experts from provincial and national government levels (Table 0-2). It also reflects lessons presented and discussed at three crucial conferences thanks to the participation of members of this project:

- *Workshop on Chinese Strategic Environmental Impact Assessment legislation and International Experiences*, organised by China’s SEPA (MEP as of 2008) and GTZ, Beijing, 27-28 September 2007;
- *International Conference on Strategic Environmental Assessment*, organised by SEPA – in collaboration with the International Association of Impact Assessment, 3-4 November 2007, Beijing; and
- *Chinese SEA Academic Forum*, organised by the Chinese University of Hong Kong and Nankai University, Hong Kong, 27 February-3 March 2009.

Finally, Section 3 also proposes a set of future research and input topics, which may be a follow up to the present project.

The Annexes to the “Recommendations” paper present the compilation of key messages from project discussion papers and outputs from the SEA pilots. The complete set of project papers can be downloaded in English or Chinese from the project website.

## TARGET GROUP OF THE PEIA RECOMMENDATIONS

The aim of the paper is to summarise and disseminate key lessons learned during the Project. The findings of the paper are aimed at:

- Chinese national and provincial government officials from MEP and from the leading development Ministries and related provincial governmental authorities, whose plans are subject to the EIA Law;
- Chinese and international assessment experts, consultants and government research and planning institutions providing data and technical input to the above mentioned ministries;
- non-governmental organisations in China, who are interested in taking part in the development and

**Table 0-2: Project Seminars and conferences on PEIA in China, attended by Project partners**

Seminar details	In-text reference
All-partner and stakeholder meeting, Beijing, Xi’an and Chengdu, 11-19 June 2007	S1
All-partner meeting, Amsterdam, 29-30 October 2007	S2
CATS, ACEE and European partners meeting, Beijing, 2-3 June 2008	S3
All-partner meeting, Chengdu, 17-20 November 2008	S4
Workshop on Chinese Strategic Environmental Impact Assessment legislation and International Experiences, organised by China’s SEPA (MEP as of 2008) and GTZ, Beijing, 27-28 September 2007	C1
International Conference on SEA, organised by SEPA – in collaboration with the International Association of Impact Assessment, 3-4 November 2007, Beijing	C2/ SEPA 2008
Chinese SEA Academic Forum, organised by the Chinese University of Hong Kong and Nankai University, Hong Kong, 27 February-3 March 2009.	C3

planning of the Chinese transport and energy sector through participation;

- development institutions and banks who implement or are planning to carry out projects in China in energy, transport and environment, such as the World Bank or Asian Development Bank;
- Chinese students and scholars interested in European and Chinese perspectives on environmental policy integration and assessment.

The technical annexes provide more detailed information aimed at practitioners.

## 1 EPI AND ASSESSMENT IN CHINA

Throughout the project “Policy Instruments for a Chinese Sustainable Future”, SEA and China’s PEIA, are considered instruments within the broader framework of Environmental Policy Integration (EPI). This section explains the linkage between EPI and PEIA/SEA, and presents a brief overview of EPI in China. For more background and details one can refer to CHINA-EPI-SEA Paper No. 28 and the article by Bina (2008b), on which this section is based.

### 1.1 EPI: OBJECTIVES AND FRAMEWORK

Generally speaking, SEA is an established term with a defined process, methodologies and practices. Environmental Policy Integration (EPI), on the other hand, is a more recent term that refers to the policy principle first established by the Brundtland Commission in 1987:

*‘The major central economic and sectoral agencies of governments should now be made directly responsible and fully accountable for ensuring that their policies, programmes and budgets support development that is ecologically, as well as economically sustainable’ (WCED 1987: 314).*

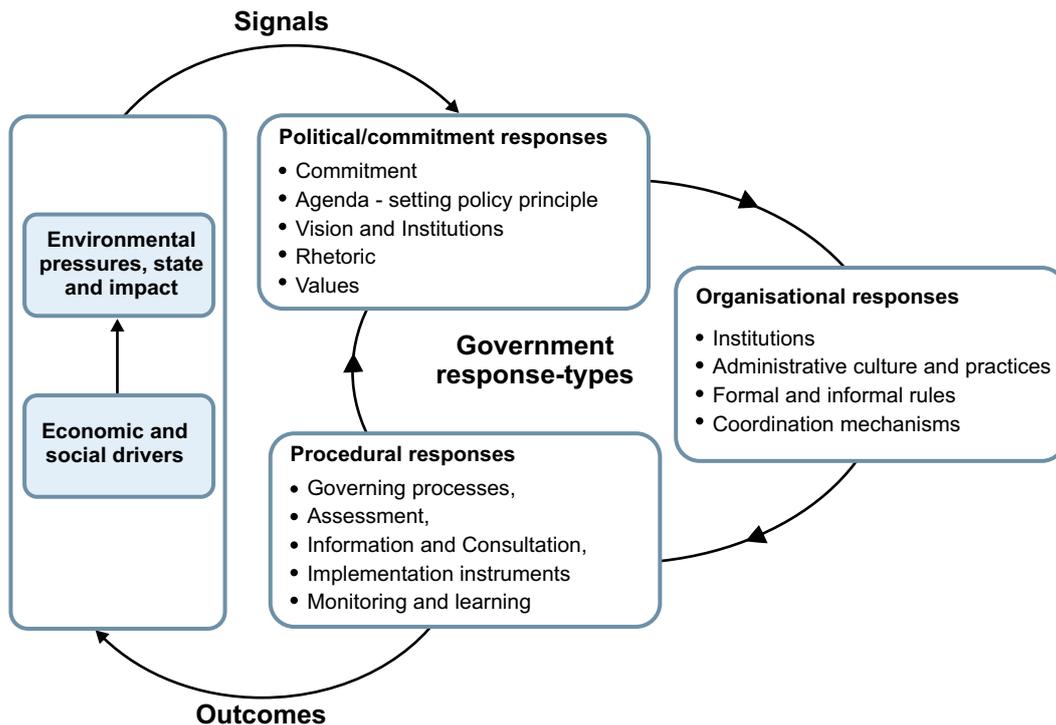
The expression EPI was coined, subsequently, to refer to this policy principle, and more broadly to the suggestion ‘that environmental thinking should be integrated into sectoral policy making at the earliest available opportunity in order to make human development more sustainable’ (Jordan and Lenschow 2008: xvii). It is concerned with the need for profound innovation in solving the tension between environment and development, and in particular for changes in traditional political orientation and institutional arrangements, all emphasised by the Brundtland Commission. EPI describes the relationship between a wide range of practices and activities (including SEA), that have been carried out over the last few decades under the headings of environmental protection, environmental governance and sustainable development. The origins of EPI are thus linked to those of sustainable development. EPI expresses the concerns arising from the weakness of early environmental policy, which reacted to the impact of man on nature by promoting the rise of a

new sector: the environmental sector of the 1970s. Although the sector was instrumental in raising understanding and awareness of the many unwanted impacts of development on the environment and natural resources, it also suffered from being – more often than not – the weakest government sector (ministry or department) amongst powerful ministries. China has witnessed similar trends (Xue Lan *et al.* 2006), and the very recent upgrading of SEPA to ministerial rank (March 2008) has yet to prove that the environment sector will gain sufficient recognition amongst its peer institutions.

EPI is considered implicit and indispensable to sustainability. The objective of EPI is to insert environmental policy considerations into the formulation and implementation of other development policies, for sectors to share ownership of environmental policy (EEA 2005b). Currently, EPI is not a common expression in China’s environmental and sustainability policy domains. However, its underlying concept is shared by the Government’s policy on sustainable development (NPC 1994 and NDRC 2007), and this project explored the extent to which EPI is taking place ‘de facto’ in China, and the strengths and weaknesses of its application.

The analysis draws on the European Environment Agency’s (EEA 2005b) *Framework for evaluating integration of environment into sector policies*, which proposes a set of criteria for understanding how to promote integration, and which identifies SEA as a key mechanism for delivering EPI (see Figure 1-1: ‘Procedural variables’ including ‘assessment’). The purpose of such a framework is to analyse these practices and activities in a systematic and comprehensive way, in order to be able to assess the progress of key sectors (such as energy or transport) towards environmental protection and sustainability.

The three government response types - political, organisational and procedural - are intended to meet the expectations of the Brundtland Commission for profound innovation and institutional change by operationalizing sustainable development in everyday policy-making. This is also the aim expressed by the Chinese Government in its *White Paper on China’s*



**Figure 1-1: Framework for evaluating environmental policy integration in China**

Source: adapted from EEA 2005b.

Note: For more background and details of the analytical framework, please refer to CHINA-EPI-SEA Paper No. 28.

*Population, Environment and Development in the 21st Century* (NPC 1994) and subsequent updates (see (NDRC 2007).

Throughout this project the analytic lens of EPI on China’s environmental policy and governance practice has been used to deepen current understanding of the weaknesses and strengths identified in recent studies (Mol and Carter, 2006; OECD, 2007; Xue Lan *et al.*, 2006). The EPI discussions within the project helped to explore the potential contribution of Europe’s EPI concept (and practice) towards supporting China’s ‘environmental protection campaign’ in general, as well as to place current Plan Environmental Impact Assessment (PEIA) practice in the wider context of effective environmental governance (Bina 2008). Finally, it is expected that EPI concepts may also contribute ideas for the development of a ‘macro environmental strategy’ for the more systematic implementation of environmental protection throughout the country by all major sectors. The initiative, launched in May 2007 under the leadership of Xu Kuangdi, President of the Chinese Academy of Engineering, aims to implement the scientific outlook

on development and explore a road for environmental protection with Chinese characteristics (MEP 2009). In line with the EPI concept, it refers to the need to integrate environmental management into state planning and the market economy as a key priority.<sup>5</sup>

## 1.2 SUMMARY FINDINGS ON EPI IN CHINA<sup>6</sup>

Based on the EPI framework discussed above, the project’s main findings on EPI-type practice in China can be summarised under the following headings.

### **Political responses: strong but unpersuasive**

Central Government’s commitment to environmental protection and sustainable development (scientific view-point of development and harmonious society) has been stated clearly and at the highest levels of

<sup>5</sup> For more information see: [http://www.cenews.com.cn/xwzx/zhxw/qt/200903/t20090317\\_599803.html](http://www.cenews.com.cn/xwzx/zhxw/qt/200903/t20090317_599803.html)

<sup>6</sup> Interested readers should refer to the full report: CHINA-EPI-SEA Report No.28

policy definition (see Hu Jintao 2007). Specific objectives, including the target of reducing energy intensity per unit GDP by 20 percent by 2010 (NPC 2005; NDRC 2007), are now universally acknowledged at all levels of governance (from central government to municipalities).

However, the political responses and their rhetoric need to translate into day-to-day practice, and to influence the planning and market economies that coexist in contemporary China. This can only be achieved by moving from the definition of objectives to the adoption of a new approach to development. Four obstacles can be identified: a) failure by central government to persuade leaders and administrations across the many levels of governance to take ownership of EPI-type objectives, b) inadequate and insufficient resources and capacity across the many levels of governance that ought to implement EPI-type objectives, c) limited capacity of the judiciary to assist in the enforcement of relevant legislation, and d) a prior and enduring commitment to the economic growth imperative, which continues to override the pursuit of sustainable development. The latter is especially a concern in the current time of crisis that increases pressures to sacrifice the environment and longer term sustainability for more immediate relief of economic and social tensions.

### **Procedures and mechanisms: quantity versus quality**

This aspect of the EPI framework is the most common area of practice in Europe, and China seems to follow a similar pattern. The range of procedures and mechanisms adopted in China is significant and attests to the country's modernisation and to its embracing of economic and market actors.

Song Guojun and others (2008: chapter 4) identify three categories of methods for environmental policy in the broadest sense:

- 'command and control' including regulation that introduces and enforces bans and phasing out of environmentally unfriendly processes and products, emissions and energy efficiency standards, etc., all of which maintain a central role in China;
- 'market/economic', including taxation and pricing reforms, the internalisation of externalities,

the discontinuation of subsidies to sectors and products that have poor environmental performance, etc. These are relatively recent in China and – according to the authors should be applied only after careful analysis of costs and benefits; and,

- 'persuade and encourage', which respond to the Chinese traditional values and praise of excellence. They include: information, education, public participation, voluntary agreements, and evaluation and praise systems, including, for example, the environmental model city program. Many of these 'persuade and encourage' mechanisms fall into the EPI categories discussed during the project (for details see: CHINA-EPI-SEA Report no.28).

The main obstacle continues to be effective implementation, rather than mechanisms. The reasons for this weakness vary depending on the procedure or mechanism. However, one common theme worth mentioning here is the lack of a strategic approach (cf. MEP 2009). Overall, EPI and sustainability remains the subject of procedures and tools, rather than strategy and long-term design, and this places such priorities at a disadvantage compared to the strategic imperative of economic growth, which continues to override all other priorities at local level.

From the perspective of EPI response-types, China reveals a preference for quantity (number of mechanisms, i.e. practical solutions and actions), rather than quality (a strategic framework to guide the effective implementation of mechanisms). The capacity to devise mechanisms and tools has unquestionably been a strength of China's government. The quantity of procedural responses is not matched by a capacity for strategic coordination and optimal use of all these mechanisms, nor for overall planning for the implementation of environment and sustainability priorities, which remains weak.

### **Organisations: fragmented authority**

Organisational responses involve a change in the administrative culture, rules and practices that EPI theory considers to be the most effective glue between political and procedural responses, discussed above. Government's capacity for leadership, responsibility, accountability and coordination is meant to facilitate the effectiveness of procedural

responses. Organisational responses make possible the kind of innovation and far reaching change sought by the Brundtland Commission, and implicit in the idea of scientific outlook on development; they define the rules and practices that can take environmental concerns beyond existing (and mainly technical) environmental departments, into the heart of sectoral policies and decision-making.

In summary, two weaknesses have been identified: fragmented authority and unpersuasive leadership for EPI, which undermine the effectiveness of organisational-type EPI responses, and in turn, procedural responses, which end up being poorly implemented partly as a result of weak EPI within sectoral organisations (please refer to Report no. 28 for details).

Authority is required in order to operate throughout the government machinery, and in China authority is inseparable from rank. Although commitment to EPI and sustainability in China comes primarily from Central Government, the day-to-day delivery of environment policies and measures is the responsibility of MEP and its environmental protection bureaus (EPBs). Authority and influence (let alone the resources) of environmental bureaus throughout the country remain inadequate given the scale and pace of the task. Thus, suddenly, the fact that primary support for EPI comes from the Centre, suggests as many weaknesses, as strengths. There is no simple top-down line of authority to deliver EPI. Instead, as noted by many studies, authority is fragmented both horizontally and vertically. Solutions can be found, of course, including involving high ranking offices such as the Development Reform Commissions in Provinces and Municipalities, or the Mayors' offices. Examples of these difficulties, and their solutions, abound even within the CHINA-EPI-SEA project. But the point remains that a significant part of the energy of governing is devoted to reducing fragmentation through negotiation and building consensus, at the great expense of social capital (*guanxi*).

Effectiveness of EPI procedures requiring the involvement of different authorities, such as PEIA – deemed the most important of existing EPI procedures in China – is thereby severely compromised.

Put simply, unless leaders have an interest in EPI-related objectives, it is difficult to pursue these through China's vast machinery of government, and given the limited capacity for mobilisation from the Centre, dilution of the original commitment seems inevitable. Abundance of leaders does not translate into EPI-related leadership, and this also helps explain the limited implementation of procedural responses (above), including that of PEIA which is the subject of the remainder of this report.

### 1.3 EPI AND ASSESSMENT

EPI and SEA are complementary concepts and processes. EPI refers to the context of SEA, and in particular to the capacity for environmental governance of such context, its political commitment to environmental integration and sustainability, the organisational settings that aim to facilitate the implementation of this commitment, and the range of instruments and procedures available for such task (institutional level). SEA is potentially one of the most powerful instruments available to promote environmental integration in planning and policy making. It is an essential instrument of EPI, and in China, progress in the theory and practice of PEIA could ensure that it makes a substantial contribution towards the aims of EPI, ultimately ensuring a more effective pursuit of sustainable development objectives (NDRC 2007) and the priorities of a scientific outlook on development and a harmonious society (Hu Jintao 2007).

Table 1-1 identifies the basic differences and complementarities between EPI and SEA. In essence, SEA (and PEIA) can be seen as a process contributing to the achievement of EPI, and is thus a sub-set of EPI in practice. The project reports on energy and transport EPI (CHINA-EPI-SEA No. 21 and 25) provide a general overview of EPI-related activities that are being carried out in these sectors in China.

**Table 1-1: Complementarities and differences between EPI and SEA**

Issue	EPI	SEA
Definition	<p>EPI is a way of thinking (concept) about how Government can achieve environmental protection and sustainable development through its day-to-day sectoral activities.</p> <p>EPI can be defined as a continual (permanent) process to ensure environmental issues are reflected in all policy- and plan-making of economic and social development sectors. This generally demands changes in political, organisational and procedural activities, and can be supported by procedures and tools. SEA is just one of the mechanisms that can help deliver EPI in a particular sector.</p>	<p>SEA is an assessment process that uses a range of methods and tools.</p> <p>SEA can be defined as the process of environmental assessment that provides for a high level of protection of the environment and contributes to the integration of environmental considerations into the preparation and adoption of policies, plans and programmes with a view to promoting sustainable development.</p> <p>SEA is a process involving certain steps that have been specified in legislation or in guidance.</p>
Key concept	Environmental governance	Assessment
Status	<p>There is no one specific ‘recipe’ for an EPI process, but it is a general concept or principle. The European legislation on EPI states that “environmental protection requirements shall be integrated” in sector policy, it does not specify how this should be achieved in practice. For this reason, the European Environment Agency has recently produced an overall framework of key elements of an EPI process – to guide European Governments in implementing EPI into key sectors, and evaluating progress on EPI (EEA 2005).</p>	<p>There are many ways in which SEA has been applied throughout the EU and the world. However, contrary to EPI, SEA has recently been regulated in national laws and many technical guidance documents can be found detailing the stages, tasks and methods involved in SEA (see Dalal-Clayton and Sadler 2005; IAIA 2002).</p>
Focus of application	<p>Overall economic and social sectors.</p> <p>EPI is typically understood as a continual process within the administrations and institutions responsible for economic and social sectors, such as energy, transport, agriculture, industry, urbanization, education and so on.</p>	<p>Policies, plans or programmes (for specific sectors, e.g. energy and transport, or for multiple sectors e.g. China’s Five year Plans, or for specific areas, e.g. urban or river-basin plans)</p> <p>SEA is typically applied to individual policies, plans or programmes from a range of economic and social sectors, such as energy, transport, agriculture, industry, landuse planning and urbanization (depending on legal requirements, or ad hoc practice).</p>
Duration	<p>EPI should take place on a permanent and continuous basis, it does not have a beginning or an end. It is not a process that should be started at a certain point in time, but it is a way of working and it is about environmental awareness at different stages in the policy- and plan-making process.</p>	<p>SEA is a process with a clear beginning and end that is undertaken in conjunction with a specific PPP.</p> <p>Following the assessment and reporting, SEA processes include evaluation and monitoring, which aim to accompany the policy, plan or programme throughout its implementation.</p>

Issue	EPI	SEA
Defining elements and stages	<p>In order to more easily understand whether EPI takes place in sector policy-making, EPI can be examined in five different elements of the sector policy system (that continuously produces specific policies and plans):</p> <ul style="list-style-type: none"> <li>• commitment and vision</li> <li>• administrative culture and practice</li> <li>• assessment, information, consultation</li> <li>• use of policy instruments</li> <li>• monitoring and evaluation.</li> </ul> <p>These different elements do not necessarily follow on from each other in a sequential way. Relationships between the different elements can be looked at, but also each element in a separate way.</p>	<p>To undertake SEA there are well-established good practice experiences that have resulted in different stages:</p> <ul style="list-style-type: none"> <li>• consultation and participation (at different times throughout the process)</li> <li>• scoping: context, baseline, objectives and possible alternatives (iterative stage throughout the process),</li> <li>• a clear plan to ensure the integration between planning and assessment</li> <li>• assessment (prediction, evaluation)</li> <li>• preparing the environmental report</li> <li>• quality review</li> <li>• monitoring and evaluation.</li> </ul> <p>A good SEA should include all these stages (see also IAIA 2002).</p>
Output / Products (and links between EPI and SEA)	<p>The product of EPI should be an overall improvement in policy and implementation, in line with sustainable development needs (EEA 2005). Effective EPI requires a regular flow of information about the sector's performance in terms of environmental protection and sustainable development, i.e. environmental signals.</p> <p>Many standard reporting mechanisms can be considered interim products of EPI – illustrating progress in EPI implementation. For example: state of the environment reports, reports based on sustainability indicators for the sector in question, ad hoc policy analysis documents that can be produced from time to time, as well as national, provincial or municipal sustainable development strategies.</p>	<p>The product of SEA is typically an environmental report (the contents of which will depend on legal requirements, or ad hoc practice).</p> <p>However, increasingly, SEA is seen as a process that produces several documents or products (e.g. scoping reports, minutes of key meetings, or workshops, etc.). SEA is about using existing relevant environmental information and collecting any additional data necessary for the assessment of a specific policy, plan or programme.</p> <p>If the sector, for which a plan is being proposed, performs well in terms of EPI, then the SEA process will be facilitated in several ways:</p> <ul style="list-style-type: none"> <li>• information on the environmental and sustainability performance of the sector should be readily available;</li> <li>• awareness of the importance of environmental and sustainability issues should be widespread amongst all actors;</li> <li>• the overall aim of defining environmentally sustainable policies, plans and programmes for the sector should be generally shared by all actors.</li> </ul>
Application at different administrative levels of Government	<p>EPI can be examined at all levels; national, provincial, and municipal. Many of the conditions for EPI will be determined at a higher level. Especially policy commitments.</p>	<p>SEA can be applied to policies, plans or programmes defined for any administrative level of Government. It is most commonly applied to plans and programmes at the municipal and provincial (or regional) levels.</p> <p>However, Chinese experts are exploring the opportunity of applying a form of EIA to policies (see Section 2).</p>

Issue	EPI	SEA
Measuring effectiveness	In order to measure the success of EPI, indicators for each of the five different elements of EPI can be examined. These could be process indicators that demonstrate new ways of working, e.g. whether a sectoral environmental strategy has been developed. The ultimate interest is whether integration efforts have led to better sector policy outcomes and a better sector environmental performance.	In order to measure the success of SEA, the quality of the SEA itself could be reviewed and its impact on the final decision and design of the plan/programme can be analysed.  It is also useful to consider the following factors: adequate availability of resources (financial and human/expertise), degree of coordination between planners and assessment experts, adequate and timely accessibility to data and information.

Source: Adapted from Persson and Bina 2007 (CHINA-EPI-SEA Paper No.2)

## 2 PEIA APPLICATION IN CHINA: AN ANALYSIS OF CHALLENGES AND OPPORTUNITIES

### 2.1 THE CRITICAL ROLE OF ENVIRONMENTAL ASSESSMENT IN CHINA

The previous section presented the project's findings on environmental policy integration (EPI) in China, noting that while the expression is not commonly used, some EPI-type ideas and instruments can be identified in Chinese practice. This section discusses the application of one of the EPI instruments - PEIA - in China, and, drawing on the empirical findings of the project, proposes recommendations for the further development of environmental assessment with the aim of facilitating a transition from PEIA to generally agreed international SEA practice and standards.

The Environmental Protection Law of December 1989 has established that national plans for environmental protection must be incorporated into national economic and social development plans. The Government shall adopt economic and technological policies and measure favourable for environmental protection so as to coordinate the work of environmental protection with economic construction and social development. Article 4 of the Environmental Protection Law (1989) requires integration of the environment into other development sectors.

The tension between rapid economic growth and the deteriorating state of the environment was already exacerbated by the late 1980s, and by the 1990s SEPA was fully engaged in a mission to raise awareness of the scale and urgency of the problem: environmental issues "became the main bottlenecks restricting the economic and social development and one of the exploding points of society conflicts" (Duan Peijun, 2008).

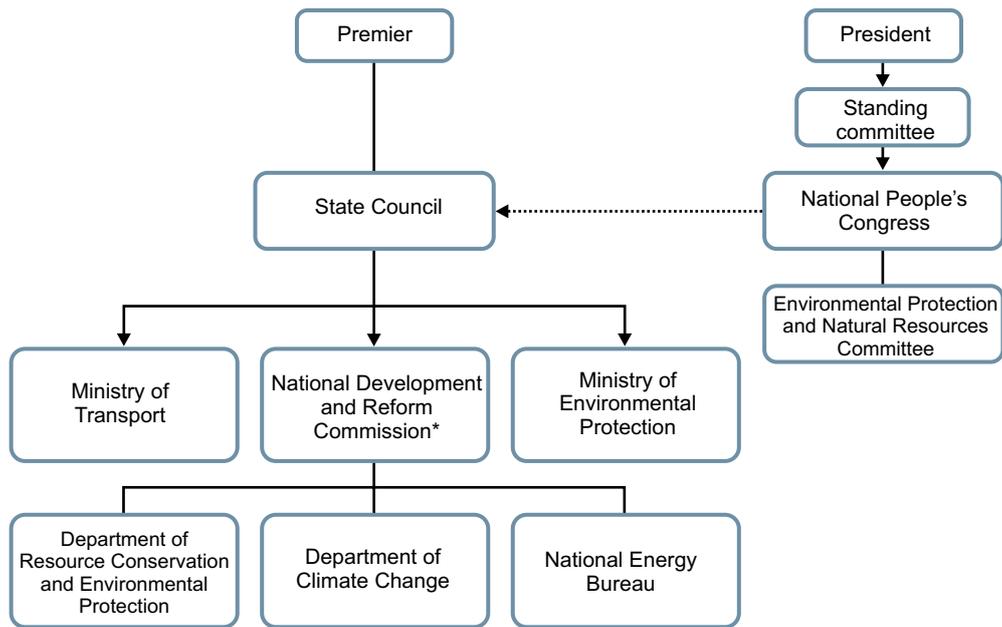
The approval of China's EIA Law in October 2002 was therefore a major step forward in strengthening the national capacity to remedy the problems caused by its pursuit of rapid economic growth. The law, which came into force in September 2003, regulates both project and PEIAs. It requires their application to ten categories of 'specialised plans' (industry, agriculture, animal husbandry, forestry, energy, water conservation, transportation, urban construction, tourism, and natural resources development) and four 'comprehensive

development plans': land-use, river basin, coastal and regional development (S1).<sup>7</sup> This Project focuses on energy and transport, two sectors chosen for their central role in all four 'comprehensive development plans', as well as for being two of the ten specific topics listed in the EIA Law. The large scale investments in transportation make it essential that the PEIA of this sector is rapidly improved, and that the institutional barriers to sustainable transportation systems planning are removed. The Shaanxi case study highlighted the key areas requiring change and improvement. There has also been growing concern over the energy intensity of the country's economy and the local and global impacts of energy use on the environment. Given the importance of this area of planning and development, and given the limited experience of energy PEIA in China (and elsewhere), the Xichang case study focuses on a municipal energy plan.

In recent years, thanks also to MEP's efforts to promote good practice through pilot PEIAs in various sectors and parts of the country, China has made great progress (see SEPA 2008; C2 and C3). However, this remains true primarily for high-profile cases that receive the attention of top officials and in some cases even the direct participation of MEP's Vice Minister Pan Yue. Many PEIA's that are considered leading examples, especially applied to urban and land-use relate to areas in the richest part of the country - the coast and the South. Here, thanks also to the greater wealth of the region and its citizens, there is evidence of higher levels of support for the improvement of the environment. This awareness, combined with greater average wealth, has enabled local governmental leaders to weigh the benefits and costs of development, paying greater attention to the impacts on the environment. Most parts of the Western and Northern regions remain in a position where opportunities for growth (still largely linked to heavy industry and large public infrastructure projects) are likely to take priority, and where the old refrain 'grow now, clean up later' continues to apply.

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7 Throughout this section we refer to evidence and direct quotes from the project's four Seminars (see Table 0-2 on page 5 for the coding used: S1, S2 etc.).



**Figure 2-1: Key actors in China's environment, energy and transport sectors**

Source: Urda Eichhorst, personal communication, 2009

\* The National Development and Reform Commission (NDRC) is considered a unique organisation amongst the range of Chinese Ministries. Its rank of 'Commission', and its remit covering a wide range of sectors - including energy - results in greater power and influence even compared to historically powerful Ministries like that for Railways. The NDRC also enjoys a closer relationship with the State Council.

The current global economic slowdown has now affected this situation, and even the richer provinces in China are witnessing significant changes. The stimulus package is speeding up a wide range of development initiatives, many of which are in the field of transport and energy (World Bank 2009). As mentioned in the opening section of this report, it is hoped that PEIA will be adequately strengthened and supported by the highest levels of government, and in particular by the Chinese Premier, State Council and the NDRC (see Figure 2-1). This alone will enable the mechanism of PEIA to play a significant role in ensuring that the balance between growth, human health, environmental protection and wellbeing is made on the basis of clear evidence and arguments. In other words, in line with the precepts of the Communist Party of China's principles of 'scientific development' (Xin Hao and Stone 2008).

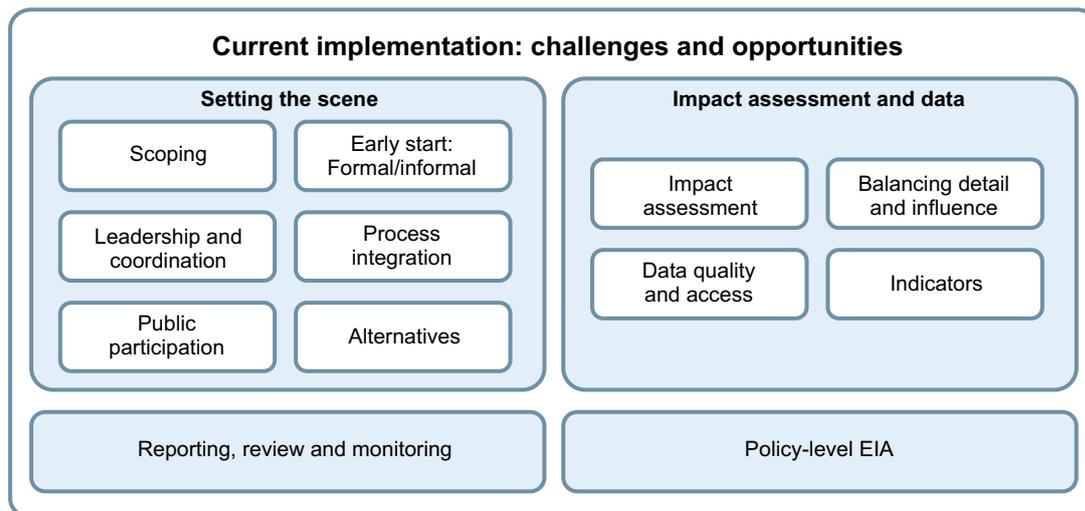
Scholars and experts have offered detailed analyses of the strengths and weaknesses of the EIA Law and of the *Technical guidance for planning environmental impact*

*assessment (on trial)*, issued in 2003<sup>8</sup> (see for example: Bao *et al.* 2004, SEPA 2008, Zhu and Ru 2007). Many of the problems identified are similar to those that characterised the early stages of SEA application elsewhere: late start, excessive detail compared to the strategic level of assessment, poor consideration of alternatives, limited public participation, limited capacity to influence the final decision. Perhaps the best summary is offered by the following conclusion by Zhan Cunwei & Qiu Xinxin (2008): 'most of the deficiencies in the area of [PEIA] correspond to the EIA deficiencies at the project level in China'.

The following section reflects on persisting challenges relating to theoretical, legal and practical aspects of PEIA, but it also explores opportunities offered by current implementation trends and proposals. Figure

<sup>8</sup> The contents of the guidance follow Canadian, America and European (Directive) experience and guidance.

Amongst the strengths of the guidance we note: the consideration of positive effects as well negative and cumulative impacts, the need to initiate PEIA as early as possible and to consider alternatives.



**Figure 2-2: Key recommendation themes identified during the CHINA-EPI-SEA project**

2-2 provides an overview of the main recommendation themes being discussed.

## 2.2 SETTING THE SCENE: SCOPING AND PROCESS INTEGRATION

Formal vs informal early start

Scoping is a ‘critical stage’ in SEA (Project Report 4) and this is also true in China’s PEIA practice (S4). The stage commonly referred to as ‘scoping’ will include:

- the analysis of existing plans that can directly or indirectly influence the proposal;
- the analysis of key actors and stakeholders;
- the identification of alternatives;
- the identification of impact themes;
- the plan for involving the public; and,
- the outline of the final report (which are standardised by MEP).

However, all these issues may not be recorded systematically in a ‘scoping report’ for a number of reasons. Often, the process of discussing and deciding upon these issues will lead to separate reporting mechanisms, or may be considered part of the ‘planning’ effort (e.g. analysis of key actors). Some tasks can also take place

before the formal PEIA process is considered to have started. This happened in the energy study, but did not affect the substance of the tasks. Quite the contrary: the Xichang example shows significant effort was made to start considering issues a) to e) before the PEIA itself was considered to have started. This was primarily the result of close collaboration between the DRC and EPB, that is, the planning and environmental protection authorities.

Thus, an informal process that can lead to the completion of key scoping tasks at a relatively early stage can be identified, even though formal PEIA procedures will only begin later, once the draft is in place. This can reduce the ‘late start’ to a matter of form, rather than substance, and can be a temporary solution to the failure to comply with the PEIA Guidance (SEPA 2003) unequivocal request to initiate PEIA as early as possible. This is ‘temporary’ because the fact that collaboration takes place outside the official PEIA procedure raises two problems: firstly, this is not a systematic practice, but rather an ad hoc occurrence, and secondly, should there be disagreements in terms of the way forward, the fact that these exchanges occur outside the legal framework of PEIA means that environmental and social issues might be sidelined more easily. Furthermore, if started late, it becomes a very difficult and costly process that makes it difficult to reach consensus and integrate assessment findings into the planning outputs.

The transport case presents a very different, and equally revealing, picture. The PEIA of the expressway plan was initiated once the final version of the plan had already been drafted. This is far from uncommon throughout the country

(S1-4). Typically, the EPB will be notified of a plan when it is ‘almost final’, and, at least as far as the road transport sector is concerned, often the plan has already been approved (S1, S4, C2). The explanations offered include: planning takes place too quickly and does not allow for an early start; the planning authority simply fails to notify the EPB until a draft is ready; the tendency of some planning authorities to consider PEIA and EPB’s involvement as an intrusion; the lack of awareness and ownership of the PEIA process by planning authorities; the general belief that ‘we need something to assess’ (S1) – suggesting that PEIA cannot begin until a draft is ready; the approval of plans without their PEIA by State Council despite the fact that EIA Law requires that draft plans should be submitted for approval to State Council and local governments only after the evaluation of their environmental effects (S4).

However, ultimately the simplest and strongest reason appears to be that the EIA Law states that the impact assessment should be carried out on the draft plan, and the formal process of PEIA is linked to this specific impact assessment task, rather than an extended scoping stage.

The project therefore confirms a structural impossibility to pursue the ideal of an early start for PEIA. Provincial and local governments and their sectoral departments will, as a rule (EIA Law), involve the EPB and the agency/experts responsible for the PEIA, only once a draft of the plan has been prepared (S1, S2, S4). There may be some exchanges prior to that, but these rarely amount to more than a request by the top planning agency (for example Provincial MOC in the Shaanxi case) for data. Of course, there are ‘informal’ exceptions, as illustrated by the Xichang case – and just as in many other parts of the world, these will largely be the result of the efforts of individuals who are capable of leadership and the influence of the processes of planning and assessment (see also Section 1.2). However, current practice follows the formal path of PEIA process exemplified by both case studies which started only when the ‘draft Xichang energy plan’ had been completed (see Xichang case, Figure 2-3).

A similar process and timing is expected for transport PEIA. As illustrated in Figure 2-4 PEIA is expected to start once crucial planning stages, and decisions, have already been made: transport demand, optimal structure and location of the network to mention but a few.

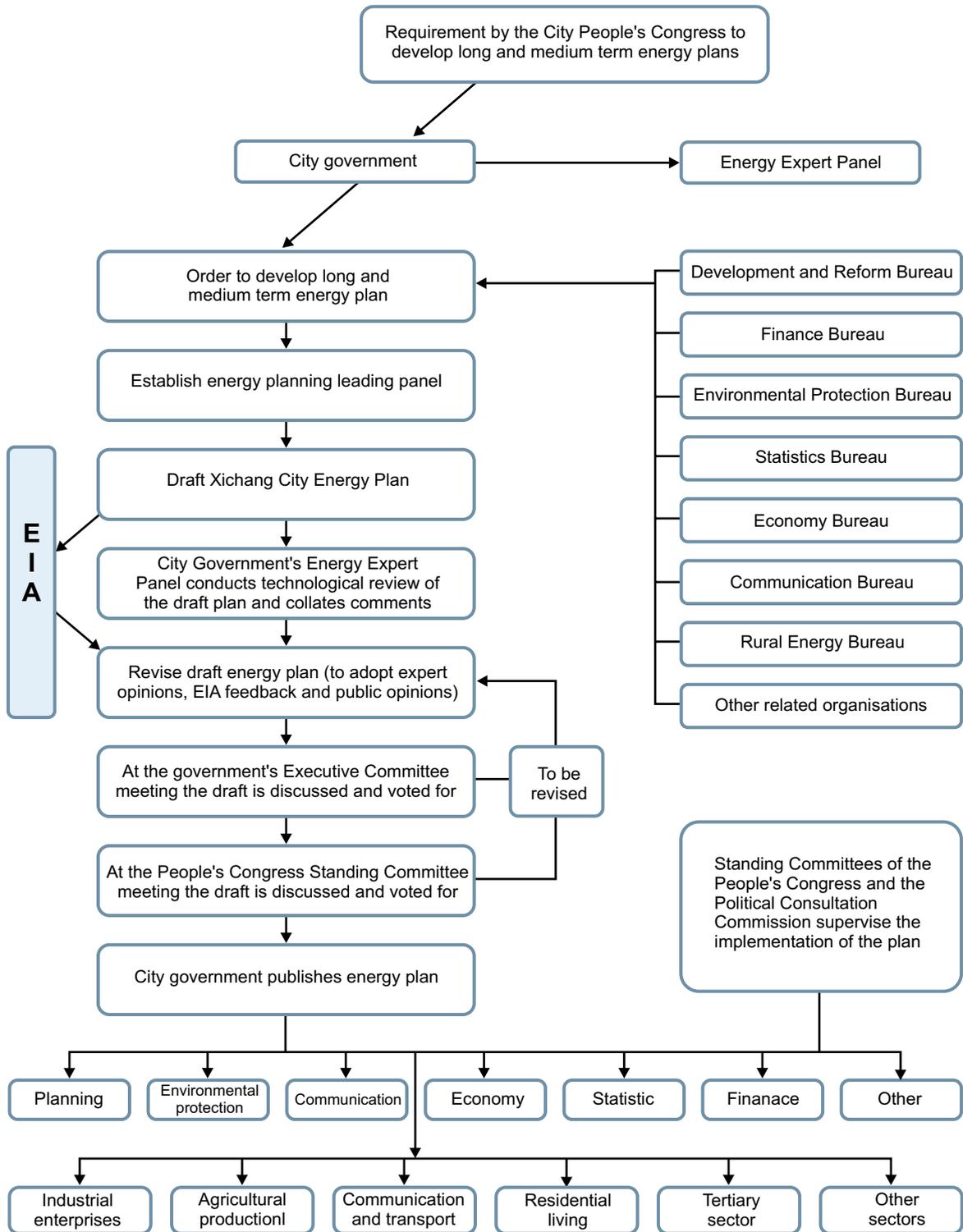
#### **Recommendations on the ‘early start’ of assessments:**

- promote an early start, ideally so that it can be required in formal terms by stakeholders; (requires a change of the EIA Law);
- as an interim solution, accept informal processes - as long as the main steps and decisions are recorded and can be clearly identified;
- consider introducing new rules that require DRCs to notify EPBs at the earliest possible stage;
- National Council, NDRC and DRCs to set the example by initiating PEIA in good time;
- introduce the practice of Scoping Reports as a separate document that needs to be discussed and approved jointly by the planning and assessment authorities (requires a change of the EIA Law);
- develop detailed guidance on this critical stage of PEIA, promoting the use of tools such as simple organigrams and tables identifying ‘windows of opportunity’, which can increase transparency and facilitate coordination (Project Reports 4 and 7);
- explore the opportunity of requiring the approval of a scoping report by an independent party (S2; see also: Review, below).

#### **Process integration, leadership and coordination**

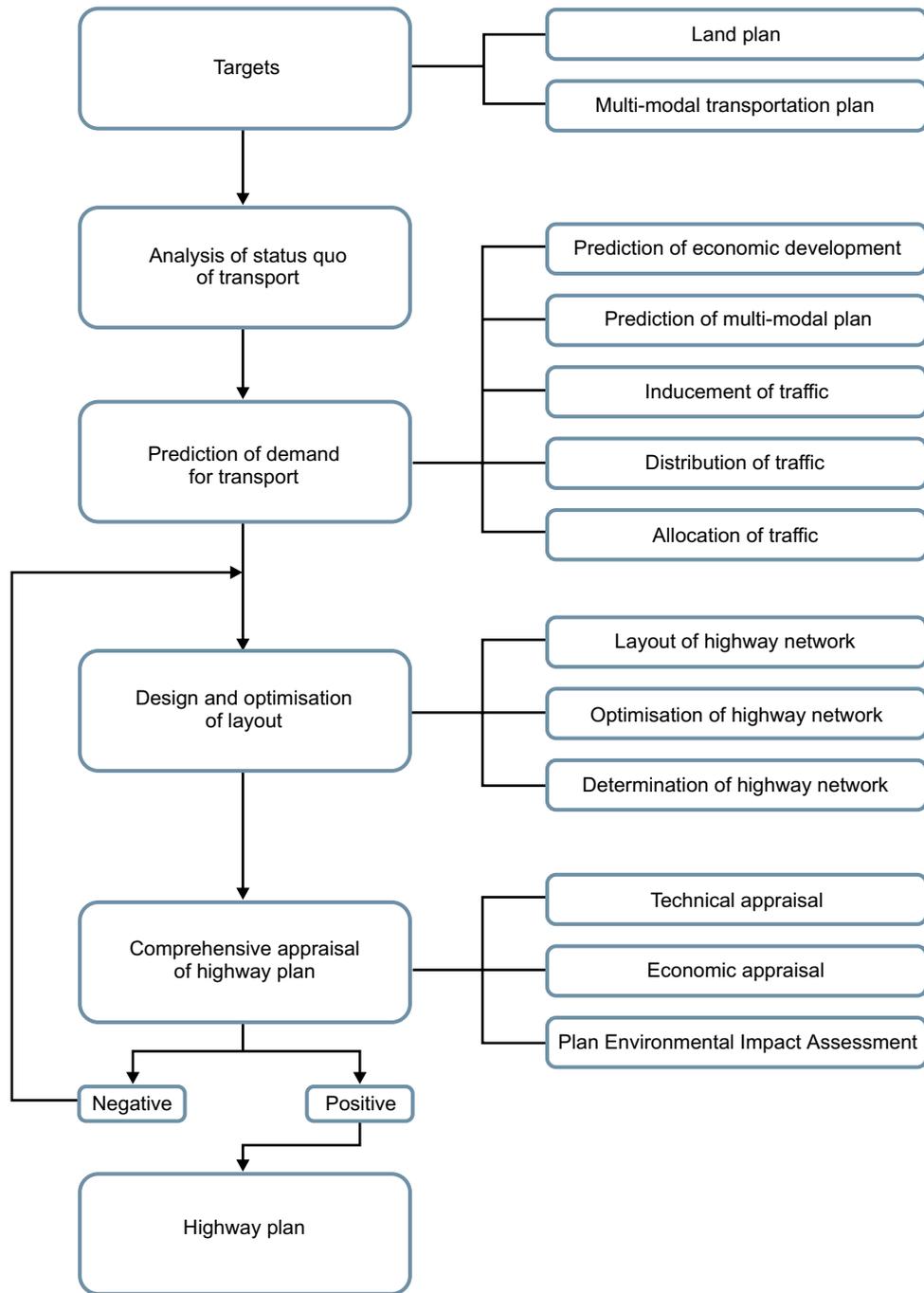
The timing of PEIA in relation to planning has direct impact on the level of process integration between planning and the environmental assessment. Process integration is important for a number of reasons:

- it can affect the cost-effectiveness of the process (by avoiding duplication of effort – for example in data gathering and processing);
- it can lead to long-term improvements in cooperation between government departments, and between these and other key agencies (the actors identified during scoping, above); but most importantly,
- it can ensure early and effective exchange of ideas and information that can help shape the draft plan in line with environmental protection and sustainable development priorities, thus increasing the importance of constructive dialogue and reducing the role of the more conflicting stage of impact assessment.



**Figure 2-3: Flowchart of energy planning and decision-makers in Xichang City**

Source: Project Report CHINA-EPI-SEA No.7.



**Figure 2-4: Flowchart of trunk road planning and decision-making in Shaanxi Province**

Source: Zhang Hui 2008 (S4)

Early start and process integration can be seen as conditions for successful consultation and coordination between key actors from all sectors interested in shaping the final plan (Project Report no.12). Without them, consultation and coordination can still take place, but their effectiveness and efficiency (cost, time, expertise and resources) can be undermined: they can be reduced to mere exchanges of data requirements and one-way request for opinions, almost invariably from the high-ranking planning agencies to the environment agencies.

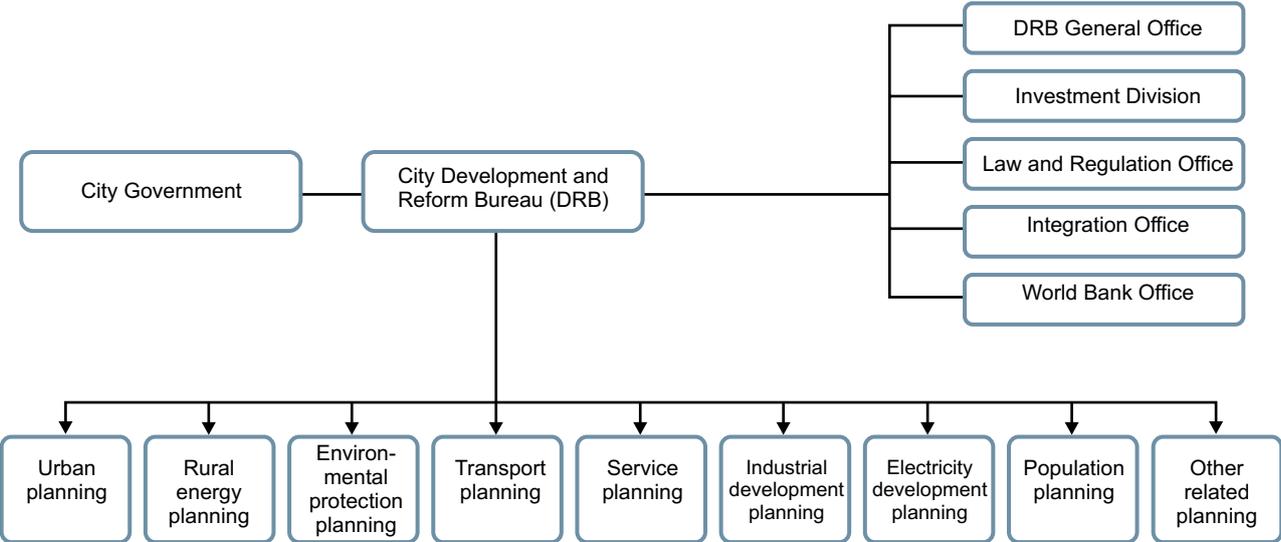
The two project case studies are an illustration of both scenarios. But current practice resembles more the following illustration (S4): the draft plan document is presented to the other actors during a single meeting, where they are given a few hours to discuss and comment. The document is often considered ‘secret’ and will not be available outside the meeting, making it very difficult to make meaningful and informed suggestions; often there will not be enough time to identify the ‘real problems’, let alone solve them.

However, it also ought to be noted that other actors/ departments are also rarely inclined to play a greater role in commenting ‘because there is no requirement to do so’ (S4), and this suggests a more deeply rooted culture of sectoral and organisational fragmentation. Fragmentation that is partly explained by the strict division of power according to rank, and the pervasive

culture of avoiding conflict with higher-ranking officers and organisations (see also Section 1.2 above).

The Xichang case is thus all the more interesting. It has achieved process integration, mainly thanks to the efforts and vision of the Mayor and Vice-Mayor (‘City Government’ in Figure 2-5), who recognised the importance of PEIA as a means to ensure that the city moved a step forward towards its goal of becoming a National Eco-city by 2010 (S1). This in turn led to collaboration between the agencies listed in Figure 5, including the local EPB, whose experts were able to share information but also ideas about the best environmental options for the energy plan.

The importance of the leadership of local mayors in promoting process integration is being acknowledged in other cases around the country (C3). In fact, leadership is crucial at all key levels of governance where plans are being developed and approved. It is therefore important to strengthen the link between PEIA practice and leaders’ annual performance evaluation (which now includes reference to energy saving targets, for example) (S4). This links to the broader issue of strengthening environmental policy integration: given the high level of influence of leaders in the planning and decision-making processes, training (for example through the Party Schools) can play a crucial role in raising awareness about environmental protection and sustainable development, and promote



**Figure 2-5: Local Energy Administration - municipal Bureau of Development and Reform and related departments**

Source: Project Report CHINA-EPI-SEA No. 20, Xichang EPB 2007

the effective use of PEIA as a mechanism that can deliver ‘scientific development’ (S4). It is important to strengthen the level of accountability, to match the existing lines of responsibility, and these initiatives could help achieve this.

Following extensive discussions with experts over the two years of the project, it seems that the single most significant difference between China’s practice of PEIA and other applications of SEA-type evaluations elsewhere, is the strength of the top-down planning system and the importance of leaders and rank. This characteristic influences most of the elements deemed essential in ensuring the effectiveness of SEA-type practice:

- the timing of the assessment in relation to planning (‘early start’ – Project Reports CHINA-EPI-SEA No. 4 and 7);
- the level of integration and collaboration between assessment and planning (‘coordination and collaboration’ – Project Report CHINA-EPI-SEA No. 12);
- the flow of data and information, the discussion and analysis of alternative solutions (‘IA and alternatives’ - Project Reports CHINA-EPI-SEA No. 16 and 22);

#### **Recommendations on Process integration, leadership and coordination:**

- promote the planning of process integration as part of the early tasks of PEIA (within scoping if possible), and the dissemination of such information in simple format (e.g. tables proposed in Project Reports CHINA-EPI-SEA No.12 and 7);
- consider promoting internship of middle-managers from sectoral agencies to EPBs, and vice versa, to enhance mutual understanding and knowledge of the priorities that drive each agency and ensure timely and more comprehensive circulation of information (S4);
- promote training of decision makers and political leaders (e.g. mayors) at all key levels of planning and decision-making (S4);
- link the completion of PEIA (and perhaps their timing) to performance evaluation (S4);
- strengthen leaders’ accountability.

- the degree of public participation (‘public participation’ – Project Report CHINA-EPI-SEA No.12).

#### **Public participation and alternatives**

Scoping, or the initial stages of SEA and PEIA, will also include a discussion about the role of the public during the process of planning and assessment, and a preliminary consideration of the range and type of alternatives that might need to be explored. On both issues, the project has confirmed that significant progress remains to be made.

Despite having taken into account the role of the public, both PEIAs have fallen well short of what is considered meaningful public participation in terms of who, when and how to involve the public. The main shortcomings (S4, C1-2) can be summarised thus:

- the public participation will often be taken to mean consultation with key actors, and primarily government actors – what here is called ‘coordination’;
- the ‘public’ is almost exclusively invited to comment at the final stage of PEIA, on the assessment itself, rather than at the key stages of scoping;
- the PEIA document is rarely presented in sufficiently non-technical terms, and sometimes can take the shape of ‘a couple of pages’ – possibly on the internet – making it impossible to develop informed comments;
- the time for commenting is often gravely insufficient;
- limited existence and interest of environmental NGOs to provide input;
- no motivation to participate and comment since the current legal and political context tend to make the possibility of prosecuting a claim almost unachievable in practice.

One of the project partners who has been involved in over ten PEIAs commented that the only public involvement instrument used was the placement of the documents on the Internet as the main step towards eliciting the views of the public. However, he has admitted that such action has ‘never received any comment... not

a single comment' (S4). Amongst the explanations offered: the public 'does not have the competence to comment', and the public 'cannot get information on the routes proposed... [therefore] cannot comment'. The project has revealed the need for specific training

#### **Recommendations on public consultations:**

- promote specific training in terms of the purpose and methods for the involvement of the public;
- promote pilot studies where the public is involved at earlier stages in the planning and assessment (ideally at the 'scoping' stage);
- require the early planning of public participation in terms of who, when and how as part of scoping (Project Report 12) (requires a change of the EIA Law);
- provide technical and financial support for NGOs and GONGOs to ensure they can follow PEIA procedures, and promote the participation of interested communities;
- ensure high-level commitment to full consideration of public comments and the legal guarantee for public participation (requires a change of the EIA Law);
- strengthen the environmental capacity of the local judiciary to enforce this aspect of PEIA.

#### **Recommendations on how to improve the quality of the process:**

- early involvement of the public (representatives of the public), especially for selected scoping tasks, would be extremely beneficial and could reduce problems at the later stages of assessment (see for example the experience of the Netherlands Environmental Assessment Commission, [www.eia.nl](http://www.eia.nl)); a scoping report as suggested earlier would be an excellent document, which could be discussed with the public;
- the public should be guaranteed full and free access to the PEIA process and related documentation (e.g. scoping documents, full draft report and non technical summary) as an essential condition for meaningful participation;
- time for comments should be reasonable and flexible commensurate with complexity: a possible option would be to propose minimum and maximum periods, rather than a single limit;
- in line with good practice, establish minimum requirements for feedback informing the public as to how its views and comments were taken into account.

amongst sectoral and environmental authorities, to raise awareness about the importance of public participation, as well as the means to achieve this. A further comment by one of the participants to seminars (S1) revealed the lack of understanding about the Government's objective to place the people at the centre of its development efforts: discussing a situation when the public might oppose a certain initiative, one expert asked why not 'just move the people out' of the area to be developed?

The rise in the number and strength of non-governmental organisations (NGOs) and governmental NGOs (GONGOs, a Chinese phenomenon) may be slow, but it is certainly a promising trend that can hopefully push forward an agenda of meaningful participation in project and PEIAs. Similarly, options for the prosecution of claims for failed implementation of the law in meaningful ways, can become more likely as representatives of the local judicial system expand their expertise of environmental issues.

#### **Identifying and assessing alternatives**

The second missing element is that of alternatives. The opportunity to identify and assess the environmental implications of alternatives has been one of the central reasons for wanting to adopt SEA (Thérivel *et al.* 1992). It is through the identification of different ways of achieving strategic objectives, and the subsequent open discussion about the strengths and weaknesses of such alternative development paths, that planners can ensure the most sustainable proposals (CHINA-EPI-SEA Report No.16). In China the PEIA guidance (SEPA 2003) requires that alternatives be defined and assessed through PEIA, however just like elsewhere in the world, this element of PEIA is remarkably weak. Project meetings revealed that there are difficulties linked to planning culture and practice:

- leaders may want to change the plan many times, but the debate and changes are done before the draft plan is sent to the PEIA team – as was the case for Shaanxi's road plan (S3);
- even if the timing would allow for contributions by the PEIA practitioners, planners 'do not have to share the alternatives with them' and often won't; and finally,
- plans are developed to meet economic, social, environmental objectives, therefore, from the planning agency perspective, PEIA can only

recommend changes and mitigation measures from the environmental perspective, rather than engage in the strategic choices implicit in defining alternative paths of development (S1-4); and last but not least,

- preferred options are provided from the highest decision making level before the plans are developed, therefore the assessors are left with minimum assessment alternatives: no plan and the plan alternatives.

It is certainly telling that the environmental consultancy was never involved in the discussion or evaluation of alternatives for any of MOC's plans to date (S4). Most of the work done by the institutions carrying out impact assessments will relate to the identification of best candidate areas for development, areas that ought to be avoided, and mitigation or compensation measures where appropriate. The PEIA on energy considered a no-plan scenario, but no full alternative paths of energy development (S4).

The cases being presented at conferences on PEIA in China (C2, C3) suggest that this is common across different sectors, not just transport. However, it is important to keep things in perspective. Firstly, China is still new to SEA-type evaluations, and alternatives have been a difficult aspect of SEA practice around the world, as they epitomise the difficulty in power sharing that characterises the relationship between sectoral ministries and environmental authorities everywhere in the world. It will therefore take time for things to change, and a key driver will be the continued emphasis on the need to improve the environmental and social dimensions of growth, by Central Government. Secondly, the difficulties in terms of alternatives are closely related to those of 'early start' and process integration and coordination, discussed earlier. Progress in those areas will eventually help open up the debate about alternatives. Thirdly, and perhaps most importantly, currently: (i) China's Central Government defines targets based on policy priorities, (ii) local and sectoral authorities are in charge of designing and implementing the Plans, (iii) but the responsibility for defining strategies (which include the identification of alternatives), is not clearly assigned. In fact, it is taken up by Central Government, which leaves insufficient leeway to local and sectoral authorities, to whom it should be at least partially transferred. Although significant changes have enabled provincial and municipal governments to

define development priorities since the Reforms began in 1989, a lot remains to be done (see also Section 1.2).

Current practice should be evaluated against these premises. SEA scholars might consider the current focus on zoning (the identification of best candidate areas for development, areas that ought to be avoided) based on concepts of carrying capacity, and on mitigation or compensation measures as falling short of the ideal practice. However, the significant contribution that this approach is making to daily planning across China must not be underestimated. Prior to the introduction of PEIA there would have been little or no consideration for the issue of ecological carrying capacity, and the consequences of this can be seen in the state of ecological crisis that affects the country (Song Guojun *et al* 2008). Current practice provides an opportunity on which to build stronger analyses, as is discussed in the next section.

#### **Recommendations on alternatives:**

- encourage the wider discussion of alternatives through the use of seminars and consultation processes, and disseminate good practice widely;
- transport is a special case in China, due to the fragmentation between railway and other modes of transport, just like in the majority of other countries. This is a major obstacle to the definition of sustainable transport policies, as has been argued elsewhere. In terms of PEIA it is recommended that greater efforts are made to systematically plan for multi-modal transport alternatives by Provincial DRCs and or Provincial Government agencies;
- promote the adoption of scenario analysis as a means to explore (or introduce, where this has not been done through the planning stage) alternative paths – including an 'environmental scenario' which tests the equivalent of a best environmental option;
- different scenarios, whether realistic or not - in view of policy constraints – should be systematically explored as a means to frame the adopted Plan options and provide some measure of the sensitivity to major variants.

## 2.3 IMPACT ASSESSMENT AND DATA

### Impact assessment: the link between detail and influence

For the reasons identified above, impact assessment remains the single most important task in the Chinese PEIA process, and one that depends heavily of quantification methods. Overall, the project confirms what can be seen from the rapidly growing body of PEIAs being completed across the country: that China's PEIA experts have mastered the techniques needed to assess carrying capacity, related ideas of ecological footprint and general constraint mapping (see for example SEPA 2008 [C2], and details of the Chinese SEA Academic Forum [C3] at: [http://cseac.gm.cuhk.edu.hk/seaconf2009/SEA\\_conf09.htm](http://cseac.gm.cuhk.edu.hk/seaconf2009/SEA_conf09.htm) ).

This should not be a surprise. In addition to the high level of technical expertise within the agencies responsible for PEIA, it must be noted that SEPA's guidance on how to complete PEIA (SEPA 2003) emphasised the central importance of carrying capacity studies, and the need to calculate what is commonly referred to as 'cumulative impacts' within a particular area (e.g. a river basin). This has been further endorsed by Central Government's repeated high-level commitment to protect the natural resource base of China, especially its agricultural land and water supplies. This priority is amply justified by the country's limited resources (in per capita terms), and the severe degradation of water, soil and air, which has led to setting the 10 per cent pollution reduction target by 2010 (see 5th FYP, NPC 2005). As a result, most of the PEIAs being produced today in China focus on these issues, and will generally adopt quantitative analysis. This is also in line with the late start of the PEIA process, which naturally requires experts to focus on the impact assessment of the draft provided.

Such focus was by-and-large confirmed during the project. As one of the participants to the first seminar explained: 'we hope to identify environmentally sensitive sites', including historical heritage and key habitats and ecosystems, 'all the factors influence planning. We hope the case study can help us to identify the sensitive sites, including the natural resources, the nature parks and wetlands' (S1). This focus, may seem narrow, however, by identifying clear threats to ecosystems, several plans are being amended to prevent damage, as in the case of river-basin developments in Sichuan (S2).

What needs to improve is the capacity to complete cumulative impact assessments, to consider secondary impacts (crucial in the transport and industry sectors, to name a few), to calculate concentration levels of pollutants at local, regional and global scale where appropriate, especially in relation to the issue of climate change which is not commonly factored in PEIAs – although energy intensity is included (S4).

Most of the methodological issues discussed related to questions about a) the kind of indicators needed for transport and energy, b) the most appropriate scale of the analysis, including geographical boundaries but also level of resolution for maps and data, c) techniques, especially those enabling accurate zoning and constraint mapping. These questions are regularly raised by experts and practitioners operating in China (S1-4, and C1-3), yet they can only be answered on a case-by-case basis, and should be answered with a view to matching the level of detail to the kind of objectives set for the plan and the assessment.

Interestingly, CHINA-EPI-SEA project discussions revealed a number of tensions. The perceived need to be 'as precise as possible' in the analysis and results presented in the impact assessment reports implies access to large amounts of high quality data. This is rarely the case: data is difficult to obtain, expensive when it exists, and often of inadequate quality for the task. Quantitative analysis is meant to reduce and qualify uncertainty: in practice, data accessibility and quality pose major problems. Furthermore, despite the significant narrowing of the scope of PEIA to constraint mapping, cumulative impacts and carrying capacity themes, uncertainty cannot be erased when operating at the planning scale. Even if PEIA does not yet engage, with notable exceptions, in the art of defining sectoral development strategies, it cannot be exempt from the intrinsic uncertainty of planning and strategic-level assessment. Hence the common complaint of practitioners who find draft plans insufficiently detailed for the kind impact assessment (and techniques) that they are expected to apply. Here qualitative methodologies, which have little trust in China could help to react quickly and enable an "integrated assessment", where due to the nature and detail of strategic initiatives quantitative assessments will certainly fail.

Finally, the focus on natural resources and the physical environment appears to leave little room (and/or resources) for adequately addressing health and social

issues at such strategic scale, leading to an even narrower scope of the impact assessment. Concept of impact should include positive effects, as well as adverse ones, and the term ‘environment’ refers to the interaction between environment and society as well as to the natural resource base. Both aspects are central to the Government’s stated priorities (development for the people and protection of the resource base) and PEIA should be actively regulated and implemented with the aim to serve these overarching policies.

Several important lessons should be drawn from this.

- Essentially, the current purpose of PEIA in China is that of a traditional impact assessment (as the name ‘PEIA’ indeed suggests) aimed at reducing, mitigating and compensating impacts of plans and programmes. The wider purpose of some SEA, linked to the promotion of environmental governance and organisational learning, being advocated by various experts may become relevant in the Chinese context, once the planning process is further opened and the top-down planning culture and practice is balanced by greater options at the local level.
- In terms of capacity building, the priority shifts away from techniques, which are now being widely used and refined by the country’s experts, towards improving process design and maximising the early exchange of information and ideas all the while recognising the contextual constraints discussed earlier. Current practice has achieved an important shift from delivering mitigation, to promoting the ‘prevention’ of impacts, as required by the PEIA guidance (SEPA 2003). This change must not be underestimated. The next step could be to expand this towards a broader understanding of environment and prevention, to embrace health and social justice dimensions.
- In order to be effective, China’s PEIAs must provide high levels of detail through quantitative techniques that essentially respond to national priorities of resource conservation and optimal allocation. As one expert explained, MEP expects PEIAs to be better than the plans themselves – meaning more accurate, detailed, ‘scientific’ – in order to be able to gain the attention of planners, and thus influence the final versions of the plans themselves (C3). This is an illustration of the adaptation of SEA-

type assessments to their contextual constraints and challenges.

A process of adaptation and cautious progress on this topic can therefore be identified, as in the case for scoping, above. PEIA in China is being used to compensate for the shortcomings of planning, which has been criticised for being the product of leaders’ ‘ideas’ with little substantiation from data, analyses and local – as opposed to national – characteristics (S1, S2, S4, C1-3).

#### **Recommendations on SEA content:**

- emphasise the need to consider both positive and negative effects of plans;
- build capacity for cumulative impact assessments, for the analysis of secondary impacts;
- explicitly assess and qualify uncertainty ranges, in recognition of the limits of data availability.

#### **Recommendations on the scope of impact assessment:**

- the scope of PEIA should balance the focus on environmental resource issues, with social issues, recognising these as matters of equal urgency to that of resource conservation and optimal allocation;
- include the following dimensions in the general definition of ‘environment’: effects on the population (wellbeing, human health, social harmony, environmental justice), material and energy consumption, and climate change (requires a change of the EP Law and EIA Law);
- these dimensions should also be part of the definition of ‘significant impact’ in the forthcoming Regulation (see below).

#### **Data: the weak link**

Improving access and quality of data should be given priority by the highest levels of government (S1-4). The scarcity and poor quality of data affects not only the quality of PEIAs but also, and most crucially, the entire monitoring system which feeds into the National Bureau of Statistics (Song Guojun *et al.* 2008). It is therefore a priority issue that goes well beyond the remit of improving PEIA. Project recommendations are therefore intended to support the already numerous calls for improvement by institutions (including MEP) and scholars across the nation.

Building a tiered public data system that includes national, provincial and local governance levels of aggregation should be one of the priorities established by regulations on all levels. The European Environment Agency operates a similar system for the whole of the EU, with comparable levels of governance. Current NDRC baselines could be a starting point (S2).

The time, effort and resources required to access baseline data for PEIAs is significant, and difficult to justify when so much of the data in question belongs to public sector agencies. Several experts have described in detail the painstaking procedures they need to go through in order to obtain relevant data and information (S1-4):

- Access to data can take months of negotiations and almost always requires to be paid for by ‘favours’ – for example returning a data set after upgrading.
- High-level meetings involving multiple government agencies can provide an opportunity for an official request of data from a top-ranking department. They provide a ‘high level political (platform)’ which is seen as one of the most effective ways of obtaining data. However, such meetings can only be arranged ‘if Government wants to’ (S4). The situation is further complicated by regional differences: ‘it varies from province to province: in some cases a letter of introduction by the Provincial MOC is sufficient’ (S4).
- Access to data is therefore closely linked to political leverage and rank (see above). This is very problematic in a context where environmental agencies (EPBs and others) are notoriously in a weak position compared to sectoral planning departments. A situation that has not changed significantly since the upgrading of SEPA to ministerial rank.
- At the municipal level, access to data is granted on a ‘need to know’ basis that is ultimately judged by the Mayor’s office (S1). This may sound reasonable in certain respects, but it also denotes a culture that runs counter to the notion of ‘scientific development’, for which data and information are nothing short of a *conditio sine qua non*.

#### Recommendations on data:

- make existing data accessible and free to all agencies and individuals involved in PEIA, including the public and its representatives;
- build a tiered public data system that includes national, provincial and local governance levels of aggregation. The European Environment Agency operates a similar system for the whole of the EU, with comparable levels of governance;
- systematically and explicitly include data collection costs in the PEIA budget.

#### Indicator sets

Overall, the issue of data and information seems to be in direct conflict with at least two related priorities of Central Government: resource protection and conservation, and the switch to a scientific mode of development. In addition to baseline data, experts have expressed the urgent need for sustainable development benchmark indicators for national, provincial and local scales. These would greatly facilitate the task of PEIA, and serve the purpose of Central Government to promote sustainable and scientific development. During the project several European initiatives, which could provide useful ideas, given the interesting parallels in terms of governance levels, were discussed. For example:

- Europe’s Core Set of Indicators (CSI) (<http://themes.eea.europa.eu/IMS/whycsi>);
- EEA provides Transport and Energy Reporting Mechanism (TERM), which informs key decision makers on European, national and regional levels about the regulatory and factual progress or increasingly worrisome environmental issues through a regulatory updated set of indicators and publications (<http://www.eea.europa.eu/themes/transport/indicators>);
- DG TREN project MURE which has enabled the development of a qualitative database of measure in EU 15 countries to promote energy conservation (<http://www.mure2.com/>);
- EU project ODYSSEE, which resulted in a detailed database on energy efficiency data and indicators for Europe (<http://www.odyssee-indicators.org/>).

### Recommendations on indicators:

- establish a 2-level set of indicators, with a first subset being common (i.e. intersectoral) to ensure consistency across sectoral PEIAs and a second subset being sector specific;
- projects like MURE and ODYSSEE (EU) could be jointly set-up by EU and China in order to improve data accessibility.

## 2.4 REPORTING, REVIEW AND MONITORING

These three tasks are at the heart of accountability of the PEIA process, and of planning. They are therefore of the greatest importance.

### Improving the reporting process

The most important, and often the only, report resulting from the completion of a PEIA takes the form of either an EIA chapter, description in the plan, or a separate EIA report with a standardised content (see Table 2-1).

Based on discussions throughout the project, an opportunity to expand the main purpose of current reporting, which essentially provides an overview of the likely **effects** of a policy, plan or programme (PPP) on the environment and sustainability, was located. The

idea is to include information that also illustrates the **quality** of the PEIA process – in particular all items and tasks that contribute to setting the scene (as discussed above), thus facilitating participation and capacity building.

### Recommendations on the reporting process:

- Request the inclusion of the following annexes to existing 'chapters' and 'reports'.
  - A. Organigramme and list of contacts of all agencies and key responsible parties involved in planning and the PEIA.
  - B. Scoping report.
  - C. Outline of the whole PEIA Process and its integration with planning.
  - D. Review of other PPP and sustainability objectives.
  - E. Assessment of draft Plan (details, including a clear indication of the uncertainties).
  - F. Results of the public participation process(es).
  - G. Changes made to draft and documents supporting changes to the Plan in response to the assessment.
  - H. Acknowledgment of any shortcoming of the PEIA process.

**Table 2-1: Example of a PEIA report**

1 General Principles	4 Environmental Impact Prediction Assessment
1.1 Origins of the Task	4.1 Atmospheric Environmental Impact Prediction
1.2 Scope of the Assessment	4.2 Surface Water Environmental Impact Prediction
1.3 Proposed Year for Assessment	4.3 Ecological Environmental Impact Prediction
1.4 Environmental Impact Identification	4.4 Social Environmental Impact Prediction
1.5 Environment Protection Objectives and Targets	4.5 Comprehensive Assessment to the Proposed Plan
1.6 Assessment Indicator System	
1.7 Assessment Methodology	5 Environmental Feasible Schemes and Mitigation Measures
1.8 Assessment Procedures	
2. Profile and Analysis of the Proposed Plan	6 Monitoring and Follow-up Assessment Plan
2.1 Necessity of the Proposed Plan	
2.2 Objectives of the Proposed Plan	7 Environmental Investment Budget
2.3 Task of the Proposed Plan	
2.4 Principles for the Proposed Plan	8 Public Participation
2.5 Brief Introduction to the Proposed Plan	
2.6 Analysis of the Proposed Plan	9 Difficulties and Uncertainties
3 Environmental Setting	
3.1 Environmental Setting	10 Executive Summary
3.2 Environmental Quality Status Quo and Changing Trends	
3.3 Environmental Constraint Factor Analysis	

It would certainly help promote transparency and learning if reports were to record all informal, as well as formal, stages in the PEIA process. Especially for those cases when the PEIA formally started ‘late’ but nonetheless offered early opportunities for process integration through informal channels.

### **Options for independent review: process and substance**

Independent review of SEA is a crucial step to ensure that the process and outcomes are adequate and fair. Although reference to such activity has been common since the late 1990s (IAIA 2002), its importance has grown as SEA is increasingly being linked to the broader objective of good environmental governance (Bina 2008). The current review practice in China is faced with challenges in terms of process and substance which are considered in turn.

Most review panels include representatives of the developing agency (often the local DRC) and the local EPB. Given the complex relationship and financial dependence that ties EPBs to local governments, this arrangement remains unchanged despite the upgrading of SEPA to ministerial rank. As such, it falls short of the principle of independent evaluation. Chinese experts have explored the option of setting up ad hoc ‘Review panels’ for each PEIA. This would certainly be an improvement. However the option of permanent, independent commissions at provincial level is suggested to ensure a certain level of learning by the commission members. By serving for a period of, say, five or eight years each commission could build up a significant body of knowledge and expertise which is essential in the ability to judge complex, often value-laden, processes such as planning and SEA (Dalkmann and Bina 2007). The network of Provincial commission could also act as a vehicle for the dissemination of good practice.

In terms of substance, current practice is not facilitated by a somewhat ‘unclear’ set of criteria set out in the EIA Law (S2). This combines with a tendency by EPBs to be ‘too critical’ and to require ‘that all factors should be calculated precisely’, implying high levels of detail, with virtually ‘no tolerance [for different approaches] for qualitative assessment methods’ (S2). This is almost in conflict with the strategic nature of plan-level assessments, and is also made difficult given the status of data quality and availability (S2 and S4). Such tight requirements and criteria conflict with the uniqueness

of each planning process, due to its inevitable context-specificity, and seem to deny the intrinsic uncertainty that characterises both planning and related assessments.

As noted above, one of the reasons for wanting PEIAs to look as accurate and detailed as possible is linked to the need to compensate for poor quality of certain plans, and to the desire to win the attention of planners and decision-makers by producing ‘better quality’ studies. Nevertheless, attempts should be made to gradually expand the range of acceptable approaches and methods in PEIA, to include qualitative and more participatory (rather than expert-led) methods. The criteria for the review process would have to be amended accordingly.

Finally, it would be helpful if the scope of the review process was expanded to include:

- an assessment of the overall process quality (not only of the EIA chapter or Report);
- an evaluation of how alternatives were identified, analysed and chosen;

### **Recommendations on the process of independent review:**

- consider the institutionalisation of permanent, independent commissions at Provincial level (serving periods of 5 to 8 years, for example);
- develop mechanisms that can harness the experience accumulated by the network of Provincial commission, with the aim of promoting learning and contributing the dissemination of good practice;

### **Recommendations on the substance of independent review:**

- provide guidance to explain the importance of uncertainty, and the validity of both quantitative and qualitative (and participatory) methods, and amend the review criteria accordingly;
- expand the scope of the review process to include (requires a change of the EIA Law):
  1. an assessment of the overall process quality (not only of the EIA chapter or Report),
  2. an evaluation of how alternatives were identified, analysed and chosen,
  3. an assessment of the proposed plans for monitoring and for data dissemination.

- an assessment of the proposed plans for monitoring and for data dissemination.

This would maximise the opportunities to learn about more sustainable development planning.

### Promoting effective monitoring and learning

The quality and effectiveness of monitoring are linked to the scoping stage and the issues relating to data and indicators discussed above. The Government is aware of the shortcomings of its current environmental monitoring network, and that in order to enable its administration to function according to a scientific notion of development, it needs to invest in capacity building and the restructuring of current procedures ruling the gathering, analysis and

#### Recommendations for monitoring linked to PEIA:

- the monitoring concept adopted should be described as part of the Environmental Report, so that the boundaries as well as the significant effects are defined in advance. The Report should also specify the timing, agency responsible, and how they plan to ensure access to the monitoring data (requires a change of the EIA Law);
- to improve acceptance of the PEIA, as well as the quality of the monitoring report, the report should be made available to the public;
- monitoring should focus on the key significant environmental and social effects, and include both positive as well as negative impacts.

#### Recommendations for monitoring in general:

- broaden the range of organisations entitled to carry out monitoring activities;
- strengthen the capacity and resources of these agencies (EPBs often lack resources).

processing of monitoring data (see Song Guojun *et al.* 2008). This project simply provides additional support towards these priorities (S4).

In terms of learning, there is already evidence that Provincial agencies are benefiting from having completed several PEIAs. For example, in Sichuan project partners noted the improved departmental coordination resulting from repeated assessments, as

well as an increased attention to the PEIA's results on the part of Government (S4). This is very encouraging.

Introducing the additional annexes (Table 0-1) to current PEIA reports, would provide useful insight into the strengths and weaknesses of past practice, and thus already promote opportunities for learning and further improvements.

#### Recommendations for learning and capacity development :

- set-up an online database that provides free access to all PEIA and related planning reports in China;
- regulation is needed to ensure the PEIA of strategic documents (plans and programmes) remains accessible, even after the consultation period, next to the documents they have been approved for.

## 2.5 POLICY-LEVEL EIA

Plan-level EIA is one of a few EPI instrument in China. In addition to PEIA two other instruments are present at various stages of development: one preceding current PEIA, called Regional EIA, and one which is being discussed as an addition to PEIA, called Policy EIA (Zhan Cunwei & Qiu Xinxin, 2008). Although project case studies and overall discussions focused primarily on plan-level assessments, during the period of the action, the interest of Chinese experts in the topic of policy-level assessments was noted (C1, C2 and C3).

Regional EIA evolved in China in the early nineties as a precursor of PEIA, seeking to assess regional development policies and strategic actions during their planning stage (Zhan Cunwei & Qiu Xinxin, 2008). Though the concept has no separate law, it has been referred to since 1993, when SEPA issued *Some suggestions on further improvement of environmental protection management for construction project* [Huanjian No. [1993]015] followed by a number of other governmental level documents. Li Tianwei *et al.* (2008) points out that in 2002 SEPA issued the *Circular concerning strengthening Regional EIA of Development zones* [Huanfa No.[2002]174]. Those references prove that Regional EIA has been one of the components of SEA in China to have received support in regional development and construction activities.

Policy EIA or ‘EIA demonstration’ has been referred to in Article 8 of The Decision of the Governmental Council on the Implementation of the Scientific Outlook on Development and Strategic Environmental Protection [Guofa No.[2005]39], where it is required to ‘be carried out for the decision making with major environmental impacts’ (Li Tianwei *et al.*, 2008). Li Tianwei *et al.* therefore regard ‘EIA demonstration’ as a kind of policy EIA that has been adapted to Chinese structural and administrative conditions.

This project has confirmed the desirability of adopting policy-level assessments that consider both environmental and social implications. Top-down policy making remains the basis of China’s development planning, despite the significant steps towards a socialist market economy. This is especially clear in relation to the two sectors of transport and energy, on which the project has focused, and which are bound to be the subject of significant investment in the coming years (World Bank 2009). As it has been found, the definition of targets and objectives by Central Government has great influence on the planning and options considered at Provincial and local levels. It therefore seems especially important to apply strategic-level social and environmental assessment to policy-making.

The process for defining the 12th FYPs has started. It would be important to ensure that this time the guiding policies for the new Plans were subject to a form of strategic social and environmental assessment, and that the sectoral, provincial, and local 12th FYPs were systematically subject to PEIA and independent reviews.

#### **Recommendations for policy-level assessment:**

- promote Policy-level SEA, and make use of qualitative, participatory techniques - as well as quantitative ones where appropriate and feasible;
- produce a pilot study on regulatory-level SEA, for example the SEA for legislation related to environmental resources;
- include social impact assessment in SEA and regulatory-level SEA;
- apply SEA to the policy guidance for the 12th FYP.

## **2.6. PRIORITIES FOR FURTHER EU-CHINA JOINT RESEARCH**

Cooperation between China and the EU on a wide range of issues pertaining to sustainable development is already well underway, and includes a variety of promising joint research initiatives. This project has made it possible to identify a number of areas where targeted, cooperative Research and Technology Development (RTD) efforts are needed to promote and reinforce the systematic and widespread adoption of EPI and SEA methodologies and practices.

### **Integrated sustainability framework**

There is a need to develop an integrated sustainability framework ensuring an appropriate balance between economic, environmental and social concerns.

It is widely recognised that the social dimension of sustainability is the most difficult to appraise and to represent through e.g. specific sets of indicators. Although there is on-going research in the EU presently addressing this challenge - and interesting findings are beginning to emerge<sup>9</sup> - the current state-of-the-art clearly suffers from an imbalance between social assessments on the one hand, economic and environmental on the other. It has been argued, for instance, that legislation should be extended from the current SEA approach (that does not explicitly consider the social dimension), so as to consistently include all dimensions of sustainability, and in particular the social one. In China, the systematic reference to harmonious development in policy statements is a clear indication of the priority assigned to social concerns, calling, once again, for the establishment of balanced, integrated sustainability assessment frameworks.

This is therefore an area of research where EU and China share common objectives, while approaching their attainment through highly differentiated paths, which reflects major differences in the respective socio-economic contexts and constraints. Joint research would therefore be extremely beneficial to both parties.

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<sup>9</sup> See for instance the recent outcome from the NEEDS project ([www.needs-project.org](http://www.needs-project.org)), where a novel, balanced set of sustainability indicators (economic, environmental and social) associated with energy systems have been devised and experimented in close cooperation with policy makers and stakeholders.

## Scenario analysis

The study has shown that planning processes, in China, seldom feature an explicit consideration of alternative options, at least for what concerns the sustainability perspective. On the other hand, the identification of alternative plans and programmes, and their comparative assessment, is a major, unavoidable step of any strategic assessment. Promoting a more systematic inclusion of alternatives in the planning process clearly calls for changes in the structure of governance, and in the associated institutional set up. But it also requires that appropriate methodologies and tools are available and adopted. Scenario analysis is one such methodology that has long proved its value. The EU has accrued consolidated expertise in developing strategic, medium and long term scenarios that serve as a primary input to the formulation of sectorial plans and programmes, particularly in the framework of sustainability policies. Joint EU-China research in this area could explore the possible application of state-of-the-art methods and tools<sup>10</sup> for scenario analysis to strengthening the planning and assessment capabilities of Chinese planning bodies, particularly at the local level.

## Data and indicators

The study has shown that data constraints play a major role in the development of environmental assessment good practice in China. While the sheer availability of data is indeed the most obvious of such constraints, the institutional and organisational set up required for data collection and for its targeted use in planning and environmental assessments is also fundamental. The study recommendations in fact include the need to build a tiered public data system that combines national, provincial and local governance levels of aggregation, and suggests that the EU experience in this area (and notably that accrued by the European Environment Agency) could be further explored in terms of its possible adaptation to the Chinese context.

As for data availability, to overcome the well known problem associated with the high resource cost of data collection campaigns, joint research could focus on the potential usefulness of value transfer approaches, which are increasingly adopted in the EU to reduce the

direct costs of data collection, particularly in the area of economic valuation of social and environmental costs and benefits.

## Training and capacity building

The study has identified many opportunities for training and capacity building to strengthen the planning and environmental assessment capacities of e.g. local planning bodies in China. Joint EU-China efforts could be usefully considered in this context, notably if training and capacity building initiatives are organised around concrete pilot cases, providing immediate results in the form of plan documents, environmental assessment reports, consultation and participation campaigns, etc. In a way, this study has initiated such process, which could be therefore replicated, extended and improved, notably by focusing on the priority targets identified so far.

### Recommendations for further EU-China joint research:

- develop an integrated sustainability framework ensuring an appropriate balance between economic, environmental and social concerns;
- develop scenario analysis;
- include data and indicators in the development of environmental assessment good practice in China;
- instigate training and capacity building to strengthen China's planning and environmental assessment capacities.

## 2.7 INSTRUMENTS AND THEIR PRIORITIES TO SUPPORT JOINT RESEARCH INITIATIVES

EU sponsored research projects are mainly funded through the RTD Framework Programmes. The current Programme (FP7) features innovative mechanisms for what concerns the participation of third (i.e. non EU) countries, in that:

- all projects are open to the participation of ICPC (International Cooperation Partner Countries, including China), who are entitled to the same level of funding as EU Member States; and,
- in addition, specific themes are identified as targeted priorities for ICPC participation (the so-

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<sup>10</sup> For instance, integrated energy-economy models like those of the TIMES-MARKAL family, or scenario building tools like MURE-ODYSSEE for energy efficiency policies.

called SICA). SICA projects must involve ICPC as participants.

In the area of **sustainable development**, a recent workshop co-organised by the EU and by the Chinese Ministry of Education<sup>11</sup> has led to the identification of selected joint priority themes for future EU-China RTD cooperation. It is expected that these themes will be included in the forthcoming calls for proposals of FP7. The following themes will be included.

- Ensuring the sustainability of energy systems: the role of the public sector. Particular emphasis is on the consideration of evolving societal needs, of differing (EU/China) socioeconomic contexts and the need to address gaps in regional development, and of the overall policy priorities (economic growth, security of supply, harmonious development, etc.).
- Promoting balance and harmony, with a focus on the growing regional gap in China. Particular emphasis is on the parallels and lessons that can be drawn from the policy of cohesion and convergence developed in the EU, to inform the current challenges China is facing in managing the different development levels between Western, Central and Eastern (coastal) regions.
- Bold visions for new, sustainable development models, to promote a new concept of development embedded in social and environmental dimensions, rather than economic priorities alone. Particular emphasis is on the balanced development of urban and rural areas
- Water resources and sustainable development: balancing water for food and water for nature.

**Climate change** is another major area for RTD cooperation between EU and China. Current EU-funded climate change research projects targeting China focus on the assessment of:

- the costs and benefits of technological, market-based measures to control air pollution;

- greenhouse gas emissions (GAINS-ASIA project) and evaluation of climate change;
- mitigation options for China and the conditions for strategic cooperation on RTD; and,
- technology transfer with the EU (TOCSIN).

Within the context of existing China-EU initiatives such as the EU-China Partnership on Climate Change and following the results of the EU-China Workshop on Energy Technology and Climate Change Research (Guangzhou, China, 6–7 March 2008) the following key research themes of mutual interest have been identified and include:

- climate change, mega-cities and emissions;
- impacts and adaptation in vulnerable regional sectors;
- low carbon and climate resilient cities.

These priority areas represent the basis for further bilateral discussions at institutional level with the aim to define and agree concrete actions that will further strengthen the EU-China collaboration on climate change research.

**Recommendations on available financial instruments:**

- within EU sponsored research projects - FP7 programme;
- within EU-China RTD cooperation on sustainable development and on climate change;
- within the context of existing China-EU initiatives such as the EU-China Partnership on Climate Change.

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### 3 PROJECT RECOMMENDATIONS ON PEIA

The CHINA-EPI-SEA project shows that China's PEIA practice and its context of application are both a major source of challenges and opportunities to enhance effectiveness and improve the sustainability of growth in China. This final section summarises the Project recommendations, aimed at ensuring that PEIA in China can respond more fully and effectively to the economic, social and environmental pressures that are converging into a significant challenge for development and wellbeing.

The recommendations are intended to assist the transition from PEIA as a formal method (see Preface) to one that embraces fully the defining characteristics of strategic-level assessment in line with IAIA criteria (IAIA 2002) and arguments developed by Western and Chinese scholars (see bibliography). The following suggestions also express full support for many of the changes proposed in the *Regulation of the People's Republic of China on Plan Environmental Impact Assessment – Draft*, which is awaiting discussion by State Council.<sup>12</sup>

#### RECOMMENDATIONS: SETTING THE SCENE

<b>Formal vs. informal early start</b>	Promote an early start, ideally so that it can be required in formal terms by stakeholders; (requires a change of the EIA Law).
	As an interim solution, accept informal processes - as long as the main steps and decisions are recorded and can be clearly identified.
	Consider introducing new rules that require DRCs to notify EPBs at the earliest possible stage.
	National Council, NDRC and DRCs to set the example by initiating PEIA in good time.
	Introduce the practice of Scoping Reports as a separate document that needs to be discussed and approved jointly by the planning and assessment authorities (requires a change of the EIA Law).
	Develop detailed guidance on this critical stage of PEIA, promoting the use of tools such as simple organigrams and tables identifying 'windows of opportunity', which can increase transparency and facilitate coordination.
<b>Process integration, leadership and coordination</b>	Explore the possibility of requiring the approval of a scoping report by an independent party.
	Promote the planning of process integration as part of the early tasks of PEIA (within scoping if possible), and the dissemination of such information in simple format.
	Consider promoting internship of middle-managers from sectoral agencies to EPBs, and vice versa, to enhance mutual understanding and knowledge of the priorities that drive each agency and ensure timely and more comprehensive circulation of information.
	Promote training of leaders at all key levels of planning and decision-making.
	Link the completion of PEIA (and perhaps their timing) to performance evaluation.
Strengthen leaders' accountability.	

<sup>12</sup> The latest official version available to the public dates from 2008, and can be accessed from the Legislative Affairs Office of the State Council P.R.China website: <http://www.chinalaw.gov.cn/>

<b>Public participation and alternatives</b>	Promote specific training in terms of the purpose and methods for the involvement of the public.
	Promote pilot studies where the public is involved at earlier stages in the planning and assessment (ideally at the 'scoping' stage).
	Require the early planning of public participation in terms of who, when and how as part of scoping (requires a change of the EIA Law).
	Provide technical and financial support for NGOs and GONGOs to ensure they can follow PEIA procedures, and promote the participation of interested communities.
	Ensure high-level commitment to full consideration of public comments and the legal guarantee for public participation (requires a change of the EIA Law).
	Strengthen the environmental capacity of the local judiciary to enforce this aspect of PEIA.
	Early involvement of the public (representatives of the public), especially for selected scoping tasks, would be extremely beneficial and could reduce problems at the later stages of assessment; a scoping report would be an excellent document to be discussed with the public.
	The public should be guaranteed full and free access to the PEIA process and related documentation (e.g. scoping documents, full draft report and non technical summary) as an essential condition for meaningful participation.
	Time for comments should be reasonable and flexible commensurate to complexity: a possible option would be to propose minimum and maximum periods, rather than a single limit.
In line with good practice procedure, to establish minimum requirements for feedback informing the public as to how its views and comments were taken into account.	
<b>Alternatives</b>	Encourage the wider discussion of alternatives through the use of seminars and consultation processes, and disseminate good practice widely.
	Transport is a special case in China, due to the fragmentation between railway and other modes of transport. This is a major obstacle to the definition of sustainable transport policies, as has been argued elsewhere. In terms of PEIA it is recommended that greater efforts are made to systematically plan for multi-modal transport alternatives by Provincial DRCs and or Provincial Government agencies.
	Promote the adoption of scenario analysis as a means to explore (or introduce, where this has not been done through the planning stage) alternative paths – including an 'environmental scenario' which tests the equivalent of a best environmental option.
	Different scenarios, whether realistic or not - in view of policy constraints – should be systematically explored as a means to frame the adopted Plan options and provide some measure of the sensitivity to major variants.

## RECOMMENDATIONS: IMPACT ASSESSMENT AND DATA

<b>Environmental Impact Assessment</b>	Emphasise the need to consider both positive and negative effects of plans.
	Build capacity to cumulative impact assessments, for the analysis of secondary impacts.
	Explicitly assess and qualify uncertainty ranges, in recognition of the limits of data availability.
<b>Scope of impact assessment</b>	The scope of PEIA should balance the focus on environmental resource issues, with social issues, recognising these as matters of equal urgency to that of resource conservation and optimal allocation.
	Include the following dimensions in the general definition of 'environment': effects on the population (wellbeing, human health, social harmony, environmental justice), material and energy consumption, and climate change.
	These dimensions should also be part of the definition of 'significant impact' in the forthcoming Regulation.
<b>Data</b>	Make existing data accessible and free to all agencies and individuals involved in PEIA, including the public and its representative.;
	Building a tiered public data system that includes national, provincial and local governance levels of aggregation. The European Environment Agency operates a similar system for the whole of the EU, with comparable levels of governance.
	Systematically and explicitly include data collection costs in the PEIA budget.
<b>Indicators</b>	Establish a 2-level set of indicators, with a first subset being common (i.e. inter-sectoral) to ensure consistency across sectoral PEIAs and a second subset being sector specific.
	Project like MURE and ODYSSEE (EU) could be jointly set-up by EU and China in order to improve data accessibility.

## RECOMMENDATIONS: REPORTING, REVIEW AND MONITORING

<b>Improving the reporting process</b>	<p>Request the inclusion of the following annexes to existing 'chapters' and 'reports'.</p> <ul style="list-style-type: none"> <li>A. Organigram and list of contacts of all agencies and key responsible parties involved in planning and the PEIA.</li> <li>B. Scoping report.</li> <li>C. Outline of the whole PEIA Process and its integration with planning.</li> <li>D. Review of other policies, plans, programmes and sustainability objectives.</li> <li>E. Assessment of draft Plan (details, including a clear indication of the uncertainties).</li> <li>F. Results of the public participation process(es).</li> <li>G. Changes made to draft and documents supporting changes to the Plan in response to the assessment.</li> <li>H. Acknowledgment of any shortcoming of the PEIA process.</li> </ul>
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<b>Options for independent review</b>	Consider the institutionalisation of permanent, independent commissions at Provincial level (serving periods of 5 to 8 years, for example).
	Develop mechanisms that can harness the experience accumulated by the network of Provincial commission, with the aim of promoting learning and contributing the dissemination of good practice.
	Provide guidance to explain the importance of uncertainty, and the validity of both quantitative and qualitative (and participatory) methods, and amend the review criteria accordingly.
	Expand the scope of the review process to include: a) an assessment of the overall process quality (not only of the EIA chapter or Report), b) an evaluation of how alternatives were identified, analysed and chosen, c) an assessment of the proposed plans for monitoring and for data dissemination.
<b>Monitoring</b>	The monitoring concept adopted should be described as part of the Environmental Report, so that the boundaries as well as the significant effects are defined in advance. The Report should also specify the timing, agency responsible, and how they plan to ensure access to the monitoring data.
	To improve the acceptance of the PEIA, as well as the quality of the monitoring report, it is recommended that the report should be made available to the public.
	Monitoring should focus on the key significant environmental and social effects, and include both positive as well as negative impacts.
	Broaden the range of organisations entitled to carry out monitoring activities. Strengthen the capacity and resources of these agencies (EPBs often lack resources).
<b>Recommendations on learning and capacity development</b>	Set-up a database that provides free access to all PEIA and related planning reports in China.
	Regulation is needed to ensure the PEIA of strategic documents (plans and programmes) remain accessible even after the consultation period.

**RECOMMENDATIONS: POLICY-LEVEL SEA**

<b>Recommendations Policy level SEA</b>	Promote Policy-level SEA, and make use of qualitative, participatory techniques - as well as quantitative ones where appropriate and feasible.
	Pilot study on regulatory-level SEA, for example the SEA for legislation related to environmental resources.
	Include social impact assessment into SEA and regulatory-level SEA.
	Apply SEA to the policy guidance for the 12th FYP.

## RECOMMENDATIONS: FURTHER EU-CHINA JOINT RESEARCH

<b>Recommendations for further EU-China joint research</b>	Development of an integrated sustainability framework ensuring an appropriate balance between economic, environmental and social concerns.
	Scenario analysis.
	Data and indicators for the development of environmental assessment good practice in China.
	Training and capacity building to strengthen China's planning and environmental assessment capacities.

## RECOMMENDATIONS: JOINT RESEARCH SUPPORT INSTRUMENTS

<b>Recommendations on available financial instruments</b>	EU sponsored research projects - FP7 programme.
	EU-China RTD cooperation on sustainable development and on climate change.
	Existing China-EU initiatives such as the EU-China Partnership on Climate Change.

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## INTRODUCTION TO THE ANNEXES

The Annexes to the “Recommendations” paper present the project material researched and prepared on the key SEA issues, which were identified by the project partners, and aimed at aiding the pilots and fulfilling the project objective of capacity development. The SEA messages and tools presented here are supporting the idea of the transition from PEIA to SEA and can be widely applied in China both in pilot applications as well as in general practice, since they represent good internationally tested SEA practice.

Though the annexes are the extraction of a few most relevant sections of project papers, full documents are

available from the project website at: <http://www.sea-in-china.com/publications.html> (English only). Annex references are listed together with the references as well as abbreviations of the “Recommendations” paper.

The annexes are aimed at SEA practitioners, but other stakeholders mentioned in the Preface to the “Recommendations” paper may find different elements of this section useful. The table below has been composed to help the choice of the reader and provides the source of each annex, an overview of the content and their application within SEA/PEIA process.

**Table: Introduction to the annexes: overview**

No.	Title	Source	Overview of the content	Benefits and relevance to SEA/PEIA
A	Guiding principles for participation, consultation and cooperation in SEA	CHINA-EPI-SEA Report No. 12	Definitions and terms relevant to public participation, benefits of participation, consultation and cooperation. An overview of the key methods applied in organizing participation, consultation and cooperation.	By providing definitions of related processes such as public participation, consultation and cooperation; the differences and importance of each of them are highlighted for decision making, planning and SEA processes.
B	Windows of opportunities	CHINA-EPI-SEA Report No. 7	A table of windows of opportunities for integrating SEA in decision making enabling the planning of steps; mapping the stakeholders, anticipating the outputs and outcomes of each stage.	Enables the linkage between planning and assessment processes to be demonstrated, by listing planning tasks (steps), linking them with the SEA integration opportunities (parallel steps). Through a real life energy pilot SEA example the sequence, inputs required and expected outputs are demonstrated.
C	Benefits of identifying and assessing alternatives in SEA	CHINA-EPI-SEA Report No. 16	A concise list and description of the benefits of identification of alternatives. A good awareness raising tool.	A list of benefits have been distilled from European experience in implementing SEA. It provides a tool to justify and substantiate in discussions on the need to establish and identify alternatives in planning for any level and/or sector.

No.	Title	Source	Overview of the content	Benefits and relevance to SEA/PEIA
D	Introduction to development and identification of alternatives	CHINA-EPI-SEA Report No. 16	The annex complements Annex C on “Types of alternatives” and continues to expand on practice of identification and assessment of alternatives. Do’s, don’ts and guiding principles in developing, identifying and assessing alternatives.	It reinforces the need for alternatives in decision making and planning with the European example and how the issue of alternatives is justified in the European regulations. Do’s and don’ts provide a support tool in identifying and analyzing alternatives and help save time and resources by providing useful tips on planning and assessment, which are based on long term European experience.
E	Types of alternatives	CHINA-EPI-SEA Report No. 16	Definitions of different types of alternatives for energy and transport sectors with guiding questions enabling the development of more appropriate alternatives.	It is a guiding tool in developing alternatives based on the examples provided for energy and transport sectors. Guiding questions and types can be adapted for other sectors.
F	Good practice in impact assessment of SEA alternatives	CHINA-EPI-SEA Report No. 22	Summary of the issue of a number of alternatives recommended for SEA, process of selecting alternatives and the key recommendations on alternatives in planning and assessment.	It aids the planning, identification and assessment processes by discussing the number of alternatives and critical issues in selecting them such as baseline, and demand forecast. It mostly focuses on the transport sector with discussions on different key options.
G	Tools for impact assessment	CHINA-EPI-SEA Report No. 22	An overview of the SEA tools pointing out the key stages of the process and outlines main use, strengths and weaknesses of each of them, which can be very useful in selecting methods for a concrete SEA application.	This annex provides the key methods of analysis/assessment for every stage of the SEA process. It is not an exhaustive list or a complete description of available methods, but allows for a fast informed choice.
H	Proposal for the contents of SEA report	CHINA-EPI-SEA Report No. 6	Contents of an SEA report and an example of an SEA report for the Energy sector (case study of the project).	This is a useful tool at the initial stages of SEA planning, but should be adjusted for the type and format of the planning document and range of issues.

## ANNEX A: IAIA STRATEGIC ENVIRONMENTAL ASSESSMENT

### PERFORMANCE CRITERIA

Source: IAIA (2002)

A good-quality SEA process informs planners, decision makers and affected public on the sustainability of strategic decisions, facilitates the search for the best alternative and ensures a democratic decision making process. This enhances the credibility of decisions and

leads to more cost- and time-effective EA at the project level. For this purpose, a good-quality SEA process has to comply with the criteria presented in the table below.

**Table A: SEA performance criteria**

Criterion	Description
Integrated	Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development. Addresses the interrelationships of biophysical, social and economic aspects. Is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project EIA and decision making.
Sustainability-led	Facilitates identification of development options and alternative proposals that are more sustainable (i.e., that contributes to the overall sustainable development strategy as laid down in Rio 1992 and defined in the specific policies or values of a country).
Focused	Provides sufficient, reliable and usable information for development planning and decision making. Concentrates on key issues of sustainable development. Is customised to the characteristics of the decision making process. Is cost- and time-effective.
Accountable	Is the responsibility of the leading agencies for the strategic decision to be taken. Is carried out with professionalism, rigor, fairness, impartiality and balance. Is subject to independent checks and verification Documents and justifies how sustainability issues were taken into account in decision making.
Participative	Informs and involves interested and affected public and government bodies throughout the decision making process. Explicitly addresses their inputs and concerns in documentation and decision making. Has clear, easily-understood information requirements and ensures sufficient access to all relevant information.
Iterative	Ensures availability of the assessment results early enough to influence the decision making process and inspire future planning. Provides sufficient information on the actual impacts of implementing a strategic decision, to judge whether this decision should be amended and to provide a basis for future decisions.

## ANNEX B: GUIDING PRINCIPLES FOR PARTICIPATION, CONSULTATION AND COOPERATION IN SEA

Source: Bina, O. (2008), Guiding principles for participation, consultation and cooperation in SEA, CHI-NA-EPI-SEA Paper No. 12\_EN

### DEFINITIONS RELATED TO PARTICIPATION, CONSULTATION AND COOPERATION

**Consultation** can refer to intra-governmental communication (between sectors and levels of administration), or to the sharing of information and communication between planning authorities and the public. Consultation is about asking experts and the general public (individuals or representatives) about their opinion on a specific topic. Emphasis is on gathering information rather than interactive dialogue.

**Coordination** refers essentially to intra-governmental and cross-sectoral communication, consultation and collaborative work in planning, assessment and decision-making.

**Participation** refers to the involvement of the public. It is meant to be interactive and to include the public and other non-governmental stakeholder in the PPP preparation process as partners.

#### Public authority

- government or other public administration, including public advisory bodies, at national, regional or local level;
- any natural or legal person performing public administrative functions under national law, including specific duties, activities or services in relation to the environment; and
- any natural or legal person having public responsibilities or functions, or providing public services, relating to the environment under the control of a body or person falling within (a) or (b).

**The public** - one or more natural or legal persons, and, in accordance with national legislation or practice, their associations, organisations or groups (EC 2001).

### BENEFITS OF PARTICIPATION, CONSULTATION AND COOPERATION

Strengthen effectiveness and legitimacy

Ultimately, the effectiveness of SEA processes will be judged on the capacity to improve the environmental and sustainable quality of the decision on a strategic initiative (PPP).

Public participation will provide a strong knowledge input and legitimacy to requests for changes and improvements to the initial development proposal, so as to strengthen its compatibility with environmental priorities. When it is organised in a meaningful way, participation can give decision-makers additional legitimacy and accountability for their choices, help build trust in institutions and resolve conflicts among competing interests.

#### Manage complexity and minimise uncertainty

SEA processes tend to apply to strategic and complex initiatives (policies, plans or programmes), involving varying degrees of uncertainty. The nature of strategic planning, policy-making and decision-making implies that SEA must deal with:

- multiple development sectors and themes, and thus multiple perspectives, interests and priorities; and
- factors and impacts that are difficult, sometimes impossible, to predict with any degree of certainty.

For both these reasons, participation, consultation and cooperation can help to manage the complexity, multiplicity of interests and the often high levels of uncertainty.

- Consultation and participation of the public can provide new information and facts, as well as an overview of the values and expectations of interested citizens in the proposals being developed; active participation would provide the forum for

feedback and direct input into the proposal (for example, during the critical stage of scoping, when authorities discuss the overall objectives of a proposed plan).

- Consultation can also involve other government agencies, experts and key stakeholders, and can improve the flow of information between sectors of government (for example, land use and transport) and levels of government (for example, national, provincial and municipal).
- Coordination is mainly aimed at improving good governance (below).

### Contributing towards good governance

Coordination and open lines of consultation are at the heart of good governance. Good governance is all the more important when dealing with environmental and sustainability dimensions of development, as it can improve the coherence and synergies between the work done by different sectors of government and levels of government. Better coordination can be of great benefit in terms of efficient use of limited resources, and can avoid conflict between strategic initiatives operating on the same spatial context.

### Process dimension

This paper focuses on the ‘participative process’ and makes suggestions on how to maximise the opportunities for participation, consultation and cooperation actions from the very early stages of the SEA process and throughout its development. The following stages are critical:

- agree on the purpose, meaning and implications of the SEA for the planning and decision-making processes;
- clarify the scope and limitations of the SEA;
- identify significant strategic issues for environmental protection and sustainable development;
- identify the type and range of information required, sufficient to establish the baseline for the subsequent assessment;
- identify key actors: Government agencies, stakeholders and representatives of the public;

- identify main stages in planning (windows of opportunity) that should be informed and influenced by the SEA. These may include:

- contributing to the problem definition (the basis on which a PPP is developed)
- contributing to the setting of development objectives and ensuring that environmental objectives are suitably included
- contributing to the selection and discussion of alternatives
- contributing to the final decision on the plan by providing clear recommendations in the SEA report and in the conclusions of the public participation event(s)

- outline the logistics of the assessment process (including setting up steering committees, defining the main outputs and a timeframe).

Consultation and coordination should take place throughout the SEA process and should be practiced during all the stages listed above. The stage of scoping in an SEA provides the best opportunity to define as many opportunities for such consultation and coordination. In particular, it is essential to have a clear idea of the main stages of the planning process, as these will provide the backbone on which to design the SEA process and the opportunities for interaction with other government agencies and key stakeholders.

Public participation should also be planned based on the list of windows of opportunity identified.

### Basic rules of public participation

Involvement of the public is **too often limited** to commenting on, or even simply receiving notice of publication of, the SEA Report. At this stage, most decisions have already been taken. The best that can be achieved is to minimise impacts, mitigate and compensate – often with an eye to one’s own backyard. This approach will not deliver the benefits outlined above.

Communication with the public should take place **early** on. It should be based on the creation of a **contact space** that is **permanently opened** to provide information to (and receive information from) the public and

**Table B-1: Dos and donts of public participation**

DOs	DONTS
<ul style="list-style-type: none"> <li>indicate the <b>boundaries</b> of plan development</li> </ul>	<ul style="list-style-type: none"> <li>create any <b>un-fulfillable expectations</b></li> </ul>
<ul style="list-style-type: none"> <li>only start the planning/assessment process if the outcome is genuinely <b>open</b></li> </ul>	<ul style="list-style-type: none"> <li>apply interactive planning to achieve a <b>hidden agenda</b></li> </ul>
<ul style="list-style-type: none"> <li>involve <b>all relevant parties</b> in the process</li> </ul>	<ul style="list-style-type: none"> <li>allow <b>interference</b> in the agreed process</li> </ul>
<ul style="list-style-type: none"> <li>include <b>explicit evaluation steps</b> in the process</li> </ul>	<ul style="list-style-type: none"> <li>allow governments to represent <b>affected groups</b></li> </ul>
<ul style="list-style-type: none"> <li>keep to the agreed <b>time schedule</b></li> </ul>	<ul style="list-style-type: none"> <li>start the process without <b>careful preparation</b></li> </ul>
<ul style="list-style-type: none"> <li>keep all input to the process <b>authentic</b></li> </ul>	<ul style="list-style-type: none"> <li><b>mix different steps</b> in the process</li> </ul>
<ul style="list-style-type: none"> <li>show involved parties <b>their input</b> on paper</li> </ul>	<ul style="list-style-type: none"> <li>limit communication to a <b>presentation of the evaluation results</b></li> </ul>
<ul style="list-style-type: none"> <li>detach people from their <b>fixed patterns of thinking</b></li> </ul>	<ul style="list-style-type: none"> <li>always use <b>well-known solutions</b></li> </ul>
<ul style="list-style-type: none"> <li>communicate in <b>understandable terms</b> in a way that appeals to individuals</li> </ul>	<ul style="list-style-type: none"> <li>gather <b>large anonymous groups</b></li> </ul>

Source: EC 2005

interest groups, and to receive notice of concerns and suggestions (Blanco 2007).

Information about how to provide and receive information relating to the project and its SEA should be **widely publicised**, and as far as possible facilitated (for example by making briefing material freely available) by government.

Communication should be as far as possible linked to an individual that can be clearly identified, and contacted (directly or indirectly through the ‘contact space’). She or he should use **simple and clear language** when raising questions and providing answers, reports and technical summaries should make use of **graphic means** such as simple maps and diagrams rather than lengthy text (Blanco 2007).

### Dos and Donts of public participation

Remember that public participation is not a marketing or public relations activity and cannot be a panacea for obtaining the support for complex, unpopular initiatives.

### METHODS

Provision of information is a necessary element of participation, consultation and coordination (PCC) for all stakeholders at the outset on the policy, plan or programme making process. Consultation is sufficient for stakeholders that are less influential or initiatives that have less impact on people’s lives. Consultations consist not only of provision of information, but also of the expression of opinion and taking the expressed opinion into account when preparing the PPP and the environmental report.

**Table B-2: Consultation and coordination methods**

<b>Method</b>	<b>Description, clarification</b>
Invitation letters	Useful in early stages of consultation to provide information regarding the process and disseminate instructions on how to get involved.
Exhibitions	Useful way of presenting basic information and options to the public, especially local communities. Allows face-to-face feedback of information.
Media	Engages large numbers of people, through TV, radio and newspapers. Useful at targeting those who are difficult to involve due to location – local farmers etc. Internet, websites and chat rooms have become increasingly popular ways of providing information and seeking feedback.
Printed matter	Leaflets, brochures and consultation reports prepared by officers responsible for the new initiative.
Dedicated (established) communication channels	Web-pages, dedicated phone lines, dedicated e-mail addresses
Formal and informal written consultations (request for expert opinion)	Requesting formal opinion on a report or a part of a report (for example a scoping report or SEA report) or requesting an informal opinion through established and informal communication channels.
Formal and informal interviews	This tool is often used during coordination and consultation but is often undocumented. During such interviews a lot of useful information is being transferred, which is used in elaboration of the PPP or the SEA report.
Establishing focal points	Appointing people to ensure communication and coordination among stakeholders and information flow and exchange.
Coordination committees (councils, working groups)	Such coordination committees are often established to coordinate the process of consultations on a PPP with the institution or organisation which is charged with elaboration of the SEA report. They can be established based on the order of the SEA responsible authority or a planning authority.
Establishing coordination procedure	Establishing procedure for coordination for a particular process.
Giving a coordination mandate to a public authority	This tool enables one public authority to give a coordination mandate to another public authority or organisation to act as coordinator during a consultation phase.

Source: <http://www.yedp.org/>

Participation is useful for important and influential stakeholders and for initiatives which may have a large impact on people's lives.

**Table B-3: Participation methods**

<b>Method</b>	<b>Description, clarification</b>
Questionnaires surveys	Good way of obtaining basic information which can be easily analysed. Able to reach a large number of people, they are convenient and economic. Must have a clear purpose and ensure that questions are not 'leading'.
Public meetings, hearings	Present basic information to the public. Allows large numbers of people to be involved in some limited discussions. Need to be carefully managed to ensure all views are heard.
Media structured interviews	Useful for obtaining specific information and attitudes from wider stakeholders in early stages of a Plan.
Semi-structured interviews	Useful in exploring more complex issues from key stakeholders later in the process. The more open questions together with some structure allow a compromise between a thorough explanation of the issues and ease of analysis of responses.
Forums	Vary in representation, size, timing and outcome.
Focus Groups	Small groups (6-12 people) which are asked questions by a skilled facilitator. Allows facilitator to explore emerging issues and gets people to form opinions in discussion. It can be resource-intensive and is more useful later in the process of making a Plan.
Advisory committees	Representative group of stakeholders which meet regularly throughout the Plan process to provide advice.
Workshops	Structured group discussions designed to solve problems and identify ways forward. Useful in bringing different groups of experts together and require experienced facilitators.
Scenario workshops	A particular form of workshop is one where participating members of the public, government and the public together develop scenarios for the sector/region/issue concerned in the SEA. Using back-casting methodology, the scenarios can help identifying the most important issues and alternative development paths to be addressed today and can also help actors communicate with each other and find agreement.
Round table discussions	Facilitated debates between groups with different views with the aim of reaching consensus. Useful for engaging specialist interest and single-issue groups.
Printed material inviting comments	They aim to provide easily read information in words and drawings, to inform a wide range of stakeholders about the plan- or programme-making and assessment processes or documents.
Displays and Exhibits	Displays can be interactive or can be used as part of a forum, workshop, exhibition, conference or other event. Displays and exhibits can include feedback opportunities such as blank sheets with on-line questions, and can include drawings, models, maps, posters, or other visual and audio representations illustrating an event, proposal or issue.
Information hotline/ Staffed telephone lines	An Information Hotline offers pre-recorded information on the planning document or an issue via the telephone and/or access to SEA and planning team members who can answer questions or provide additional information and assistance. Staffed telephone lines can serve as a link between the public and the developer during the elaboration of the PPP, making the public feel involved.
Internet/Web-based consultations	The tool typically comprises a website on the Internet. It is used to provide information or invite feedback. Care should be taken to keep the information up to date. More interactive forms of participation on the Internet may also be developed, e.g. on-line forums and discussion groups.

Source: <http://www.yedp.org/> and [www.unece.org](http://www.unece.org)

## ANNEX C: WINDOWS OF OPPORTUNITY

Source: Bina, O. (2007) Proposal for the integration of the planning and assessment processes (Xichang Energy Plan), CHINA-EPI-SEA Paper No. 7\_EN

The concept of windows of opportunity draws on the work by Caratti *et al.* (2004). It is meant to provide a theoretical and practical support to the integration of planning and assessment tasks. A definition of ‘windows of opportunity’ is given in the project report CHINA-EPI-SEA No. 4 as follows:

*Identify the main stages in planning (windows of opportunity) that should be informed and influenced by the SEA, and specify the approximate timeline for each stage so as to ensure that the SEA can contribute to it in a timely and effective way. Such stages have been defined*

*as: ‘moments in the decision-making process where critical choices are made, which have an environmental implication’ (Bina et al. 2004:88).*

A proposal of ‘windows of opportunity’ provided below **serves as an illustration only**. They present an almost ideal sequence of events. In real life application, the report should be continuously updated as new information is made available. Provided example only represents a situation at a particular time and should not be used to judge the progress of the case it illustrates.

### Legend for the table headings:

a = Many of these tasks, as well as the specific actions (inputs, analysis and outputs) could represent a ‘window of opportunity’ for SEA to influence and guide planning and should be highlighted with a colour.

b = Collecting either qualitative or quantitative data and information (INPUTS);

c = Analyse the data using formal or informal tools, techniques and assumptions (ANALYSIS/DISCUSSION);

d = The outcomes of the analysis are expressed as outputs: they can be a report, a tool, a seminar etc. They are then discussed either implicitly or explicitly in order to inform the decision (DISCUSSION/OUTPUTS).

**Table C: Windows of opportunity for integrating SEA into planning (an example developed for project purposes)**

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organisation</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Autumn 2006	Set up an energy expert group responsible for drafting the energy plan.	City DRB	Overview of the main issues to be discussed during planning (based on previous energy plans, annual progress reports, assessments etc).	Could include a stakeholder analysis.	Ensure that the environmental perspective is represented within the group. For example, by including the EPB as a member (possibly, the early stages of the SEA process).	A formal decision (approved by the City Government) which lays out the list of organisations and actors member so the Group, with details of their role.
Autumn 2006	Identification of the main issues surrounding energy planning: priorities, concerns, problems, expectations etc.	City DRB - Expert Group	Same as above, with additional level of detail. Major policy documents relating to energy (international, national, provincial and municipal sources). Selected stakeholders and NGOs are invited to submit data, analyses and other inputs for consideration by the Group.	Analysis of background data (status quo) on: - Energy production and demand (sources, quantity) - Efficiency levels - Impacts (economic, social, environmental) - Supply forecasts - Demand forecasts, etc... Group discussions.	Include a summary of the main policies and laws relevant to energy planning (input b). Include information to highlight the environmental and sustainability dimension of the issues being discussed (analysis c).	A list of main issues to be addressed in the new energy plan. A list of additional data and analyses that need to be gathered and produced for subsequent detailed planning stages.
Spring 2007	Identification of a preliminary list of objectives and indicators for the draft plan	City DRB - Expert Group	Outputs from task 2. Main trends in: Energy consumption Emission levels per sector Air quality Other...	Discussion of significance of current trends.	Ensure that the environmental and sustainability dimension of the preliminary objectives (and indicators) is included (inputs (b) and analysis (c)).	Preliminary list of objectives and indicators for the draft plan (agreed by the group and approved by the City Government)

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organisation</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Spring 2007	Establish and interpret the current energy balance for Xichang.	Expert Group	Input/analysis/output from task 2. Additional level of detail.	Analysis of trends.	Include information to highlight the environmental and sustainability dimension of the current energy balance (inputs (b) and analysis (c)).	Report outlining the current energy balance.
Spring 2007	Establish and describe the 'reference/do nothing' scenario.	Expert Group	Input/analysis/output from tasks 2 and 4. Overview of: Use in city/townships Use in rural areas Use by Industry Other	3. Projected estimates of variables/indicators measuring the performance of such scenario against the preliminary objectives (task 3). The "reference/do nothing" scenario is strongly dependent on exogenous variables such as e.g. - population growth, climate conditions (e.g. particularly cold winters...), - significant changes in the energy prices, - availability of energy supply from other regions, - changes in lifestyles and associated consumption patterns, etc.  4. Sensitivity of the reference scenario to such variables should be tested, with particular attention to those variables that may be subject to unexpected extreme variations. Ultimately, at least three variants of the reference scenario should be presented: optimistic (e.g. with respect to the total effect on expected energy balance), most probable and pessimistic.	Include information to highlight the environmental and sustainability dimension of the reference scenario (inputs (b) and analysis (c)).  This step of planning is closely linked to the baseline task under 'scoping' in SEA.	Report describing the reference scenario and highlighting the major performance gaps – that is, what will happen (in terms of the preliminary objectives – task 3) if no measures are planned and implemented.

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organisation</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Winter 2007	Consultation to finalise the definition of the problem and objectives.	City DRB	Outputs from tasks 1-5	Stakeholder analysis. Discussion. May involve written comments, interviews, seminars etc.	Ensure that representatives of environment and sustainability interests are present / participate.	Report summarising the results of the consultation process. List of stakeholders consulted.
Winter 2007	Final definition of the problem and final list of objectives and indicators.	City DRB - Expert Group	Outputs from tasks 1-6	Discussion within the Expert Group	Ensure that the definition of the problem and list of objectives take into account the environmental perspective.	Report outlining the problem definition and the agreed objectives for the Draft Plan.
Winter 2007	Identification of specific sectoral targets for the achievement of the objectives (task 7).	Expert Group	National and provincial sectoral targets (from policies and legislation). Outputs from tasks 1-7	Discussion within the Expert Group	Include information to highlight the environmental and sustainability dimension of the objectives and targets (inputs (b) and analysis (c)).	Identification of specific sectoral targets for the achievement of the objectives (task 3).

Dates	Planning task (a)	Lead organisation	Input required (b)	Analysis proposed (c)	SEA integration opportunity	Expected planning outputs (d)
<b>Path involving SCENARIOS followed by MEASURES</b>						
Winter 2007	Preliminary outline of energy scenarios for Xichang.	City DRB - Expert Group	<p>Outputs from tasks 1-8</p> <p>Scenarios: Alternative scenarios corresponding to alternative overall strategies should be devised, including both supply side and demand side energy strategies/measures. For instance:</p> <ul style="list-style-type: none"> <li>- Scenario A could be focusing on maximising endogenous energy supply (irrespective of environmental priorities) to reduce external dependency.</li> <li>- Scenario B would be focusing on energy efficiency and renewables in the building sector, etc.</li> </ul>	<p>Each alternative scenario should be assessed against the reference scenario, at least in terms of their qualitative impact (e.g. + or -) on the main performance indicators.</p> <p>This can be for instance derived from causal chain analysis, which determines the direction of change of the indicators as a result of changes in the input variables characterising the scenarios (for instance, Scenario A is likely to entail a better economic performance (less imports) at the expense of the environmental performance (wider recourse to fossil fuel sources), etc.</p> <p>Clearly, more detailed, quantitative analysis, at least for the most important indicators, is preferred, where for instance the final, overall performance of all scenarios is expressed in terms of total consumption by source (and variations Vs the reference scenarios), total emissions etc.</p>	<p>Contribute to the definition of scenarios. Influence the range and type of extreme events considered.</p> <p>Include information to highlight the environmental and sustainability dimension of the scenarios (inputs (b) and analysis (c)).</p>	Report outlining three alternative scenarios for Xichang
Winter 2007	Preliminary assessment of the energy scenarios for Xichang.	Expert Group	Outputs from tasks 1-9	<p>Identification of likely impacts:</p> <p>Economic Social Environmental and sustainability</p>	<p>Include information to highlight the environmental and sustainability impacts (inputs (b) and analysis (c) – both positive and negative impacts!</p>	Report outlining the range of likely impacts of the scenarios for Xichang

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organisation</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Winter 2007	Public participation invited to discuss alternative scenarios and impacts.	City DRB	Reports from Task 9-10	Discussion. May involve written comments, interviews, seminars, events, conferences etc.	Ensure that representatives of the environment and sustainability interests are present / participate.  Ensure that the material is presented in a way that communicates adequately with the audience (i.e. non technical where needed).	Report summarising the results of the public participation processes.
Winter 2007	Revision of proposed scenarios based on the response of the public.	Expert Group	Report from Task 11	Revision of the scenarios with a view to propose the most desirable scenario as a base for detailed proposition of measures (next tasks).	Review the final report (d) to ensure due account was given to the public's comments.	Revised report on energy scenarios.
Winter 2007	Path involving only the definition of MEASURES.					
Winter 2007	Preliminary outline of measures for the supply and demand sides.	City DRB - Expert Group	Outputs from tasks 1-8  SUPPLY SIDE – explore: - actions increasing energy efficiency of individual energy processes and sources - actions that will modify the structure of supply - actions that will improve the energy trade balance  DEMAND SIDE – explore: - actions increasing efficiency of the energy end uses - actions reducing energy demand.	The contribution of each analysed measure to improving the performance of the main indicators should be evaluated (in absolute or/and per cent terms). Cost benefit analysis of individual measures could be carried out, possibly including a monetary evaluation of social and environmental effects (Social Cost Benefit Analysis SCBA). Identification of likely environmental and sustainability impacts.	Contribute to the definition of measures.  Include information to highlight the environmental and sustainability dimension of the measures and their likely impacts (inputs (b) and analysis (c) – both positive and negative impacts!	Report outlining possible measures for the supply and demand sides.

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organisation</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Winter 2007	Consultation on the range of possible measures.	City DRB	Report from Task 13	Stakeholder analysis (see task 6) Discussion. May involve written comments, interviews, seminars etc.	Ensure that representatives of the environment and sustainability interests are present / participate.	Report summarising the results of the consultation process.
Early 2008	Detailed development of the energy plan measures.	Expert Group	<p>Outputs from tasks 1-10</p> <p>SUPPLY side...</p> <p>DEMAND side (based on draft plan contents list – email 16/11/07):</p> <ul style="list-style-type: none"> <li>- Priority Projects in the city and township area</li> <li>- Energy efficient buildings</li> <li>- Green street lighting</li> <li>- Energy efficiency in the public sector</li> <li>- Priority Projects in the rural areas</li> <li>- Rural biogas plan</li> <li>- Popularisation of solar thermal water heaters</li> <li>- Ecological Protection</li> <li>- Priority Energy Efficiency Projects in industry</li> <li>- Analysis of typical industry branches (I think this means identification of...)</li> <li>- Energy consumption and energy savings plan for the steel sector</li> <li>- Energy consumption and energy savings plan for the cement sector</li> <li>- Energy consumption and energy savings plan for the metallurgy sector.</li> </ul>	<p>Sensitivity analysis of the finally selected measures and actions could be ultimately carried out to verify that the adopted policy (here intended as a package of measures) is sufficiently robust (i.e. that its expected overall performance is not seriously at risk if major changes of exogenous variables should occur, such as extreme events in demography, climate, etc.)</p>	<p>Contribute to the definition of measures.</p> <p>Include information to highlight the environmental and sustainability dimension of the measures (inputs (b) and analysis (c)).</p>	<p>Report outlining detailed measures for the supply and demand sides.</p>

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organization</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
Early 2008	Technical review and Plan EIA (SEA).	Expert Group	Report from Task 15 (and all other supporting documents Tasks 1-14).	<p>Identification of likely impacts:</p> <ul style="list-style-type: none"> <li>- Economic</li> <li>- Social</li> <li>- Environmental and sustainability</li> </ul> <p>Proposal of mitigation.</p>	<p>Include information to highlight the environmental and sustainability impacts (inputs (b) and analysis (c) – both positive and negative impacts!</p> <p>Try to adopt mitigation as a last resort. The aim should be to ensure that the plan is environmentally consistent.</p>	<p>Report outlining the range of likely impacts of the measures for Xichang's Energy Plan. A separate Plan EIA report should be prepared, including a non technical summary.</p>
	Revision of the draft plan.	City DRB	Report from Task 16.	Discussion and redrafting.	<p>Ensure that the key findings from the Plan EIA report are taken into consideration.</p>	Revised Draft Energy Plan.
?	Public participation invited to discuss the detailed measures and their impacts.	City DRB	Reports from Task 16 and 17.	<p>Discussion.</p> <p>May involve written comments, interviews, seminars, events, conferences etc.</p>	<p>Ensure that representatives of the environment and sustainability interests are present / participate.</p> <p>Ensure that the material is presented in a way that communicates adequately with the audience (i.e. non technical where needed).</p>	<p>Report summarising the results of the public participation process.</p>

<b>Dates</b>	<b>Planning task (a)</b>	<b>Lead organization</b>	<b>Input required (b)</b>	<b>Analysis proposed (c)</b>	<b>SEA integration opportunity</b>	<b>Expected planning outputs (d)</b>
	Revision of the draft Energy Plan based on the response of the public.	Expert Group	Reports from Tasks 16-18.	Discussion and redrafting.	Review the final report (d) to ensure due account was given to the public's comments.	Final Energy Plan.
	Other					

## **ANNEX D: BENEFITS OF IDENTIFYING AND ASSESSING ALTERNATIVES IN SEA**

Source: Jurkeviciute A. and Ricci A. (2008) Good practice principles for identification and assessment of alternatives in SEA, CHINA-EPI-SEA No. 16

### **More robust decision-making**

Early assessment of appropriately-selected alternative approaches to a PPP broadens the evidence base for decision-making. This reduces the risk of unexpected issues arising during implementation of the PPP and causing expensive changes.

### **SEA effectiveness and legitimacy**

Effectiveness of SEA can be judged by process and output criteria (McLauchlan and Joao, 2005). The consideration of alternatives relates to SEA process, in that a judgement can be made about the extent to which reasonable alternative PPP approaches were considered during the SEA.

Consideration of alternatives also concerns output, where the role of the SEA in the selection of the preferred alternative can be examined. Evidence of robust consideration of alternatives can be an indicator of SEA effectiveness and contribute to the legitimacy of a PPP development by demonstrating transparency, openness and clear justification for the decision.

### **Better environmental performance**

Assessment of alternatives provides the decision-maker with details of the alternative with the best environmental performance.

### **Better intersectoral coordination**

Discussing alternatives with administrations of other sectors can bring the benefit of intersectoral coordination between different sectors of the economy and sustainability integration into planning. One should consider that some of the possible alternatives (at least at Plan level), might involve developments in sectors other than transport or energy (typical is land use planning, but also agriculture, industry...). Identifying alternatives can foster better intersectoral coordination.

## ANNEX E: INTRODUCTION TO DEVELOPMENT AND IDENTIFICATION OF ALTERNATIVES

Source: Jurkeviciute A. and Ricci A. (2008) Good practice principles for identification and assessment of alternatives in SEA, CHINA-EPI-SEA No. 16

### Development of policies, plans and programmes and SEA stages

SEA is a process which identifies the outputs of the plan making process and provides additional information on the environmental effects of those outputs. SEA is not in charge of the development of alternatives, but it has to help planners choose between alternatives by enabling them to identify the most environmentally sound ones. The decision makers then can use SEA information when choosing, based on information and justification provided by SEA.

### Developing alternatives

In discussion of alternatives in SEA, there is a fine distinction to be made between the development of alternatives and their description. This is important since this defines the roles of the planners and SEA in this important element. The process of alternatives development is the responsibility of the planner and not the environmental assessor.

The environmental assessor, though, has to be able to identify and assess the alternatives provided in the PPP. European Union legislation on SEA, as well as the literature, states that the SEA process identifies, describes and assesses alternatives (EC (2001), Art 5.1). The EC SEA Directive does not say that alternatives have to be elaborated during SEA. Planners are the experts in the sector and therefore are in a position to elaborate the alternatives, if any, for the purpose of selecting the best option. SEA experts are in the best position to provide justification for the environmental effects of the alternatives developed.

For SEA to be effective, the development of reasonable alternatives involves commitment by planners to avoid being a token exercise by environmental assessors. Alternatives should be distinct and clear and provide sufficient information for SEA experts to make environmental judgement in terms of environmental impacts.

EC developed the Guidance on Implementation of EC SEA Directive (EC, 2004), which provides the following assistance on alternatives in SEA.

- The EC SEA Directive asks the planner to identify, describe and evaluate the likely significant environmental effects of reasonable alternatives (Art. 5 §1). This means that alternatives should not be artificially developed for the purpose of fulfilling the requirement of the directive so that they can be assessed. Instead, alternatives should be a part of the planning process helping to choose and develop the best solutions for a given purpose. False, misleading or dubious alternatives should not be created just to feed the SEA process.
- The same guidance (EC, 2004) points out that alternatives have to be realistic. Deliberate selection of alternatives that had more adverse effects than the preferred option is not appropriate.
- Alternatives have to fall within the jurisdiction of the planning authority and be relevant. The EC guidance says that “alternatives must [...] fall within the legal and geographical competence of the authority concerned”.
- The assessment of the alternatives is worthy only if SEA provides timely input into the planning. Alternatives as well as the overall assessment are “to ensure that the effects of implementing plans and programmes are taken into account during their preparation and before their adoption” (EC, 2005, page 26).
- Alternatives described for SEA must be distinct to enable a meaningful assessment between them to be carried out (EC, 2004).

## Dos and Don'ts to generating and assessing alternatives

Several authors have identified “does and don'ts” in dealing with alternatives (EC, 2004; EC, 2005; TAG,

2004; ODPM, 2005). The table below summarises the most important aspects of alternatives in PPPs and how they have to be treated during SEA (based on: CEP et al., 2006).

**Table E: Dos and donts in generating alternatives**

DOs	DON'Ts
Do identify and document the essential strategic choices that need to be made as part of the PPP making process, and discuss alternatives approaches to dealing with these early on (i.e. identify the essential strategic choices that need to be made).	Make up alternatives just to satisfy SEA requirements.
Do propose alternative ways to (a) deliver the PPP's objectives and /or (b) deal with further issues /problems identified during the scoping stage.	Define PPP objectives so narrowly as to preclude reasonable alternatives.
Do include whatever details are available on the likely range of alternatives that will be considered when consulting on the scope of the assessment, so that stakeholders (including the public) can comment on them.	Leave the identification and assessment of alternatives too late in the assessment process.
Do recognise that there may be alternatives within the PPP (e.g. alternatives for housing, employment, transport etc).	Suggest only one high level PPP-wide alternative (e.g. the PPP is either socially, or environmentally, or economically orientated).
Do consider, where appropriate, different tiers of alternatives: broad alternatives (which provide the underlying strategy for the plan /programme) /topic alternatives /alternative sites. When considering detailed alternatives focus on those that are consistent with the underlying strategy (e.g. sites which are consistent with the broad alternatives).	Don't unnecessarily produce alternatives for every minor issue or every permutation of every option.
DO consider the alternatives hierarchy, by asking: (i) Is development necessary? If so, (ii) How should it be done? Then, (iii) Where should it go? And finally, (iv) Timing and detail of implementation For high level strategic plans/programmes, 'need' may be more important than for lower level plans/programmes where alternatives for 'type, location or implementation' may be addressed in more detail.	DON'T confuse mutually exclusive alternatives (e.g. build X v. don't build X) with mix-and-match alternatives (e.g. build X, build Y next door). The sustainability of the former needs to be compared and a preferred option selected; the latter need to be individually tested and potentially combined as a preferred option. If using both approaches for different topics make this clear to stakeholders. Each alternative should be reasonably distinct.
DO use alternatives to illustrate issues and tensions which should be addressed as the preferred options are refined (e.g. use an environmentally focused alternative to highlight economic implications and an economically focused alternative to highlight environmental implications). Use these to help prepare a preferred alternative for the plan or programme that combines the best sustainability outcomes.	DON'T present extreme or unrealistic alternatives in order to support a preferred middle alternative (e.g. avoid alternatives for targets for affordable housing simply based on (a) market driven levels, (b) 35 per cent of housing (preferred option), or (c) 100 per cent of housing).
DO consider alternatives that may be politically controversial or that contradict higher-level policies if you can show that doing so would clearly lead to a more sustainable solution. Sustainable development involves pursuing new and innovative approaches to future development.	DON'T suggest alternatives that are clearly unrealistic or unfeasible (e.g. technically, financially). Stakeholders should be presented with genuine alternatives.

DOs	DON'Ts
DO describe how the alternatives have been developed and identify constraints to generating alternatives.	DON'T ... just accept constraints on alternatives as a given. Question how much room for manoeuvre there may be.
DO proactively engage with the community and stakeholders (including those from neighbouring authorities) in generating and developing alternatives and be willing to consider new alternatives as they emerge through the plan/programme-making process.	DON'T treat consultation as a public vote on which of the alternatives should be taken forward. The community is relying on decision makers to make informed decisions, taking into account community views as well as the full range of sustainability considerations.
DO inform decision makers, including elected members, of the requirement to appraise the alternatives considered.	DON'T just assume decision makers know or understand what is meant by alternatives.

### Guiding principles for identification of alternatives

The guiding principles and recommendations for identification of alternatives are as follows.

- Alternatives are set by planners, not by SEA practitioners.
- **SEA contributes to the effectiveness of the decision-making process** by facilitating the selection of a strategic alternative.
- For both energy and transport, **demand forecasts** are crucial in resolving the problem description adequately and therefore as a basis for developing alternatives.
- **Consultation** can assist in identifying alternatives – include stakeholders, public.
- Look for different ways of achieving the strategic objective. This should include the alternative of **avoiding development** (look at reducing demand rather than meeting demand) – i.e. include behavioural alternatives or alternative actions in other sectors.
- Alternatives need to be **realistic, reasonable and relevant**. They need to be **distinct** to allow meaningful assessment between them.
- In setting alternatives, where possible and feasible, establish **intersectoral coordination** for the establishing and assessing alternatives. Some of the possible alternatives (at least at Plan level), might involve developments in sectors other than

transport or energy (typical is land use planning, but also agriculture, industry...).

The guiding principles and recommendations for the assessment of alternatives are as follows.

- Consider “do nothing” or baseline alternatives alongside alternative futures – i.e. ‘**do nothing**’ and ‘**business as usual**’ alongside ‘**do something**’.
- The best alternative may not be ‘either /or’ but a combination that takes elements of more than one alternative.
- SEA may be only one of a series of assessments of a policy, plan or programme. Other assessments may evaluate social, economic, technical issues and thus the sequence of the assessments should not prejudice other assessments otherwise, for example, initial economic or technical assessment may first reject environmentally preferable alternatives.
- Use of a series of topic-based indicators to assess alternatives. Core issues in relation to transport schemes will be severance, noise, biodiversity, visual impact, land take and the effects of harmful emissions on air /water /soils /flora /fauna.

For a transport plan a “do nothing” alternative certain principles from (TAG, 2004) could be considered. It:

- It is based on current Government policies.
- It assumes that other adopted PPPs will deliver as planned - establishing the implications for the plan being developed is a source of uncertainty.

- It assumes continued implementation of strategies and measures planned in the previous plan, unless time limited (for example, a measure planned to be implemented for five years should not be assumed to be implemented beyond the planned five year period).
- It does not assume any new strategies or measures. For example, enhanced public transport provision to complement a planned new hospital should not be included in the “do nothing” scenario. These should be included in other alternatives being considered.

## ANNEX F: TYPES OF ALTERNATIVES

Source: Jurkeviciute A. and Ricci A. (2008) Good practice principles for identification and assessment of alternatives in SEA, CHINA-EPI-SEA No. 16

Different levels of planning imply different sets of alternative approaches to a policy, plan or programme (PPP). Additionally to the planning level, alternative setting is influenced by the sector development drivers identified in the process of planning. The

UK Department for Transport (DfT) has developed a “hierarchy” of transport alternatives (TAG, 2004), which with some modification can be applied to the thinking and design of energy alternatives. These are set out in Table below.

**Table F: Types of alternatives**

Level of decision	Definition/guiding questions	
	Energy	Transport
Need or demand	Is it necessary?	
	<p>Is the demand necessary or can it be achieved by efficiency measures?</p> <p>Can energy demand be more balanced/coordinated in time?</p> <p>Can the demand be met without new energy infrastructure?</p> <p>Can charges based on time modify and solve the demand issues? Peak pricing?</p>	<p>Can the need or demand for accessibility be met without new development / infrastructure at all?</p> <p>Can the need to travel be reduced?</p> <p>Can toll or road tax make changes in the transport and road demand?</p>
Input and supply	Can we use what we have now?	
	<p>What alternative energy sources exist?</p> <p>What kind of mix of energy sources is the most efficient?</p> <p>How long will we have the existing energy supplies for?</p>	<p>What types of existing infrastructure can be enhanced rather than building new infrastructure?</p>
Mode or process	How should it be done?	
	<p>Can renewable technologies meet the demand?</p> <p>What cogeneration strategies can be employed?</p> <p>Can hydro or waste derived energy be used?</p> <p>What more effective energy generation technologies be applied in the field?</p>	<p>Are there technologies or methods that can meet the need with less environmental / sustainability damage than ‘obvious’ or traditional methods?</p> <p>Can public transport system modifications meet the demand?</p> <p>Can access to multi-passenger transport (public transport) be increased?</p>
Location	Where should it go?	
	<p>What are environmentally suitable locations for renewable energy and energy generated from waste?</p>	<p>How does the scheme accommodate environmental management needs?</p>
Detail	Timing and detailed implementation	
	<p>When should it be built to meet the demand?</p> <p>What technology can meet the demand faster and be sustainable for long term generation?</p> <p>Increased interconnection as a short term solution?</p>	<p>When, and in what sequence, should developments be carried out?</p>

Source: adapted from TAG, 2004

It is important to stress that the above Table assumes that sectoral strategies and objectives have been clearly identified. In the energy sector the issue of optimal energy mix, which is mentioned in the table as one of those that should be looked at in identifying alternatives, could be considered as a basic element of objectives and strategies (e.g. decreasing dependency from specific fuel sources...).

For the transport sector the examples of alternatives can be further elaborated and more clearly identified in the rail and water transport sectors, which are considered more efficient and sustainable compared to road and especially air transport.

## ANNEX G: GOOD PRACTICE IN IMPACT ASSESSMENT OF SEA

### ALTERNATIVES

Source: Ricci, A., Eichhorst, U. and Bongardt, D. (2008) Techniques for Impact and BAU Assessment in SEA, CHINA-EPI-SEA Paper No. 22\_EN

#### WHY EVALUATIONS MUST BE CARRIED OUT ON MULTIPLE OPTIONS (ALTERNATIVES)

In SEA several (i.e. at least two) plan (or programme/project) alternatives should be evaluated. In fact, the identification of multiple options is a well-known prerequisite of all evaluation methods, including e.g. project EIA, or "traditional" Cost Benefit Analyses (CBA). An evaluation is a way of measuring the performance of a plan (or project, etc.), and, whatever the criteria in focus, it mainly serves two purposes.

- It should assess the viability of the option, which can in turn be interpreted as a combination of (i) its feasibility, and (ii) its potential to achieve the initial objectives. In other words, the viability check must allow the decision maker to conclude whether the option is "generally sound", and consistent with the policy framework surrounding it. In that sense, the evaluation can be meaningful even in the presence of one, and only one, option.
- On the other hand, there may be several options that all fulfill the viability check, in the sense that they are all generally sound and contribute to the achievement of policy objectives. The issue then arises of which should be selected, and of how to rank them. Therefore, in order to provide conclusive input to decision makers, an evaluation must demonstrate that the option at hand is "superior" to others.

In summary, while an evaluation that examines only one option does indeed provide meaningful indications on the general soundness of that particular option, it does not allow to reach the conclusion that the option should be implemented, as other plans or programmes (which have not been considered) may prove superior.

#### HOW MANY ALTERNATIVES?

Ideally, the widest possible range of alternatives should be identified in the scoping phase of SEA and then submitted to the comparative evaluation process within the impact assessment phase. On the other hand, SEA is a high level, strategic assessment approach, and should not be concerned with the distinction between variants that can only be differentiated in terms of e.g. technical implementation details (typically to be looked at within project EIA).

Although there is no standard rule to decide how many alternatives should be examined in any given SEA, a reasonable range spans from a minimum of 2 to a maximum of 4/5 options: less than 2 fails to provide conclusive evidence for decision making (see above), while more than 4/5 generally means that the differentiation between options is not sufficiently strong, and therefore not relevant in strategic terms. Also, comparing a large number of alternatives inevitably requires more, and more detailed, data which is usually neither feasible (resource-wise) nor appropriate within an SEA.

#### CRITICAL ISSUES IN SELECTING ALTERNATIVES

##### Baseline

As a minimum requirement, a plan (or programme) must be assessed against the "basic" alternative that corresponds to the BAU option. This is often referred to as the comparison between "do nothing" and "do something". Hence the importance of carefully defining and documenting the BAU, whereby this will not only serve as the reference for impact assessment, but will also establish, in line with the aim of the scoping phase, the framework for evaluation (which indicators, which level of detail, etc.) to be then consistently adopted for all the options, in order to ensure comparability.

While the BAU does not, by definition, include proposals designed to address specific problems or objectives, the “do something” options - if more than one - can be defined as alternative ways to depart from the BAU in order to respond to specific problems or objectives.

Identifying and designing such options therefore requires, as a starting point, the explicit representation of the problems/objectives that must be addressed, notably by answering basic questions such as: which problem(s) should be solved? Who is affected by the problem(s)? How big is (are) the problem(s)?

Scenarios are useful tools in environmental assessment for evaluating future states of the environment and assessing how they could be affected by policy interventions.

The business-as-usual scenario, by providing the baseline against which the effects of a plan or programme and its alternatives can be compared, plays an important role in decision-making, since it will highlight the environmental implications of a policy option (EC, DG TREN, 2005). In contrast to a mere assessment of the current state, a BAU scenario allows decision makers to compare the expected effects of a new policy, plan or programme to the future state of society and the environment that is likely to occur in the absence of the respective policy, plan or programme. In the Xichang case, for instance, it could be used to compare the estimated amount of SO<sub>2</sub> emissions or the share of renewable energy in the energy mix after implementation of the energy plan with the “do nothing” option. Without a BAU assessment, the basis for assessment of the environmental achievements or negative impacts of a plan or programme is missing.

The BAU scenario is a so-called exploratory scenario, because it starts in the present and explores trends into the future. The principal elements of a BAU scenario include (Alcamo, 2001) the following.

- A description of the likely step-wise changes in the future state of society and the environment in the absence of any new energy policies. For example, the change of SO<sub>2</sub> and CO<sub>2</sub> emissions related to energy consumption over time.
- The driving forces, i.e. the main factors that influence step-wise changes. This could be, for instance, population and economic growth in Xichang.

Values for driving forces can either be assumed by the assessor or taken from existing studies. Useful information may, for instance, be found in the Xichang energy plan, so the assumptions on economic growth and demographic development etc. can simply be adopted from the plan.

- The base year, which marks the beginning year of the BAU scenario. Usually it is the most recent year for which adequate data are available.
- Time horizon and time steps. Whereas the time horizon describes the most distant future year covered by the scenario, the time steps mark certain years between the base year and the time horizon. In the Xichang case, to be compatible with the energy plan, the time horizon is 2020 and the time step is 2010.
- Often, a storyline gives a narrative description of the scenario, highlighting its main features, as well as the relationship between the driving forces and the main features.

Although the BAU scenario can be described qualitatively as is done in the storyline, a quantitative assessment is usually required in environmental assessments, as well. It should, nevertheless, be noted that the numerical information in a scenario is not an exact prediction of the future, but describes one of many possible futures (Alcamo, 2001). In order for the BAU scenario to be effectively utilised as a reference scenario, transparency of the underlying assumptions on trends etc. is essential.

In the framework of sectorial development plans (e.g. energy, transport), and particularly so in regions characterised by high/fast growth expectations, the typical problem that drives the design of alternatives is that of satisfying increased demand volumes. This calls for a number of important considerations:

- How accurate, and detailed, are the available demand forecasts?
- Is infrastructure development the only possible answer?
- If infrastructure capacity increase is inevitable, should this happen through the construction of

new infrastructure or/and through the expansion of existing infrastructure?

### **Demand forecasts**

Decision making with respect to sectorial policies and plans, including large infrastructure projects, is largely based on *ex ante* evaluations of costs and impacts.

The quality of these evaluations is in turn highly dependent on the reliability of the demand forecasts. Notably, most environmental impacts (emissions of pollutants and GHG, noise nuisances, etc.) are directly (often linearly) related to the volume of demand: an underestimate of demand therefore leads to an underestimate of the negative environmental effects and the social costs these represent. Furthermore, such underestimates will lead to insufficient provision of mitigation measures, and subsequent omission/underestimation of the corresponding costs and benefits. On the other hand, overestimating future demand may lead to the approval of a plan for expanding infrastructure capacity to an extent that is not required, with an unnecessary increase in environmental effects both at the infrastructure construction site(s) and across the network to which the new infrastructure is connected.

Basic recommendations to ensure the reliability of demand forecasts include:

- The use of modelling tools: as and when available, sectorial and intersectorial models provide precious inputs into demand estimation, notably by combining the effect of exogenous factors (demography, overall socio-economic trends, national economic policies, etc.) with that of sectorial policy decisions (infrastructure development, technological choices etc.). Models also allow the carrying out of sensitivity analyses, which are very useful in high uncertainty contexts such as those corresponding to long-term forecasts and fast growth. In the absence of modelling capabilities, demand forecasts will inevitably be affected by a high degree of uncertainty, which can only partly be addressed by recurring to background studies carried out in other regions with similar development prospects.
- Rebound effects: expected growth in demand stimulates investment for the provision of additional capacity. It is however well known that in turn, the availability of additional capacity (supply)

further stimulates demand growth. In other words when supply is (over)abundant, additional demand is generated. Such “rebound effects” should be considered in projecting future demand.

### **Infrastructure development vs. alternative options**

Matching supply with expected demand is in most cases addressed through the provision of additional infrastructure capacity. Particularly in the framework of SEA, it is, however, essential that non-infrastructure solutions are also considered, as the negative effects on the environment are mostly associated with infrastructural developments and their subsequent operation. A typical example in the energy sector is the management of demand peaks: it is well known (and to some extent inevitable) that energy demand varies, even significantly, over time (daily peak hours, seasonal variations according to climate conditions, etc.). While infrastructure provision may appear to be justified by the need to ensure that peak demand is satisfied, there are alternative ways of matching supply with demand, for instance through pricing (or other instruments such as fiscal incentives, information campaigns etc.), which can considerably reduce the need for capacity expansion.

In most cases, balancing supply and demand can be achieved through a mix of infrastructure and non-infrastructure measures, and this must be directly reflected in the selection of SEA alternatives.

### **New infrastructure vs. expansion/modernisation of existing infrastructure**

Meeting an increase in demand can be achieved by the provision of new infrastructure or by enhancing the existing facilities to increase their supply capacity. While traditional CBA allows the comparison of these two options from the economic and financial viewpoint, the wide-ranging environmental impacts are often underestimated. The SEA approach often turns out to shed new light on the relative merits of the two options.

## ANNEX H: TOOLS FOR IMPACT ASSESSMENT

Source: Ricci, A., Eichhorst, U. and Bongardt, D. (2008) Techniques for Impact and BAU Assessment in SEA, CHINA-EPI-SEA Paper No. 22\_EN

The expected impacts (on environment, society and the economy) of a given Policy, Plan or Programme (PPP) can be assessed in a variety of ways, and with the support of a wide range of technical tools. The choice of the most appropriate method (or combination of methods) mainly depends on:

- the scope and scale of the assessment (spatial, temporal, sectorial);

- the required level of detail (which in turn depends on the strategic/operational nature of the decisions at stake);
- the availability of resources (data, tools, skills, finance, time).

In the context of SEA, the most relevant methods and tools from which to select are summarised in the table below.

**Table H: The SEA toolbox (simplified)**

	Check lists	SWOT	Causal chains	GIS	Models	Indicators	CBA	CEA	MCDA
Screening	■								
Scoping	Definition of goals	■							
	Baseline analysis			■		■			
	Identification of alternatives		■	■	■	■			■
	Evaluation framework			■		■			
<b>Impact assessment</b>				■					
Review	■								
Monitoring	■								

The full paper briefly presents the main methods and tools for Impact Assessment, highlighting their strengths and weaknesses and their conditions of use. Please see CHINA-EPI-SEA Paper No. 22\_EN.

## ANNEX I: PROPOSAL FOR THE CONTENTS OF SEA REPORT

Source: Bina, O. (2007) Proposal for the contents of the Energy SEA Report, CHINA-EPI-SEA Paper No. 6\_EN

This proposal for an SEA report is based on the overarching idea that the Report is a document that illustrates the **quality of the SEA process**, as well as providing an **overview of the likely effects** of a plan on the environment and sustainability.

The following principles apply:

- **Clarity of language**
- **Balance** between the use of the main body of the text to deliver the main messages for decision-makers and the public/stakeholders, and the Annexes for more technical data
- **Evidence** of the **quality** of the SEA **process**, including:
  - Process design (in the scoping report)
  - Consultation, cooperation amongst administrators and key actors
  - Public participation
  - Strengths and weaknesses of the SEA
- **Evidence** of the range of **likely effects**, including uncertainties and how to deal with them.

The examples for a generic SEA report content and an adaptation of the proposed content to the needs of the pilot Energy SEA are provided below.

### CONTENTS OF AN SEA REPORT

#### 1 General Principles

- 1.1 Origins of the Task
- 1.2 Scope of the Assessment
- 1.3 Proposed Year for Assessment
- 1.4 Environmental Impact Identification
- 1.5 Environment Protection Objectives and Targets
- 1.6 Assessment Indicator System
- 1.7 Assessment Methodology
- 1.8 Assessment Procedures

#### 2. Profile and Analysis of the Proposed Plan

- 2.1 Necessity of the Proposed Plan
- 2.2 Objectives of the Proposed Plan
- 2.3 Task of the Proposed Plan
- 2.4 Principles for the Proposed Plan
- 2.5 Brief Introduction to the Proposed Plan
- 2.6 Analysis of the Proposed Plan

#### 3 Environmental Setting

- 3.1 Environmental Setting
- 3.2 Environmental Quality Status Quo and Changing Trends
- 3.3 Environmental Constraint Factor Analysis

#### 4 Environmental Impact Prediction Assessment

- 4.1 Atmospheric Environmental Impact Prediction
- 4.2 Surface Water Environmental Impact Prediction
- 4.3 Ecological Environmental Impact Prediction
- 4.4 Social Environmental Impact Prediction
- 4.5 Comprehensive Assessment to the Proposed Plan

#### 5 Environmental feasible schemes and mitigation measures

#### 6 Monitoring and follow-up assessment plan

#### 7 Environmental investment budget

#### 8 Public participation

#### 9 Difficulties and uncertainties

#### 10 Executive Summary

## PROPOSAL FOR THE CONTENT OF THE ENERGY SEA REPORT

The contents list below is based on the concepts proposed above, and seeks to combine these with the material produced by Chinese partners. You will find items highlighted from the Chinese proposal. Comments and questions are placed inside square brackets [...]

### ABBREVIATIONS

#### 1. GENERAL PRINCIPLES

[equivalent to 'Background' sections]

##### 1.1 Origins of the Task

##### 1.2 Purpose of the Assessment

[see Scoping report]

##### 1.3 Scope of the Assessment

[see Scoping report. What is included and what is excluded? Including geographical coverage? Suggestion: include a table with the key Chinese legal requirements and how these were met in this study]

##### 1.4 Proposed Year for the Assessment

[is this essentially a timetable?]

### 2. THE PROPOSED PLAN

[includes elements of the Scoping report]

#### 2.1 Introducing the energy plan

Origins of the proposed plan [the need for the plan, in the Chinese version]

#### 2.2 Links with the institutional and policy context

#### 2.3 Proposed plan objectives

#### 2.4 Principal elements of the Proposed Plan [tasks of the plan, in the Chinese version]

#### 2.5 Principles of the Proposed Plan

#### 2.6 Scenarios, alternatives

#### 2.7 Conclusions

### 3. ENVIRONMENTAL SETTING

[combines elements from 'Baseline Information' in the Scoping report]

#### 3.1 Introduction - the use of indicators and targets

#### 3.2 Xichang baseline

- Environmental quality status quo
- Changing trends
- Environmental constraint Factor Analysis

#### 3.3 Key messages from the baseline [environmental setting] review

#### 3.4 Conclusions

### 4. SEA: OBJECTIVES, PROCESS AND METHODS

[includes elements from the Scoping report, and covers elements under 'General Principles' in the Chinese proposal, and may be similar to Assessment procedures]

#### 4.1 Objectives

- Environmental and sustainability issues [Environmental Impact Identification]
- Environmental and sustainability objectives and targets
- List of environmental and sustainability objectives
- Compatibility analysis

#### 4.2 SEA process

- Integrating planning and assessment processes [see CHINA-EPI-SEA Report no. 7\_EN]
- Actors and responsibilities
  - Key actors
  - Consultation, collaboration and public participation
  - Contacts

#### 4.3 SEA methods [Assessment Methodology]

- Assessment Indicator System
- Other

#### 4.4 Consulting on the objectives, process and methodology proposed for the SEA.

#### 4.5 Conclusions

## 5. ASSESSMENT OF THE DRAFT ENERGY PLAN

### 5.1. Introduction

5.2. Main findings, Energy plan chapter by chapter [this section will depend very much on how the plan is developed and whether there are scenarios, and alternative sets of options being proposed and assessed. The following set of impact prediction categories should be presented in summary only, with the detail in annexes]

- Atmospheric Environmental Impact Prediction
- Surface Water Environmental Impact Prediction
- Ecological Environmental Impact Prediction
- Social Environmental Impact Prediction
- Comprehensive Assessment to the Proposed Plan

### 5.3 Cumulative impacts

### 5.4. Regionally significant projects and links to project EIAs [if any!]

### 5.5 Impacts on nature conservation sites and reference to additional supporting assessment [where appropriate]

### 5.6 Trans-boundary impacts [e.g. into other provinces, if any]

### 5.7 Difficulties and uncertainties

### 5.8 Conclusions

## 6. KEY ISSUES AND OPTIONS – THE ENVIRONMENTAL PERSPECTIVE

### 6.1 Introduction

### 6.2 Urban sector

### 6.3 Rural sector

### 6.4 Industrial sector

### 6.5 Climate change

### 6.6 Water

### 6.7 Other

### 6.8 Conclusions

## 7. ENVIRONMENTALLY FEASIBLE SCHEMES AND MITIGATION MEASURES

### 7.1 Including Environmental Investment Budget

## 8. NEXT STEPS

### 8.1 Commenting on this report and documentation of the decisions

- Consultation with other Government authorities
- Public Participation [details of methods, timing and scope]

### 8.2 Monitoring and follow-up measures envisaged

## 9. NON-TECHNICAL SUMMARY

[Similar to the ‘executive summary’. Often this part is placed at the beginning of an SEA report, but here it is at the end, following the Chinese example.

Ideally could include:

- list of environmental objectives
- a summary matrix of the assessment (or other diagram, maps)
- a table summarising how each main proposal/measure/project is likely to affect the objectives
- public participation (it is assumed that this report will be presented to the public, therefore it is not possible here to summarise the results of such event. This will have to be recorded in a separate document)
- next steps]

## APPENDICES (in separate files)

- I. SEA expert group
- J. Scoping report
- K. Sustainability drivers and data for sub-areas
- L. Review of other policies, plans, programmes and sustainability objectives
- M. Cumulative impact identification and mitigation
- N. SEA Process
- O. Documents supporting changes to the Plan in response to assessment
- P. Assessment of draft Plan (details)
- Q. Changes made to draft Plan



SEI - Africa  
Institute of Resource Assessment  
University of Dar es Salaam  
P.O. Box 35097, Dar es Salaam  
**Tanzania**  
Tel: +255-(0)766079061

SEI - Asia  
15th Floor, Witthayakit Building  
254 Chulalongkorn University  
Chulalongkorn Soi 64  
Phyathai Road, Pathumwan  
Bangkok 10330  
**Thailand**  
Tel+(66) 22514415

SEI - Oxford  
Suite 193  
266 Banbury Road,  
Oxford, OX2 7DL  
**UK**  
Tel+44 1865 426316

SEi - Stockholm  
Kräfftriket 2B  
SE -106 91 Stockholm  
**Sweden**  
Tel+46 8 674 7070

SEI - Tallinn  
Lai 34, Box 160  
EE-10502, Tallinn  
**Estonia**  
Tel+372 6 276 100

SEI - U.S.  
11 Curtis Avenue  
Somerville, MA 02144  
**USA**  
Tel+1 617 627-3786

SEI - York  
University of York  
Heslington  
York YO10 5DD  
**UK**  
Tel+44 1904 43 2897



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