



Policy Instruments for Chinese Sustainable Future:  
**Environmental Policy Integration and  
Strategic Environmental Assessment  
for the Energy and Transport Sectors**

An Action under the  
European Union's Asia Pro Eco II Programme  
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## **European experiences with SEA**

TRL (UK)

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## Project outline

Policy Instruments for 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 implementation 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 GHGs.

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

The action targets the inadequate reflection on environmental policy objectives and the weakness of the environment as a cross-sectoral priority and the need for information and knowledge of 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 go to:

[http://www.epi-in-china.com/project\\_information/summary.html](http://www.epi-in-china.com/project_information/summary.html)

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## TABLE OF CONTENTS

1	Introduction .....	2
2	Methodology .....	3
3	Overview of Strategic Environmental Assessment experience .....	4
3.1	International experience .....	4
3.2	European experience .....	8
3.2.1	Legislation and regulations .....	8
3.2.2	Law enforcement .....	10
3.2.3	Organisational arrangements .....	11
3.2.4	Limits of functions and powers .....	12
3.2.5	Organisational capacity.....	12
3.3	Donor institutions .....	13
4	Introduction to Strategic Environmental Assessment practice .....	15
5	SEA in the transport sector.....	16
6	SEA in the energy sector .....	21
7	Recommendations for China .....	26
8	References .....	28

## LIST OF CASE STUDIES

Case Study 1: SEA for the High Speed Rail (HSR) Zuid, the Netherlands.....	16
Case Study 2: Slovene Transport Policy.....	17
Case Study 3: South West Area Multi-Modal Study.....	18
Case Study 4: Nordic triangle transport corridor .....	19
Case Study 5: Energy Policy of the Czech Republic.....	22
Case Study 6: Slovak Republic 'Energy Policy 2000' .....	22
Case Study 7: SEA for a National Plan on the Production of Electricity .....	24
Case Study 8: Offshore Energy SEAs in the United Kingdom .....	24
Case Study 9: Norwegian management of the Barents Sea.....	25

## LIST OF TABLES

Table 1: Summary of SEA experience around the world .....	5
Table 2: SEA legislation and regulations in selected European countries.....	8
Table 3: Elements of SEA capacity and their development .....	13

# 1 INTRODUCTION

This study forms part of the European Commission Asia Pro Eco II Programme, and falls under *Work Package II – Sharing Expertise: European experiences with Environmental Policy Integration and Strategic Environmental Assessment in the transport and energy sector*. This report fulfils *Work Package II.2 – Research of European experiences with Strategic Environmental Assessment (SEA) (WP II.2)*.

The objective of WP II.2 was to analyse European experiences of SEA, specifically in the transport and energy sectors, in order to transfer learning from these experiences to the Chinese context. The study also considered international experiences in SEA, as well as the experience of donor and aid organisations. The study was completed as a literature review which investigated SEA legislation and regulations, law enforcement, organisational arrangements, limits of functions and powers, and organisational capacity for SEA in European continent with the focus on European Union countries, but also giving examples from other continents (e.g. the USA). Using case studies and available literature, recommendations for SEA of transport and energy in China are proposed.

The aim of the study was to provide a summary of SEA best practice in Europe, to transfer learning and best practice to the Chinese situation. In addition, looking at past SEA experiences in Europe will allow China to implement the most relevant and successful aspects of SEA.

The report is divided into the following chapters:

- Chapter 1: A brief introduction to the study and why it was done;
- Chapter 2: A description of the methodology used in this study;
- Chapter 3: A summary of global experiences in SEA;
- Chapter 4: An introduction to SEA practice;
- Chapter 5: SEA practice in the European transport sector, with case studies;
- Chapter 6: SEA practice in the European energy sector, with case studies;
- Chapter 7: A summary of relevant recommendations for China; and finally
- Chapter 8: A full list of references used in this report.

## 2 METHODOLOGY

The work was undertaken as a desk-top literature review of studies covering SEA practice in Europe and elsewhere. Literature sources were obtained through an internet search and a dedicated TRL Information Centre literature search.

Sources of literature for this study included *inter alia*:

- The European Commission (EC) and European Union (EU);
- The United Nations;
- Leading authorities on SEA theory and practice, such as Dalal-Clayton, Sadler and Fischer;
- Leading institutions working in the field of SEA, such as the International Institute for Environment and Development (IIED), the World Wide Fund for Nature (WWF) and the Organisation for Economic Co-operation and Development (OECD); and
- Donor or aid organisations such as the World Bank, the International Finance Corporation (IFC) and the Swedish International Development Cooperation Agency (Sida).

Types of literature reviewed for this study included:

- Books;
- Journal and conference papers;
- SEA guidelines and manuals;
- Official websites; and
- One-off studies on SEA practice.

For the purpose of the paper, over 30 books and articles were obtained and reviewed in English language. Over 90 literature items from the Information centre have been screened using library search for words “SEA” and “environment” and examined. Additionally, websites of the European Commission and other leading institutions in SEA in Europe were reviewed. The study was completed in December 2007.

### **3 OVERVIEW OF STRATEGIC ENVIRONMENTAL ASSESSMENT EXPERIENCE**

This chapter considers experience in SEA, both in the global context and on the national level in various European countries. Several reviewed studies have provided overviews of SEA around the world, and much of this information is summarised in Section 3.1. Following the global snapshot, Section 3.2 considers European experience in more detail – looking at SEA legislation and regulations, law enforcement, organisational arrangements, limits of functions and powers, and organisational capacity for SEA in Europe. Lastly, Section 3.3 looks briefly at the SEA experiences of donor organisations.

#### **3.1 Global experience**

The process and practice of SEA differs from country to country. Table 1 provides a summary of SEA experience around the world. This table is not intended as a comprehensive global review of SEA experience, but merely enhances the information provided on European experiences in Section 3.2.

**Table 1: Summary of SEA experience around the world**

Country	Summary
<b>Developed countries</b>	
USA	The term Strategic Environmental Assessment is not used in the USA; however a requirement for environmental assessment, as set out in the National Environmental Policy Act (NEPA, 1969), applies to “ <i>proposals for legislation and other major federal actions significantly affecting the environment</i> ”. This is interpreted by the Council on Environmental Quality (CEQ) as including policies, plans and programmes. A key element of higher-level environmental assessment is the Programmatic Environmental Impact Statement (PEIS) and this form of SEA has been applied by federal departments and major agencies since the mid-1970s. Federal agencies use the PEIS approach for a variety of strategic activities, including land use, integrated resource management, transport, water and waste. In practice PEIS appears to be under-utilised and completed statements represent a small proportion of EISs completed. There is significant variation in the way the process is applied and the fact that NEPA is not triggered unless the action or plan under consideration is judged to ‘significantly affect the environment’ allows agencies to skirt the PEIS process. For example, the national energy policy was exempted from requiring a PEIS under this loophole. PEISs have been acknowledged as being useful in assessing cumulative impacts, in the consideration of alternatives and in guiding lower-level environmental assessments. The SEA system established in California is the most well developed (see California Environmental Quality Act 1986). Key barriers faced by US SEA practitioners: piecemeal approach to Programmatic Environmental Impact Statements, multiple decision-making processes and lack of coordination between agencies, and a process that is oriented toward the production of a report (IIED, 2004; Dalal-Clayton and Sadler, 2005).
Canada	SEA was initially applied in the 1990s in Canada at Cabinet level (the highest level of decision-making) as a non-statutory procedure, separate from the Canadian Environmental Assessment Act which set out Environmental Impact Assessment (EIA) legislation. It was designed to integrate environmental considerations related to policy and programme proposals in a flexible and pragmatic way and was a major innovation at the time. Following a review in 1998/99 that uncovered significant inadequacies in SEA implementation, a revised 1999 Cabinet Directive on SEA strengthened the role of SEA in policies, plans and programmes (PPPs) and clarified the obligations of federal departments and agencies. This included a link between SEA and the 1997 requirement for agencies to develop and implement sustainable development strategies. Guidelines suggest flexibility in process depending on context. Generally two stages are used, comprising a preliminary scan for potentially significant environmental effects followed, where necessary, by a detailed analysis of effects, mitigation, residual effects and need for follow-up. SEA in Canada explicitly puts environmental analysis on an equal footing with economic and social analysis when developing a PPP (IIED, 2004).
Australia	SEA of Federal policies, plans and programmes is provided for through the Australia Environment Protection and Biodiversity Conservation Act (1999). SEA is triggered by agreement with Federal Minister for the Environment. Additionally the Act provides for strategic assessment of all fisheries managed by the Federal Government or all fisheries involved in export industry. The Act is criticized for being too restrictive in scope, since matters of national environmental significance are excluded. Under the National Forest Policy Statement there is provision for a comprehensive regional assessment, which is fairly similar to SEA. (Dalal-Clayton and Sadler, 2005).
New Zealand	SEA is not instituted as a formal separate procedure in New Zealand, but its philosophy and approach are reflected in a variety of laws and policies. The most relevant single piece of legislation is the Resource Management Act 1991 (RMA), which was not intended as a mandate for SEA but contains relevant material and displays environmental and sustainability dimensions. Three defining features of the RMA of relevance to SEA are: (i) a general thread around sustainable resource management, (ii) an effects-based approach to policy-making, planning and approval that approximates to tiering in SEA /EIA, and (iii) specific requirements for analysis of policies and plans including cost-benefit analysis, environmental aspects and consideration of alternatives. In practice, these requirements of the RMA have often been weakly implemented, in particular (iii) above as required by Section 32 of the RMA. Beyond RMA, SEA is not formally applied to policy and plan making although environmental matters are required to be addressed strategically in a number of other instruments and arrangements including a policy framework for environmental and sustainable development, individual inquiries carried out by the Parliamentary Commissioner for the Environment and <i>ad hoc</i> regional and sector planning exercises (IIED, 2004; Dalal-Clayton and Sadler, 2005).
European Union	In addition to its global economic and political influence the European Union leads in the interpretation and transposition into law of key concepts and

	elements of Multilateral Environmental Agreements (such as the UNCED 1992 agreements) on sustainable development, the precautionary principle and a high level of protection for the environment. These concepts are enshrined in EU Treaties, in particular the 1997 Treaty of Amsterdam, and are also set out in the preamble to the European Council Directive (2001/42/EC) on the assessment of the effects of certain plans and programmes on the environment (EC SEA Directive). The SEA Directive was required to be transposed into member states' national legislation by July 2004; it also provides the structure for the 2003 UNECE Protocol on SEA and thereby has influence beyond the EU. The Directive took 10 years to be finalised due to extensive debate about content, including whether or not SEA should be compulsorily applied at policy level. The Directive is mandatory for certain plans and programmes (PPs) but does not apply to higher-level policies. The assessment process set out in the Directive evolved from EIA. Additional key features are the requirement for consultation /participation at various stages, the requirement to consider alternatives and rationale for choice made, the need for an environmental statement and the need for environmental monitoring of the PP with respect to mitigation measures proposed. In terms of sectoral application, the Directive specifies PPs developed for agriculture, forestry, fisheries, energy, industry, transport, waste management, telecommunications, tourism and town and country planning (IIED, 2004).
Asia: Japan and South Korea	Japan has no formal provision for national-level SEA of PPPs which were not subject to the EIA law of 1997. Several local governments have introduced SEA into their environment-related plans and programmes, including the Tokyo Metropolitan Government, Hiroshima City and Saitama Prefecture. In contrast, Korea introduced a type of SEA process as early as 1999. Korean SEA relied on a PER or prior environmental review system to identify possible environmental impacts of development plans or projects in the early stages of planning. The system fails in that strategic decisions on, for example the development site or route, have already been made. The Korean SEA system is being revised to incorporate internationally accepted SEA principles (Dalal-Clayton and Sadler, 2005).
<b>Developing countries</b>	
Asia	Many Asian countries, if they do not already have an SEA system in place, have the infrastructure in place to make a success of SEA by having SEA-type assessment approaches and elements in place already. Chinese environmental law does not currently require SEA, but there is a growing interest in SEA in China. SEA in China has faced several shortfalls, including some which restrict public participation. Interest in SEA in Hong Kong is also growing, with over ten SEA studies having been conducted over the past 10-15 years. Nepal, Indonesia and Thailand do not appear to have SEA systems in place. However, in Pakistan, an SEA training programme initiated by IUCN in 1997 led to increased awareness and demand for SEA in the country. Interest in Thailand is growing after an SEA of shrimp farming was conducted in 2001 for Sida (Dalal-Clayton and Sadler, 2005).
Pacific Islands	Strategic Environmental Assessment is relatively new to the Pacific Island States, with the first SEA in the region being conducted in 1996. In this region SEA has primarily been used for integrated coastal zone management (Dalal-Clayton and Sadler, 2005).
Latin America and Caribbean	Most countries have some system or legislation dealing with EIA, however there is little application of SEA in the region outside of those led by international organisations (e.g. SEA for development cooperation plans and programmes funded by the Inter-American Development Bank and World Bank). There has been some use of SEA-type approaches as part of integrated planning, for example an assessment undertaken in 1995/96 in Bolivia and Peru looking at climate, water use, ecosystem pollution, soils and development considerations in the context of a regional development plan (funded by UNEP and Organisation of American States). SEA is starting to be used as an administrative procedure within environmental policy instruments in the region and there are examples of positive outcomes from SEA use in the region.
Middle East and Francophone / North Africa	Most countries in the Middle East and francophone / North Africa have introduced some form of EIA legislation but few have established provision for SEA. SEA-type studies have been conducted in Bénin, Burkina Faso, Morocco Guinea and Niger. In addition, some countries have legislative provision for SEA but the extent of implementation is unclear, these countries include Djibouti and Togo. Madagascan law makes provision for SEA through the Environmental Charter (Law No. 90.033). SEAs have been conducted in various sectors in Madagascar, including transport, tourism and mining. Recent regulatory developments have paved the way for developing SEA in the Lebanon. The Lebanese Government and UNDP recently co-funded a project to develop a framework for SEA in Lebanon and apply it to the development of environmental guidelines for land use planning at the national level (Dalal-Clayton and Sadler, 2005).
Sub-Saharan Africa	Few countries in southern Africa presently legislate the use of SEA. South Africa's National Environmental Management Act makes provision for the development of assessment procedures that aim to ensure that the environmental consequences of policies, plans and programmes are considered, however to date no regulations have been produced. Similarly Mozambique's EIA Regulations stipulate a number of programme-level activities that require an 'environmental impact study', and Malawi's Environmental Management Act includes 'major policy reforms' as an activity requiring an EIA.

	Perhaps the most exciting new laws regarding the use of SEA in the region are the draft Environmental Management Bills for Swaziland and Namibia. Both countries have drafted framework Acts that explicitly require SEAs for new legislation, regulations, policies, programmes or plans. SEA-related developments of note in central Africa include examples of SEAs applied to individual plans and programmes such as coastal zone management, village land management and tourism development management, usually with the assistance of aid donors. SEA was applied to Ghana's poverty reduction strategy in a stepped approach that prioritised ministry buy-in and public participation. SEA has been successfully introduced in the water and sanitation sector by Danish development cooperation in 2005 and is expanding to other sectors since then. Under the Nile Basin Initiative, launched in 1999, riparian countries undertook a Transboundary Environmental Assessment which included the development of a long term agenda for environmental action for the area. Uganda has also used an SEA approach in revising its Poverty Eradication Action Plan.
<b>Countries in transition</b>	
Central and Eastern Europe	Most Central and Eastern European (CEE) countries have a provision for SEA including at policy level. The Czech Republic, Slovakia and Poland have made particularly good progress recently with advanced legal frameworks for SEA and a record of practice, where SEA is applied to policies or 'development concepts' in Czech Republic, Slovakia and Poland. The Sofia Initiative on SEA (1996-2003), launched within the inter-ministerial cooperation process Environment for Europe, proved a highly effective tool in advancing SEA use in CEE through establishment of national consultative processes, comprehensive capacity building programmes, staying abreast of international norms and developments in SEA and using regional exchange to share experience with SEA. The newest EU member countries, i.e. Bulgaria and Romania have also modified their existing EIA and SEA legislation to comply with EC Directives. The literature describes positive feedback about SEA from planners in various CEE countries (IIED, 2004). Countries that belonged to former Yugoslavia and Albania are also aligning their regulations to the requirements of the EC SEA Directive in anticipation of the accession to the EU, however practice in this part of the region is rare and irregular.
Newly Independent States	The Newly Independent States (NIS) of the ex-Soviet Union inherited forms of the SER ('state environmental review')/OVOS (EIA) system previously introduced in Soviet Union in 1980s. SER included elements of SEA by requiring SER of all actions including strategic proposals. The introduction of OVOS or project level EIA was one of a number of reforms of this system and the two approaches operate side-by-side. Since the break-up of the Soviet Union, the NIS have variously retained or reformed aspects of the SER/OVOS system. Azerbaijan, Kyrgyzstan, Tajikistan and Uzbekistan follow the old SER procedure with little effective application at the strategic level. Ukraine, Belarus, Kazakhstan, Turkmenistan and Russia have reformed the old SER procedure with new national legislation and, in theory at least, it now applies to all planned actions. Armenia, Georgia and Moldova have introduced EIA systems that correspond to internationally accepted steps and elements but there is in practice still limited coverage of strategic actions. The SER/OVOS systems differ from internationally prescribed EIA/SEA frameworks in key procedural respects. (i) SER/OVOS lack appropriate checks and balances. Screening is generally too broad, leading to excessive volume of proposed actions for consideration. Scoping is internal only. (ii) The SER/OVOS framework on the whole lacks transparency and does not adhere to principles of public participation laid out in the Aarhus convention. (iii) A positive difference in the provision for a 'public environmental expert review' of information, however there are few or no procedures laid out for this to happen in practice (IIED, 2004).
South Africa	SEA was started in response to the limitations of project-specific EIA. Guidelines are used to promote a common understanding of SEA, but do not mandate the use of SEA. SEA in South Africa considers the opportunities and constraints that the environment places on development, rather than considering the impact of development on the environment. This includes proactive evaluation of the capacity of the environment to sustain different types of development. SEA is undertaken at PPP formulation, and the goal is to integrate social, biophysical and economic issues into plans and programs to promote sustainable development. No unified SEA process is prescribed by the guidelines, but key elements of an SEA are identified (including developing a sustainability framework; identifying sustainability objectives, criteria and indicators; identifying the opportunities and constraints the environment places on development; and formulating sustainability parameters and guidelines) (IIED, 2004; CSIR, 2007).

### 3.2 European experience

Within the EU, the SEA requirements for both Member and Accession states are outlined in what is known as the European Council SEA Directive (or *Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment*), which came into force in July 2004. The current EU Member states include Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. There are currently no Accession countries for the EU<sup>1</sup>. Candidate countries for the EU currently include Croatia, the Former Yugoslav Republic of Macedonia and Turkey. The SEA Directive will only apply to these candidate countries if they become Accession countries (EU, 2007a).

Non-Member states of the EU have their own requirements for SEA, which may be either voluntary or mandatory depending on legislative requirements. Some states may be signatory to the SEA Protocol to the UNECE Convention on EIA in a Transboundary Context (open for signatures in Kiev, 2003, UNECE SEA Protocol), which is also open to states outside the UNECE region (IIED, 2004). Once in force, the SEA Protocol will require states to evaluate the environmental consequences of their official draft plans and programmes. Like the EC SEA Directive, the UNECE SEA Protocol also provides for extensive public participation in government decision-making (UNECE, 2007). To date the UNECE SEA Protocol has been ratified by Albania, Bulgaria, the Czech Republic, Finland, Germany, Norway and Sweden (UNECE, 2007).

SEA experience in Europe varies widely, with more experience found in western European countries, however with introduction of the EC SEA Directive, the practical experience has grown rapidly through the region. SEA was commonly carried out in an *ad hoc* manner (although this is now changing), and till 2004 it used to be confined to land-use and transport plans. With the advent of the EC SEA Directive and UNECE SEA Protocol, SEA experience started to increase substantially since the middle of the decade. However, some countries cite lack of guidance as a barrier to successfully implementing the legal and administrative requirements of SEA (EEA, 2003).

As well as the Member states being required to undertake SEA through the SEA Directive, the institutions of the EU are required to integrate environmental protection requirements into EU policies and activities, with a view to promoting sustainable development.

#### 3.2.1 Legislation and regulations

The EC SEA Directive requires Member states to transpose its requirements into domestic law, establishing a minimum common procedure for SEA of certain official plans and programmes (IIED, 2004). Once ratified<sup>2</sup>, the UNECE SEA Protocol will be legally binding on signatories with regard to plans and programmes, and discretionary with regard to policy and legislation (IIED, 2004). Table 2 provides an overview of SEA legislation and regulations in selected European countries.

**Table 2: SEA legislation and regulations in selected European countries**

Country	Legislation and regulations
Austria	The SEA Directive is being implemented through the amendment of existing legislation and the introduction of new legislation on federal and regional level, including: federal government amendment of the Water Management Act; Salzburg, Lower Austria and Styria provinces amendments to spatial planning legislation; and Carinthia province amendments of the Carinthia Environmental Planning Act (IIED, 2004). There is no key

<sup>1</sup> Accession countries is commonly used to refer to countries that have or will join the European Union

<sup>2</sup> To enter into force the UNECE SEA Protocol requires ratification, acceptance, approval or accession by at least 16 countries. Currently (Dec., 2007) there are 7 parties to the Protocol.

	legislation transposing the requirements of SEA, but rather it is integrated into the entire legal framework through 29 laws or stand alone acts.
Denmark	In 2004 Denmark introduced legislation to comply with the EC SEA Directive and make SEA of land use plans mandatory at national, regional and municipal level (IIED, 2004). Prior to the SEA Directive, there was no formal provision for SEA in Denmark, although EIA practice incorporated a number of similar features (Dalal-Clayton and Sadler, 2005).
Finland	Prior to the SEA Directive, the Finnish Government had already established two systems for SEA; first through the EIA Act and the Building and Planning Act, and second through a decision-in-principle from the Finnish Government regarding the assessment of environmental impacts of legislative proposals. SEA experience in Finland is therefore fairly extensive. The legislation, where the EC SEA Directive has been transposed, retained the general requirements of the Finnish EIA Act (1994) for the assessment of policies, plans and programmes, but also included a formal procedure for the assessment of certain plans and programmes as identified in the EC SEA Directive (IIED, 2004; Dalal-Clayton and Sadler, 2005).
France	In 1993 the Ministry of Environment began steps to legislate a form of SEA which instituted a three-level regional assessment system for State-Regions Planning Contracts (or CPER, Contrats de plan État-Régions). The three levels of assessment included: the political decision-making level; technical bodies; and operational implementation level. In addition, three types of assessment are provided for; an ex-ante assessment (prior environmental assessment, to prepare for a decision); an accompanying assessment; and an ex-post assessment (take stock of environmental consequences and serve as a guide for future projects). Further legislation regarding SEA was introduced in 2000, with SEA required for transport plans at the national and urban level. IIED stated that no SEA had been done in the energy sector at the time of study (IIED, 2004). In 2004 the EC SEA Directive was introduced to French environmental law through Ordonnance No. 2004-489 (Dalal-Clayton and Sadler, 2005).
Germany	Germany has seen extensive use of SEA-type approaches in various sectors yet before the transposition of the EC SEA Directive in 2004. SEA-type assessments were most frequently undertaken in the spatial and transport planning. SEA-type assessments were applied at all administrative levels of decision-making in transport planning, although little was undertaken at policy and plan levels. Shortcomings of SEA in Germany included lack of public participation and insufficient
The Netherlands	The Netherlands has a strong history in EIA and SEA and prior to the EC SEA Directive, two distinct and separate SEA systems were already in place: (1) The E-test (Environmental test) of new legislation was introduced in 1995 and reformed in 2002. It is a qualitative appraisal of draft legislation to assess potential environmental effects. The E-test affected only a small proportion of draft legislation (c10%), and was very popular with decision-makers due to its minimal approach. However, when reviewed in 2001 its influence on legislation was found to be inadequate. Measures were subsequently taken to strengthen the E-test. (2) The 1987 EIA Decree subjects specific plans and programmes to the same procedure as projects under the 1987 EIA Act. These plans and programmes include national plans for waste management, electricity generation, water supply and regional land use. The procedure followed is mandatory, highly structured and includes examination of alternatives, public involvement in the scoping and review stages, and review of the quality of environmental information by an independent Commission. This Strategic EIA process has on the whole been effective in achieving process and product quality, but is unpopular with decision-makers due to its onerous demands. This two-tier system was in the process of being revised following the introduction of the EU SEA Directive in 2004 (IIED, 2004).
Norway	Norway is not an EU state, but a formal mandate for SEA of policy and legislation was introduced in 2000 in the country. All likely consequences of a proposed initiative are addressed through strategic assessment, including financial, social, regional, gender equality and environmental issues. Environmental assessment is required before opening an area to petroleum-related activities, and SEA has been integral to preparing the national transport plan (IIED, 2004). Norway undertook several pilot projects to understand how best to implement SEA at local and regional levels (Dalal-Clayton and Sadler, 2005).
Portugal	Prior to the transposition of the EC SEA Directive Portugal had few legal requirements for SEA, one of which was a requirement for SEA of mineral exploration plans. SEA process, methodology and outputs remained legally undefined till 2007, when the EC SEA Directive has been finally transposed by Portugal by a governmental decree 232/2007. The Portuguese Ministry of Environment is responsible for implementing SEA at the national level, and that local government authorities oversee SEA implementation in their regions.
Spain	As with Portugal, Spain had no provision for SEA prior to the SEA Directive. Various

	autonomous regions have begun implementing SEA, either through EIA legislation (such as in Castilla y León, Valencia and Andalucía), general environmental protection law (such as in the Basque Territory and Andalucía), or integrated in existing planning procedures (as in Catalunya) (Dalal-Clayton and Sadler, 2005). SEA law has been prepared on the national level transposing the EC SEA Directive though it has not been adopted to date (Dec. 2007)
United Kingdom	The EC SEA Directive was transposed into UK law in 2004 with regulations that apply to England. Authorities in Wales, Northern Ireland and Scotland have transposed EC SEA Directive into separate regulations; in fact Scotland has gone further than other parts of the UK and applied SEA to some higher level strategies as well as plans and programmes (PPs). The UK Government has published a Practical Guide to Strategic Environmental Assessment Directive (ODPM, 2005), which indicates SEA process and outputs, and which plans and programmes are likely to be subject to SEA. Thirty-five types of plans likely to need SEA are listed, comprising local authority plans including land use /spatial planning, environmental protection /management plans and other types of plans such as oil and gas licensing and offshore wind farms. SEA has been incorporated into Sustainability Appraisal (SA) of land use and spatial planning, which has been undertaken since 1999. Where statutory SEA is not required, the responsible government department may request an SEA on a voluntary basis for good practice reasons, for example for Catchment Flood Management planning by the Environment Agency (IIED, 2004).

In the European context Strategic Environmental Assessment was undertaken in various forms for almost 2 decades. Introduction of EC SEA Directive unified the practice, extended its application to new areas and sectors in Europe as well as introduced the practice to the countries of European Union, where assessment of plans and programmes have been undertaken only on pilot basis or in a form of quasi-SEA, i.e. Romania and Bulgaria. Additionally, though not demonstrated by detail analysis and examples EC SEA Directive is spreading to the neighbouring regions of EC. National laws of the countries of former Yugoslavia are being upgrade to the standard of EU environmental regulations including EC SEA Directive. Former soviet union in Eastern Europe, such as Georgia or Belarus are also looking to the Directive as an example of good practice of decision making and a tool for sustainability.

### 3.2.2 Law enforcement

Executive instructions by a Government establish a duty to comply. In reality, administrative instruments often lack the power to ensure responsibilities are fulfilled (IIED, 2004). In European Union it is a duty of national governments to report to the European Commission on the transposition and implementation of EU environmental legislation. The European Commission is responsible for ensuring Community law is correctly implemented in all Member states. This includes the EC SEA Directive (EU, 2007b). The Commission monitors the application of Community law through several means, including:

- Undertaking its own studies and assessments;
- Investigating complaints from EU citizens, petitions from European Parliament, and questions from Members of the European Parliament; and
- Through reports submitted by Member states themselves (either voluntarily or when required by the reporting obligations of a Directive).

Should the European Commission find a breach of Community law, it will initiate formal infringement proceedings against the Member state concerned, prior to litigation (EC, 2002; EU, 2007b).

The European Commission, in its seventh annual survey on the implementation and enforcement of Community environmental law (EC, 2006), in reference to the SEA Directive, stated that “during 2005, the Commission sent a reasoned opinion to Portugal and referred Austria, Belgium, Greece, Spain, Finland (concerning the province of Åland only), Italy, Luxembourg, Malta, the Netherlands and Slovakia to the Court of Justice for not transposing this Directive in time” (EC, 2006). It remains to be seen in the eighth annual survey whether any states have still not fully transposed the SEA Directive into national law, and whether the Directive is being implemented correctly.

Several problems have been noted regarding this method of compliance regulation, and it is likely that the infringement proceedings initiated by the European Commission may simply be a random sample of all non-compliance cases (Börzel, 2002). Reasons for this include:

- The European Commission does not have sufficient resources and capacity to detect and pursue all cases of non-compliance;
- The Commission may not wish to disclose all cases of non-compliance for political reasons; and
- The infringement data collated by the Commission are neither complete nor consistent (Börzel, 2002).

Infringement proceedings reported by the European Commission generally relate to countries failing to transpose a Directive into national law, or failing to notify the Commission of having incorporated a Directive into national law (Börzel, 2002). However a 5 yearly reviews of compliance with the EC SEA Directive should detect the deficiencies and information shortage regarding enforcement. The nearest review of implementation of EC SEA Directive is to be completed in 2008.

At a country level, the quality of an SEA is sometimes monitored through an independent review process, which checks the compliance with the national legislation and regulations. The Netherlands for example, have established a provision for independent review of SEA. The Netherlands Commission for Environmental Assessment (NCEA) plays a role in reviewing the quality of SEA reports for plans and programmes (IIED, 2004). The NCEA is a private foundation, funded through government subsidy, with a completely independent expert committee. Review of SEA through the NCEA is only mandatory where an assessment is required under the Nature Conservation Act and an area in the National Ecological Network is affected. In all other cases, the Commission can provide advice on a voluntary basis at the request of a competent authority (NCEA, 2006). The government also provides advice on the application of the so-called E-test of draft regulations through the Joint Support Centre (established by the environment, economic and justice ministries).

There have been several independent international reviews conducted at the sector level, for example the Extractive Industries Review. Such reviews are typically comparable with the SEA process, involving multiple levels of integrated analysis and review, assessment of strategic alternatives, stakeholder engagement, assessment of governance and institutional processes, and analysis of planning, decision-making and compliance issues (OECD, 2006). The Extractive Industries Review, an independent study commissioned by the World Bank, was undertaken to assess whether the World Bank Group should remain engaged with the sector. Primary concerns of the sector related to corruption, poverty, conflict and poor governance so often associated with extractive industries in developing countries. The review concluded that the World Bank Group *“should stay engaged with the sector, but only where its investments can be seen to explicitly support poverty reduction and sustainable development goals, and when three critical enabling conditions are in place: pro-poor public and corporate governance, more effective social and environmental safeguard policies, and greater respect for human rights”* (OECD, 2006). The independent reviews are being known to be initiated and carried out by various stakeholders including non-governmental organizations.

### **3.2.3 Organisational arrangements**

Under the EC SEA Directive, Member states must determine their own detailed arrangements and accountabilities through which the Directive requirements are implemented. Furthermore, Member states must ensure compliance with the Directive as well as with national regulations transposing it. In general, the responsibility for SEA lies in the Ministry of Environment, or an equivalent body established for this purpose, such as Dutch EIA Commission. Administration typically involves establishment of a process, provision of guidance, and monitoring compliance (IIED, 2004). The SEA may either be conducted by the government (through the relevant Ministry or other governmental or administrative body on the national, regional or local level) or by a consultant commissioned by the government (OECD, 2006). Little information on organisational arrangements for SEA in the various European states is available,.

### **3.2.4 *Limits of functions and powers***

Information regarding the limits of functions and powers relating to SEA in various European countries is almost non-existent in English language. Functions and powers for each country must be outlined in local legislation and regulations, which were out of reach for the authors of this study.

### **3.2.5 *Organisational capacity***

The organisational capacity for SEA in a particular country will to some extent determine the application of SEA: development and application of SEA regulations, quality of environmental reports as well as effectiveness of the input into decision making process. Dalal-Clayton and Sadler (2005) define various requirements for capacity in SEA in order to enable effective SEA systems. Elements of SEA capacity development as well as conditions for effective SEA systems are outlined in Table 3 below.

**Table 3: Elements of SEA capacity and their development**

Elements of SEA capacity development	Components of effective SEA systems
Supporting conditions & infrastructure for SEA	<ul style="list-style-type: none"> <li>• Political stability</li> <li>• Sound governance</li> <li>• Clear role for non-governmental organisations and civic groups</li> <li>• Environmental awareness of local communities</li> </ul>
Designing & strengthening institutional arrangements	<ul style="list-style-type: none"> <li>• Clear framework of law, regulation and policy</li> <li>• Transparent procedures</li> <li>• Guidance on implementation</li> <li>• Defined agency roles and responsibilities</li> <li>• Mechanisms for compliance and follow-up</li> </ul>
Improving professional competencies & skills	<ul style="list-style-type: none"> <li>• Ability of practitioners to implement the SEA process, apply appropriate tools and perform the main activities to an acceptable level of competence and professionalism</li> </ul>

Little information on organisational capacity for SEA in Europe could be found in the literature reviewed for the study. Case studies described in the literature indicate that SEA is undertaken by consultants on behalf of the plan or programme making authority. As an example, capacity and expertise for the Slovene Transport Policy SEA (see Case Study 2) was available within the country (at the Traffic Technical Institute of the University of Ljubljana, and the Physical planning institute Razvojni centre Planiranje Celje). However, contributions from foreign consultants (i.e. DHV) were sought in a form of providing guidance on the SEA process (DHV Environment & Infrastructure, 2006). In developing countries SEAs are often undertaken with assistance from aid organisations, international consulting companies or supporting country governments. There are more cases where SEAs are being conducted by national experts only when sufficient practice and experience is accumulated.

Several capacity building initiatives have been undertaken on SEA in Europe since late nineties. For example, the Sofia Initiative on Environmental Impact Assessment provided funding and support to develop SEA in Central and Eastern European countries (CEE), and was successful largely due to its 'regional self-help' approach (Dalal-Clayton and Sadler, 2005). Within the initiative trainings on SEA were carried out, SEA guidance materials were produced including SEA training module for South Eastern Europe and pilot SEAs were implemented. The key player in capacity development during the Sofia Initiative period (1998-2003) was the Regional Environmental Center, an international organization based in Hungary (REC, 2003).

### 3.3 Donor institutions

Environmental assessment requirements are now a recognized component of development cooperation. Donor agencies and international development organisations, such as UNDP and UNECE, are emphasising the use of SEA in promoting more sustainable and integrated approaches to sectoral and broader development plans, programmes and policies. This emphasis on SEA has resulted in growing SEA practice and application in developing countries in many parts of the world (IIED, 2004; Dalal-Clayton and Sadler, 2005).

The World Bank has applied SEA to its various activities (World Bank, 2005). This initially arose out of a policy requirement to undertake environmental assessment in all investment projects, was subsequently extended to sectoral adjustment loans, and finally introduced as a strategic analytical tool for integrating environmental considerations into decision-making and planning processes at an early stage. There are numerous examples of SEAs of World Bank activities, including the Iran Energy-Environment Review or EER. This study assessed current and future environmental priorities in the energy sector in terms of damage costs, and is informing decision-making related to the Iranian Four-Year Development Plan and the Bank's country assistance strategy (World Bank, 2005). Other SEA activities at the Bank include Country Environmental Analysis and Poverty and Social Impact Analysis (Dalal-Clayton and Sadler, 2005).

The African Development Bank has been involved in environmental assessment, initially as a way of avoiding negative impacts of development but later moving towards a proactive method of planning. Strategic impact assessment is considered the appropriate mechanism through which to address sustainable development issues in PPPs. Similarly, the Asian Development Bank has introduced SEA-type approaches to its work. The Asian Development Bank also undertakes Country Environmental Analysis (Dalal-Clayton and Sadler, 2005), This and other assessment approaches could serve as resource for undertaking SEA or could be considered a proto-SEA. In a similar vein, the Inter-American Development Bank, United Nations Development Programme, United Nations Environment Programme, and many bilateral aid agencies all promote SEA in some form or another (Dalal-Clayton and Sadler, 2005). An example could be an SEA of Poverty Reduction Strategy Papers (PRSPs) prepared by developing countries involving domestic stakeholders as well as external development partners, such as international financial institutions. UNDP has been actively promoting SEAs of PRSPs, especially in the countries of former soviet union.

## **4 INTRODUCTION TO STRATEGIC ENVIRONMENTAL ASSESSMENT PRACTICE**

Strategic Environmental Assessment assists the early contemplation of potential environmental effects that may occur as a result of strategic decision-making, either through policies, plans or programmes (Dalal-Clayton and Sadler, 2005; Therivel and Partidario, 1996). The EC SEA Directive and UNECE SEA Protocol require the SEA process to be linked to either plan or programme preparation, assessing both the proposed plan and all feasible alternatives which may be preferable environmentally. SEA of policy or legislation is not required by the SEA Directive or Protocol (UNECE, 2007; EC, 2005), however the latter strongly recommends to consider such practice.

The specific steps of an SEA will of course be determined by the legislation and regulations governing environmental assessment in a particular country. However, several generic steps to the SEA process can be defined (OECD, 2006; Dalal-Clayton and Sadler, 2005; EC, 2005):

- Screening for whether an SEA is likely to be necessary;
- Scoping to determine the issues to be considered and to identify the alternatives to be assessed;
- Assessment of identified alternatives (including avoid, minimise, mitigate and compensate for negative effects);
- Reporting the SEA study and review;
- Consultations with relevant authorities and the public (which must be carried out in different stages of the SEA process);
- Decision-making and approval of the SEA; and
- Establishing environmental implementation guidelines, and monitoring for environmental impacts.

Alongside the generic steps to the SEA process several clearly identifiable principles of SEA have been described by the International Association for Impact Assessment :

- Rigorous and credible;
- Practical and relevant;
- Cost effective and efficient;
- Focused yet adaptive;
- Participatory and transparent;
- Inter-disciplinary;
- Integrated; and
- Systematic (Dalal-Clayton and Sadler, 2005).

The following two sections of this report look specifically at SEA experience in Europe in the transport and energy sectors. 10 case studies are discussed, with the intention of making recommendations for the Chinese context in Section 7.

The long-term nature of transport and energy planning make these sectors particularly useful and appropriate for the application of environmental assessment, with policy horizons for these plans typically 20 to 30 years (Fischer, 2004).

Unfortunately, many European SEA case studies described in current literature were conducted prior to the introduction of the EC SEA Directive. It is likely that case studies describing the effectiveness of SEA since the Directive will become available in the near future.

## 5 SEA IN THE TRANSPORT SECTOR

There is extensive experience of transport SEA in Europe; in fact forms of SEA were used to assess environmental impacts of transport PPPs prior to the SEA Directive. A variety of case studies are presented in this section, with lessons drawn as appropriate.

### 5.1 Overview of the case studies in transport sector

Case Study 1 concerns the SEA of a High-Speed Rail (HSR) Zuid link section in the Netherlands. Particular emphasis was placed on alternatives assessment, including the 'do nothing' option which required a justification for further rail capacity between the Netherlands and Belgium. The environmental assessment was tiered, with a mandatory SEA to provide recommendations whether additional rail capacity was necessary and what mode was most appropriate, and a voluntary EIA of the proposed routes.

Case Study 2 presents a SEA undertaken in Slovenia in 1995/96 in relation to a road and rail building programme, the results of which has not been used in the end, did not consider alternatives to the planned routes, but instead focused on a detailed assessment of environmental, social and economic impacts with a view to finding mitigation measures for negative impacts. Although not a formal SEA, this study served as a positive introduction to SEA for the relevant Ministries. It also incorporated public consultation.

Between 2000 and 2002 the Government Office for the South West undertook a multi-modal study into transport issues in south-west England (Case Study 3), with a view to examining feasible transport alternatives. Integrated SEA formed a significant part of this work, looking at different alternatives and assessing the preferred option in detail. There was no 'do nothing' option. SEA contributed to decision-making throughout, and the final option included environmentally beneficial changes.

Case Study 4 describes a voluntary *ex post* SEA of multi-modal transport impacts in the Nordic Triangle. This SEA considered the cumulative impacts of the entire transport system, and looked at alternatives such as road-to-rail modal shift. Although it was not linked to any formal PPP, the recommendations influenced both subsequent transport policy decisions and use of SEA in Finland.

The SEA of the Wales Transport Strategy (presented in Case Study 5) was one of the first national SEAs in the UK. As an SEA of a national strategy, the assessment focussed on national level effects and did not differentiate between regional or local areas in Wales. It was used to develop a national SEA framework.

These studies show the variety of contexts that SEA, or forms of SEA, have been used in; fully integrated, separate or parallel studies provided 'state of the environment' information with a consideration of theoretical alternatives.

#### Case Study 1: SEA for the High Speed Rail (HSR) Zuid (the Netherlands)

(Taken from EC, 2005 and MPAP, DHV & POVIK-OOS, 2002)

The HSR Zuid is a major new high speed rail line from Rotterdam to the Belgian border, a linking with the Belgian and French HSR networks. Decisions concerning its route through the Netherlands were made in 2 tiers on the regional, national level and were followed by a detail EIA.

Decision-making about HSR in the Netherlands began with the approval of a plan for the development of the national airport (the so-called PKB-Schiphol, which had an SEA carried out too). The airport plan was partly based on the assumption that, part of the increase in medium-range travelling should be accommodated by a new HSR system, and it increased the feasibility of an HSR.

Environmental assessment of the HSR-Zuid began through an international SEA of the regional HSR network, between Paris, Brussels, Koln, Amsterdam and London (called the PBKAL project). This SEA, co-financed by the European Commission, considered the impacts of transport (modal) alternatives for an HSR. It was not directly connected with a PPP.

Government policy on allowable impacts, also operating at the highest level, is aimed at reducing the environmental impacts of railways. Noise standards have been introduced together with compensation for local impacts on biodiversity. Many of these policies had been subject to some form of environmental assessment and participation.

The first level of actual decision-making about the HSR-Zuid was the Spatial Planning Key Decision (PKB) about the HSR in the Netherlands. In this decision, it was decided whether rail capacity between the Netherlands and the South was necessary, and what mode was most appropriate. There was a choice between making use of the existing railway network at normal speed, constructing a new high speed railway, or a completely different mode. The SEA also analysed a 'do nothing' option.

The information in the PBKAL project was used again in a mandatory SEA for the PKB. The proposed route of the HSR was roughly determined, and the impacts of many indicative routes were compared. The vertical alignment was also taken into account. A generic comparison of the impacts of the HSR with conventional modes of long distance transport (i.e. road traffic, conventional rail and aviation) was also undertaken.

In a second tier of decision-making (Route Decision, or TB) the selected route was developed in detail. Detailed alignment and the design of mitigation and construction methods were determined. A voluntary EIA was undertaken at this level.

## Case Study 2: Slovene Transport Policy

(Taken from DHV Environment & Infrastructure, 2006)

Post-independence, the Slovene Government decided to implement updated versions of the pre-independence National Motorway Construction Programme and the National Railway Programme. SEA for Slovene transport policy was not required, but was initiated for the preparation of the Transport Master Plan due to opposition encountered by the Ministry of Environment during the preparation of EIAs for road construction. For a number of reasons the information supplied through the SEA could not be incorporated into the Transport Master Plan, and it is not considered an SEA in the usual sense. It is therefore referred to as an 'SEA study'. The SEA study began in April 1995 and was concluded in April 1996.

Although the SEA should have addressed all aspects of the transport policy, in reality most strategic decisions had already been taken and only two aspects of the policy could be assessed: measures to control traffic flows on planned infrastructure; and the decision concerning the route of the High Speed Rail.

The original study objectives were to assess the environmental impact of proposals for a traffic policy, and to suggest improvements. In practice, the SEA team made its own realistic assumptions for government policy and future traffic trends. Other study objectives included assessing and making recommendations on institutional arrangements for environmental management in the Slovene transport sector; and assessing the impact of the route selected for High Speed Rail and suggesting measures for improvement.

The study scope was determined by the Ministries of Transport and Environment, as well as the European Commission (funding the project). The scope was extended after a scoping meeting held in Slovenia. Environmental baseline data were obtained from both Ministries.

The assessment addressed environmental impacts, such as noise impacts, ambient air, greenhouse effects, photochemical smog and acidification, energy consumption, traffic policy assumptions, traffic forecasts and traffic safety. The assessment made extensive use of GIS, using map layers with different vulnerability categories to assess the route. No route alternatives were considered. The study recommended an approach for route definition which included environmental, social and economic impacts. Furthermore, the study made recommendations on environmental planning in the Slovene transport sector to improve integration of environmental considerations at a more strategic level. In the final study reports, the environmental impacts were related to national objectives and international treaties Slovenia was party to.

Although this SEA study was not conducted as a conventional SEA, and was prepared in advance of the Transport Master Plan, it was considered successful for a number of reasons. The study raised the

interest of the Ministry of Transport in SEA, especially in developing detailed options and improving public consultation. The SEA also revealed the importance of stronger policies based on environmental objectives. A key conclusion from this study is that, for a country in transition and eager to improve decision-making processes, non-integrated SEA can be a useful starting point.

### **Case Study 3: South West Area Multi-Modal Study**

(Taken from MRI, 2003)

The UK Government commissioned several major transport studies in England to examine current problems and investigate what the most appropriate solutions would be. The largest of these studies was SWARMMS (London to the South West and South Wales Multi-Modal Study). The study began in April 2000 and was completed in May 2002. An SEA was integral to the plan making activity.

An SEA process was used during the study to:

- Assess four possible alternative strategies;
- Assess the emerging strategy and the final preferred strategy; and
- Assess detailed measures to deliver the strategy.

The SEA followed an integrated approach which examined traffic, economic and safety issues; the extent to which interchange between modes is facilitated; and the extent to which local and national objectives would be achieved. In contrast with other similar studies, this study adopted a top-down approach to finding and assessing transport solutions. This study proved it was possible to conduct a strategic transport study in a large and environmentally complex study area.

The study followed the guidance available at the time (Guidance on Methodology for Multi Modal Studies), which included the following steps:

- Identify problems and issues;
- Identify potential policies;
- Initial sift of policies;
- Devise and appraise composite strategies;
- Devise and appraise emerging strategy;
- Develop and appraise provisional strategy;
- Devise detailed measures to deliver provisional strategy;
- Appraise detailed measures; and
- Recommend strategy and detailed measures.

Baseline data were gathered from national and local government, as well as transport operators and infrastructure providers. Surveys were also undertaken to update data used in modelling. Environmental data were obtained from local development plans and government environmental agencies.

Four alternative strategies were developed by the consultants undertaking the study, in response to stakeholder consultation comments. The study did not include a 'no action' alternative. Following comments, impact analysis and comparison of alternatives, a preferred strategy was selected and measures identified to deliver the preferred strategy. The preferred strategy was based on several themes, including:

- Reducing the need to travel;
- Better integration for public transport;
- Traffic restraint in main urban areas;
- Increased opportunities to use rail; and
- Expansion of air and sea networks.

An appraisal summary table was used to analyse the degree to which Government objectives for transport (environment, safety, economy, accessibility and integration) would be achieved. Ten sub-objectives for environment were identified, including: noise, local air quality, greenhouse gases, landscape, townscape, heritage of historic resources, biodiversity, water environment, physical fitness and journey ambience.

Public involvement included the release of four newsletters, public questionnaires, exhibitions, a study website, and a series of topic-based meetings and discussions with local authorities.

The SEA contributed to decision-making throughout the process, being used to appraise alternative strategies and appraise the final strategy and proposals. The final strategy included several environmentally beneficial points as a result of the SEA, including integration of public transport, improved rail services, and demand-responsive rural public transport. However, statutory environmental bodies believed there was little evidence that their views had been taken on board by the consultants.

Positive points of the process included: problems and issues to be addressed through the process were clearly identified; the use of worksheets improved transparency; the appraisal summary table provided a clear presentation method; and opportunities were provided for involvement of the public and external bodies. Key points in the process which could have been strengthened include: lack of clarity as to how problems and local objectives linked to alternatives and how the alternative strategies were developed; and a lack of firm evidence to support identified problems.

#### **Case Study 4: Nordic triangle transport corridor**

(Taken from DHV Environment & Infrastructure, no date)

The Nordic Triangle SEA concerned a multi-modal transport infrastructure programme of projects for further development of the Finnish section of the Nordic Triangle. The SEA was voluntary and initiated in 1995. No formal decision was based on the SEA, but several recommendations were made.

The Nordic Triangle SEA was not directly linked to any formal policy, plan or programme. Consultation and participation of inter-agency and NGO stakeholders was an important component of the SEA, with a number of recommendations being developed during the SEA through stakeholder discussions.

The SEA studied the cumulative impacts of the whole multi-modal transport system (including road, rail and ports). Although the assessment was not particularly detailed, it allowed the assessment of cumulative impacts of alternative sets of projects for the Nordic Triangle corridor. Impacts considered in the study included *inter alia* emissions, energy use, induced traffic per mode, ground water, scenic areas, spatial impacts and traffic safety.

The SEA sought to assess alternatives to road development, but discovered it is not easy to achieve a fundamental shift in a large scale investment programme (e.g. from road to rail). As such, infrastructure investment proposals should be based on stronger arguments and improved evidence to justify the proposal. This would lead to improvements in traffic design, economics and technology.

The Nordic Triangle SEA was not linked to any particular formal policy, plan or programme, and therefore contained several recommendations that carried no formal status. The recommendations are said to have had a significant effect on later assessments and decisions about the development of the Nordic Triangle. It is also said that the Nordic Triangle SEA influenced subsequent SEAs in the Finnish transport sector through the learning and methodology improvements which took place.

#### **Case study 5 SEA of the Wales Transport Strategy**

The SEA of the Wales Transport Strategy (WTS) was one of the first national SEAs in the UK. The SEA was undertaken under the SEA Regulations for Wales (Welsh Statutory Instrument 2004/1656) using existing UK guidance, in particular "A Practical Guide to the Strategic Environmental Assessment Directive" (ODPM 2005).

The WTS was produced by the Welsh Assembly Government, and outlines a transport strategy for Wales until 2030. It does not contain individual schemes but outlines 15 high level social, environmental and economic outcomes to be delivered through subsequent transport planning activities at the national and regional level in Wales. The strategy focuses on three main approaches for meeting the desired outcomes:

- To achieve a more effective and efficient transport system;
- To achieve greater use of the more sustainable and healthy forms of travel; and
- To minimise the need to travel.

For each approach, the WTS outlines a 'tool-kit' of measures to illustrate how the outcomes can be met in a range of regional and local circumstances. These three approaches and associated measures can be used individually or in combination to address the current and predicted transport trends and problems. However, the WTS is not prescriptive or exhaustive with regards to which measures should be used, as it needs to be flexible to respond to relevant statute and policies that may emerge during the lifetime of the strategy.

Assessing the significant environmental effects of such a strategic, high level and non-prescriptive strategy with no specific schemes or spatial implications presented a challenge, both in terms of determining which elements of the WTS to assess and developing realistic alternatives as required by the SEA process. It was decided to assess the environmental effects of the measures for each key approach, and to treat the three approaches with their associated 'tool-kits' as alternative ways by which the WTS outcomes can be met.

As an SEA of a national strategy, the assessment focussed on national level effects and did not differentiate between regional or local areas in Wales. Recognising that the assessment could only be as detailed as the strategy itself, it was acknowledged that certain matters would be more appropriately addressed at subsequent levels of transport planning and assessment. The SEA for the WTS was therefore used to develop a national SEA framework which would support different levels of transport planning in Wales. This 'tiered' approach was made possible by various factors.

The WTS was developed at a time when transport policy making and planning in Wales was evolving rapidly. A set of Welsh Assembly Government Transport Plans will implement the WTS at the national level, whereas new Regional Transport Plans were introduced to deliver the WTS outcomes at the regional level. The Assembly Government Transport Plans and Regional Transport Plans will also require SEAs. In addition, the WTS was one of the national actions to arise from the Wales Spatial Plan, which was adopted in November 2004. This plan is currently under revision and will also be subject to an SEA, as will some of its individual components.

Whilst this changing context created some uncertainties for Welsh transport planning and SEA activities, the nature and timing of these activities presented an opportunity to develop a national SEA framework to avoid duplication of effort in activities such as setting objectives and indicators, baseline data collation and monitoring. The links with the Wales Spatial Plan process also presented a unique opportunity to adopt a common SEA framework across different planning sectors, thereby achieving a vertical and horizontal tiering of SEA in practice.

## 5.2 Conclusions related to transport case studies

The importance of the introduction of SEAs at the earliest stages of decision-making is stressed by Fischer (2004). Fischer describes a study of various transport SEAs in Liverpool, Amsterdam and Berlin in 1997 and 2002. In all three cities, 1997 transport policy formulation incorporated elements of SEA and best practice showed the use of SEA at all tiers of decision-making – policies, plans and programmes. Following adoption of the SEA Directive in 2001 and the confirmation that policy-level decision-making would fall outside the remit of the Directive, 2002 transport policy formulation in these three cities was found to be less strategic than in 1997, and focused on projects.

Hildén *et al* (2004) note that several conditions are necessary for SEA to be effective, including

- a political will to use the information provided through the SEA (this is best illustrated in Case Study 6, discussed later),
- the need for integration (such as integration of SEA into the planning process, but also integration of social, economic and environmental issues),
- tiering to link decision-making at various levels (a concept promoted by the SEA Directive), and
- the need for harmonious timing (especially with regard to providing information).

Hildén *et al* (2004) also highlight factors which contribute to the effectiveness of SEA, including legal provision for SEA, increased co-operation between planners and assessment specialists, and tailoring each assessment to the needs of the situation. Finally, the authors conclude that the SEA process should be grafted into the planning process for maximum effectiveness, rather than simply focusing on improvements to SEA procedure (Hildén *et al*, 2004).

## **6 SEA IN THE ENERGY SECTOR**

Whilst collating the energy sector case studies for this chapter the authors noticed there were decidedly fewer SEAs to choose from than in the transport sector, perhaps due to the fact that energy is mainly a private sector activity. The lack of energy sector SEAs has been noted in other literature, for example by WWF (2005). The exact reasons for this are unclear, although WWF suggest this might be due to international finance institutions not specifying the requirement for an SEA from clients prior to investing in specific projects (WWF, 2005).

Despite the shortage of energy sector SEAs, several case studies are discussed in this section. However, only the first two case studies consider SEA of national energy policies; the others look at specific aspects of energy provision.

### **6.1 Overview of the case studies in energy sector**

Case Study 6 looks at the SEA for the national energy policy of the Czech Republic. This was the first pilot SEA undertaken in the Czech Republic. The SEA considered 3 alternatives and included public consultation. However, the political context in the Czech Republic changed just as the SEA was being completed, and the new government showed no political will to use the SEA that had been undertaken. A new SEA was therefore commissioned. This second SEA was less rigorous and transparent than the first SEA.

In contrast, Case Study 7 considers the SEA for the national energy policy of the Slovak Republic. This mandatory SEA was integrated with the policy development process. Public consultation was used as a means of informing policy development, this was later considered a key factor in the success of SEA. It is regarded as one of the most rigorous and interactive policy-SEAs undertaken anywhere in the world (Dalal-Clayton and Sadler, 2005).

Dalal-Clayton and Sadler (2005) note 2 lessons from these two case studies which can be applied more broadly to policy-SEA. The first lesson is that consideration of alternatives is perhaps less thorough when instigated by the Ministry of Environment. The second lesson is that the transparency of the process compensated to some degree for the lack of consideration of alternatives, which occurs more commonly than is often realised.

Case Study 8 considers an SEA for the Dutch national plan for electricity production. The SEA was mandatory and integrated with the decision-making process. Alternatives were assessed through the SEA, public consultation undertaken, and uncertainties made known. The SEA have had a positive effect on the final plan, but on review was criticised for not putting sufficiently sustainability into practice.

Case Study 9 looked at a series of eight voluntary SEAs for the licensing of offshore energy in the UK. As the SEAs were undertaken over a period of eight years, much of the learning was used to enhance both the technical and consultation processes. Some of the SEAs were undertaken before the SEA Directive was introduced, and others after. Primary data collection played an important role in the SEAs during the first years of application, however the tendency was towards assessment of effects and elaboration of mitigation measure taking up more efforts with time.

Lastly, Case Study considers the use of SEA-type process in developing a management plan for the Barents Sea. By using an SEA-type process the Norwegian government was able to determine which energy activities in the Barents Sea would be detrimental to the marine ecosystem and associated livelihoods. Certain energy-related activities could be ruled out in the area on the basis of potential damage they may cause. However, this could be done without prejudicing any individual operators as the process was undertaken before any specific projects and proponents were identified.

Some of the presented case studies show the importance of consultation through SEA, and the need to integrate SEA processes into decision-making processes for the highest chance of success. However, as noted by Hildén *et al* (2004), a lack of political will can still present a significant barrier to SEA effectiveness.

### **Case Study 6: Energy Policy of the Czech Republic**

(Taken from MRI, 2003)

The SEA for the Energy Policy of the Czech Republic was the first pilot SEA in the country. The SEA began after the Energy Policy had been drafted in 1998, and was conducted by an external consultant. The SEA relied on two teams of experts, one providing overall direction to the study and the other completing the assessment itself. A third small team carried out additional work during the SEA.

The Energy Policy set out objectives and measures for development of the entire energy sector of the Czech Republic. Key issues included deciding:

- Whether to enforce limits on coal mining which would lead to their gradual closure;
- To stop or proceed with a second nuclear power plant which had already been started;
- Whether more extensive state support should be given for energy savings and alternative energy sources; and
- On the speed of internalisation of external environmental costs in the energy market.

Three basic policy alternatives were established. Indicators were then used to compare the three alternatives against each other. Following this preliminary assessment, a more detailed multi-criteria analysis was undertaken to reflect the social values attributed to each impact category (i.e. environmental, resource, social and economic impacts). This more detailed analysis revealed similar results to the first assessment.

Public participation was organised for the SEA, with web announcements and a dedicated email address for stakeholder identification, and an interactive workshop and formal public hearing for participation. A selection of NGOs also established a network through which information was disseminated and comments gathered. Evaluation of consultation comments revealed overall participant satisfaction with the two events. It was also noted that involvement of the Senate in the public hearing improved the prestige and transparency of the SEA process.

The draft SEA Report was provided to the Ministry of Industry shortly before the change of Government. The incoming Government decided to re-do the Energy Policy and decided to ignore the SEA results. A new Energy Policy was drafted and a new consultant employed to undertake the SEA. Neither the policy nor the SEA were prepared in a transparent manner, and completion of the nuclear power plant later became a matter of international dispute between the Czech Republic and Austria. The SEA for the new revised Energy Policy was considered to be poor quality and is widely considered as an example of the most biased SEA in the country.

### **Case Study 7: Slovak Republic 'Energy Policy 2000'**

(Taken from World Bank, 2005)

Environmental assessments are mandatory for basic development policies in a number of sectors, including energy and transport. The Slovak EIA Law (1994) requires the ministry designing a policy to prepare a draft that reflects environmental considerations, and then to inform the public of the draft policy at least two months before the Ministry of the Environment reviews it formally after which it is submitted for government approval. The proposing ministry is therefore forced to consider environmental impacts and mitigation measures for each policy.

Before conducting its SEA on the proposed energy policy established in 2000 (i.e., 'Energy Policy 2000'), the government of the Slovak Republic had had prior experience in doing SEAs for energy policy. That experience helped inform the SEA approach followed in 1998, when a new government called for a revision of the existing energy policy. The process for creating the new energy policy was initiated in 1999 and the associated SEA was carried out as part of the policy formulation process.

A key feature of the SEA process in the Slovak Republic is that it is indistinguishable from the policy design process. Thus when the Ministry of Economy was preparing its draft energy policy in 1999, it sent a preliminary draft to a range of stakeholders, including NGOs, for comment. The Ministry incorporated the NGO comments into its draft Energy Policy 2000. This integration of environmental consideration into policy design activities was carried out in eight steps:

1. Preparation of the draft policy;
2. Public notification of preparation of policy;
3. Formal consultations and public participation;

4. Public hearing on the draft policy;
5. Statement by the Ministry of Environment on the draft policy;
6. Revision of draft policy;
7. Adoption of final policy; and
8. Monitoring implementation of the policy.

The full integration of SEA into the policy formulation process has been characterized as “*probably the most important factor behind the effectiveness of Slovak SEAs*” (ERM, 2004 in World Bank, 2005). At the same time, however, the lack of a distinct, structured ‘SEA process’ has been criticized as being a departure from ‘SEA good practice’. Other criticisms were that results of the SEA process were not documented and that trade-offs were not analyzed (ERM, 2004 in World Bank, 2005).

Some degree of coordination between the proposing ministry (in this case, the Ministry of Economy) and the Ministry of Environment is built into the policy design process. This coordination occurred in the phase of policy formulation that required the Ministry of Environment to prepare a statement on the draft policy, as well as in the revision of the draft policy. In designing Energy Policy 2000, the Ministry of Economy revised its draft policy based on the conclusions of the SEA process. The proposing ministry is not obliged to accept the recommendations in the Ministry of Environment’s statement; such revisions are made by “*mutual consent*”. ERM (2004 in World Bank, 2005) characterized “*improved inter-departmental government communications*” as a positive spin-off of the SEA process for Energy Policy 2000.

Public involvement was a hallmark of the SEA for the Slovak Republic’s Energy Policy 2000. The SEA provided a vehicle for mobilizing NGOs interested in energy and for raising public awareness of important energy-environment relationships. The Ministry of Economy circulated a preliminary draft to NGOs for comment prior to finalizing its draft policy. The public was also notified of the draft policy via newspaper announcements in addition to it being made available on several government, university and NGO websites. Media coverage was extensive and the draft policy was also made available at district and regional offices of government agencies and several towns in Slovakia through an NGO. A period of two months was given for comments, during which hundreds of comments were received by the Ministry of Environment.

NGOs organized themselves under an umbrella organization, ‘Energy 2000’, and they formulated their own proposed energy policy called the ‘New Energy Policy of the Slovak Republic’. This policy, which was discussed extensively, was posted on the websites of government agencies and NGOs. In addition, Energy 2000 organized an international conference at which both the ‘New Energy Policy’ and the Ministry of Economy’s draft policy were debated.

After consultation with NGOs regarding the scope and structure of a public hearing on the government’s draft policy and the New Energy Policy, the Ministries of Environment and Economy held a hearing. The transcript of the hearing, together with several hundred public comments and government consultations with experts formed a basis for the Ministry of Environment’s formal statement, which was made available to the public on request.

The SEA process resulted in many modifications to the government’s draft energy policy. For example, the government’s draft was changed to encourage the diversification of energy sources and the “*de-monopolization*” and decentralization of the energy sector.

A limitation of the SEA was that it focused narrowly on a subset of environmental issues, and excluded topics such as the effects of the energy policy on air quality and human health.

Although there was no legal requirement for monitoring the environmental impacts of implementing Energy Policy 2000, the Ministry of Economy committed to a monitoring program. Monitoring was being conducted by government bodies, in addition to several NGOs, including Greenpeace Slovakia and Energy 2000.

Furthermore, according to Kozova (personal communication reported by ERM, 2004 in World Bank, 2005) the commitments made in the SEA have been delivered by the government. No further information is available on whether all or some of the policy commitments have been implemented.

## Case Study 8: SEA for a National Plan on the Production of Electricity

(Taken from MRI, 2003)

The national 'Structure Scheme Electricity Supply' (or SEV) outlines the environmental and spatial conditions for electricity supply in The Netherlands. The SEV includes decisions on: 1) possible locations of power plants of 500 MWe or more; 2) suitability of these locations for utilising certain fuel types; and 3) maximum capacity per fuel type which may be installed in The Netherlands. The mandatory SEA should address the first and third of these decisions. The SEA for the SEV could address additional decisions on a voluntary basis.

The SEA process was integrated with the SEV plan-making process. Baseline data for the SEA described the main environmental problems created by electricity generation. The assessment used existing information, except for the electricity demand scenarios.

During the SEA several different alternatives were assessed and compared, and a number of indicators used to aid site selection and choice of fuel type. Impacts were analyzed through modelling, engaging expert judgement and applying knowledge in existing literature. The assessment resulted in a qualitative assessment of site suitability and a quantitative assessment of alternative fuels.

Public participation was achieved through written comments during scoping, written comments on the SEA and preliminary core decision, and public hearings during the first two steps of the plan-making process.

The SEA results contained many uncertainties, particularly where new and unproven technology was concerned. Uncertainties included:

- Uncertainty of emissions in unproven technologies;
- Lack of data on contribution of power plants to pollution of sediments and ecosystems with heavy metals;
- The unknown cost of removing CO<sub>2</sub> from flue gas; and
- Inability to quantify all technology costs.

The Netherlands Commission on Environmental Assessment (then EIA Commission) gave a positive judgement on the SEA, but stated it had not given sufficient effort to operationalise sustainability. The decision-makers concluded the SEA was useful for their purposes, and in their opinion had had a major impact on the final SEV adopted.

## Case Study 9: Offshore Energy SEAs in the United Kingdom

(Taken from DTI, 2007 and POST, 2004)

In 1999 the UK Department of Trade and Industry (DTI) initiated a series of eight voluntary sectoral SEAs to address the environmental repercussions of further licensing for oil and gas production on the UK continental shelf. The assessments began in 1999 with SEA1, and SEA8 is due to be completed in 2007. An SEA for offshore wind energy licensing was also completed.

Although the European SEA Directive was not transposed into UK law until 2004, the earlier DTI SEAs were carried out in accordance with its requirements. As the SEAs were being undertaken, the process has evolved and been refined.

The offshore energy SEAs have presented significant challenges with regard to baseline studies, with considerable survey work being required. This survey work has contributed valuable data which are now freely available. It is considered unlikely that onshore SEAs will require such intensive collection of new site-specific environmental data.

The SEA process requires consultation with the public, environmental authorities and other bodies, together with any neighbouring states which may potentially be affected. Innovations in the consultation process of the offshore energy SEAs have seen the introduction of parallel consultation groups. The DTI was guided by the Oil and Gas SEA Steering Group, composed of departmental representatives and independent experts. Subsequently, to conduct the same process for offshore wind farm development, the DTI set up the Offshore Wind SEA Steering Group. The two groups were then amalgamated into the Offshore Energy SEA Steering Group in 2003. Additional innovations in consultation included formal Stakeholder Dialogue sessions and the creation of a dedicated website with email news alerts ([www.offshore-energy.org.uk](http://www.offshore-energy.org.uk)).

Although such an intensive primary data collection process is unlikely to be required in many future SEAs, many lessons can be learned from the intensive and innovative stakeholder participation process for the offshore energy SEAs.

### **Case Study 10: Norwegian management of the Barents Sea**

(Taken from WWF, 2005)

In recognising the importance of protecting marine ecosystems such as the Barents Sea, the Norwegian government began developing integrated management plans for its coastal and marine areas, starting in 2002 with the Barents Sea. The Ministry of Environment is the lead agency.

The plan looks at the various impacts associated with shipping, oil operations, fishing and aquaculture. The plan has adopted a strategic, integrated approach similar to that used in SEA, in an attempt to ensure cumulative impacts on the ecosystem do not exceed its tolerance levels.

The process used to develop the management plan includes three components:

- Establishing a comprehensive baseline, including the identification of vulnerable areas;
- Assessing, sector by sector, the impacts of various activities on the ecosystem; and
- Assessing the cumulative impacts that will lead to the final management plan.

The sector assessment revealed some areas of the Barents Sea should be temporarily closed to oil and gas developments, due to the impacts on the ecosystem. The Norwegian government has concluded that in some areas the importance of biodiversity and protection of fishing livelihoods outweigh the potential benefits of oil and gas exploration.

Appropriate sequencing of decisions is critical to the protection of valuable natural resources. This study shows that some areas are too valuable to exploit for oil extraction, and should therefore not be put at risk. Such decisions made through an SEA-type process are slightly easier, as there is no impact on an individual operator as there would be in an EIA.

## **7 RECOMMENDATIONS FOR PEOPLE'S REPUBLIC OF CHINA**

As with any developing country, PRC has several environmental problems related to its industrial growth. Air pollution, smog and acid rain affect are frequent environmental issues in China. Water pollution is also a problem, and water shortages due to the climate change phenomenon are more prolonged in the regions, where water is generally scarce. Energy use and carbon emissions are high, and are expected to increase in the future. These environmental problems are in many ways linked to the energy and transport sectors in China.

Despite the varying practices and levels of experience in SEA around Europe and globally, there are still many common threads from which lessons can be learned. The literature describes several benefits of SEA, including (Dalal-Clayton and Sadler, 2005; World Bank, 2002):

- The systematic review of environmental and health issues and improvement of concepts in PPPs;
- A clearer understanding of the environmental effects of actions;
- Improved transparency and public support for government actions; and
- A more balanced consideration of health, social, economic and environmental issues in decision-making.

Despite these benefits, several barriers to implementing SEA still exist. These include (World Bank, 2002):

- Uncertainty and vagueness around SEA and its role in decision-making processes;
- A lack of guidance and training, for both practitioners and decision-makers;
- Lack of clear accountability and responsibility required for SEA; and - as always -
- A lack of resources.

Some important lessons can be drawn from both the case studies presented in this report and the available literature. These are discussed further below.

### **7.1 Institutional Barriers**

In transport sector institutional barriers hinder SEAs in particular, when multi-modal studies are involved in cooperation of several administrations are required (for example, administrations dealing with roads, rail or aviation) (OECD, 2002). In addition, where more than one country is involved in an SEA, institutional barriers can again become problematic. In energy sector market and institutional barriers delay the realization of the full potential for energy efficiency improvements (ECE, 1998)

Generally, rules drive peoples' behaviour. In a similar manner, legislation will drive the behaviour of those carrying out SEA. Fischer (2004) notes two different behaviour patterns for SEAs conducted in three different European cities, in 1997 and 2002. SEAs in 1997 were carried out at all levels of decision-making. However already in 2002 it was clear that EC SEA Directive of 2001 will only require carrying out SEAs for certain plans and programmes. Fischer point out that the Directive directly influenced behaviour in all three cities, leading to much less strategic consideration of environmental issues in 2002 (Fischer, 2004).

### **7.2 Political Support**

A lack of political will or buy-in can affect even the most promising SEAs (OECD, 2000). This was reflected through Case Study where the SEA for the Czech Republic energy policy was repeated following a change in government and the desire to follow a different course (MRI, 2003).

### **7.3 Flexibility**

The approach to SEA implementation should be reasonably flexible to take account of local circumstances, and can be tailored to the specific system requirements (Dalal-Clayton and Sadler, 2005; World Bank, 2002). Case Study 1 relied on information available from previous studies, whereas Case Study 9 was intensive in primary data collection, though most SEAs do not rely upon primary data collection, which may be a subject to the scale of the assessment. In Case Study 6 a simple assessment technique was followed by a more complicated assessment, however both revealed the same results in the end, leading to the conclusion that it is best to follow the simplest, most suitable, route possible.

### **7.4 Transparency**

Since an SEA is used as an aid to decision-making, it is important that the SEA process is as transparent and participative as possible. It is also crucial to understand how the decision-making process works, so that the SEA can provide support at critical moments: in times when the input is needed, wanted and will be used (Dalal-Clayton and Sadler, 2005; World Bank, 2002). Case Study 7 is an example of good practice of how participation and transparency can improve buy-in to the decision-making process, and can improve the actual PPP being developed. As Case Study 3 reveals, it is important to accurately reflect how participation has influenced development of the PPP in question.

SEAs are used to make decisions which prevent the exploitation of the environment in order to protect it. This is reflected in Case Study 10 where the Norwegian approach to managing the Barents Sea was to consider what environmental effects they were not prepared to accept, before considering what development could be considered. This approach is also reflected in South Africa, where an SEA must consider how the environment constrains development rather than consider how development impacts on the environment (CSIR, 2007; Dalal-Clayton and Sadler, 2005).

### **7.5 Follow up of the study**

The EC SEA Directive was transposed into national law in European Union Member states between 2004 and 2007. The case study evidence relating to SEAs conducted after the Directive came into force (i.e. July 2007) has been growing since. The largest input to the evidence was done by the 'Directive-led' SEAs for the national and regional programmes aimed at distribution of European Union Structural and Cohesion Funds (SCF). Those funds will be allocated, firstly for the poorer regions of the EU, and, secondly, for integrating European infrastructure especially in the transport sector for the period 2007 - 2013. The environmental assessments of the programmes have just been completed, therefore there is little written about them to date. In addition, the available literature does not address recent legislative reform in Member states since the Directive was transposed. It is anticipated that literature released in the next two to three years will cover this ground. Lessons learned from application of SEA Directive to the SCF are particularly important and will be worth looking at in the nearest future, when official feedback will be available from the European Commission and Member States.

## 8 REFERENCES

- Börzel, T.A. (2002) *Why do States not obey the law?* Paper prepared for presentation at ARENA, University of Oslo, June 6, 2002. Humboldt Universität zu Berlin. Available online at <http://www.arena.uio.no/events/papers/Borzel.pdf> [Last accessed May 2007]
- CSIR (2007) *Enhancing the effectiveness of SEA in South Africa*. CSIR Report CSIR/NRE/RBSD/EXP/2007/0068/A.
- ECE Committee on Environmental Policy (1998) *Proposal for a policy statement on energy efficiency* to the Aarhus convention. Available online at <http://unece.org/env/documents/2000/cep/cep.47.e.pdf> [Last accessed December 2007]
- Dalal-Clayton, B. and Sadler, B. (2005) *Strategic Environmental Assessment: A Sourcebook and Reference Guide to International Experience*. Earthscan, London.
- Danish International Development Cooperation (2007) *An introduction to Strategic Environmental Assessment (SEA) for Danish International Development Cooperation*, <http://sea.linddal.net/docs/seanote.pdf> [Last accessed Dec 2007]
- DHV Environment & Infrastructure (2006) *SEA of the Transport Policy of Slovenia*. Report written by S. Nooteboom for Commission of the European Communities – DG XI. Available online at <http://www.eia.nl> [Last accessed May 2007]
- DHV Environment & Infrastructure (no date) *Environmental Assessments of Strategic Decisions and Project Decisions: Interactions and Benefits*. Report written by S. Nooteboom for Dutch Ministry of Environment. Available online at [http://www.sharedspaces.nl/Docs/internationaal/environmental\\_assessment.pdf](http://www.sharedspaces.nl/Docs/internationaal/environmental_assessment.pdf) [Last accessed May 2007]
- DTI (2007) *DTI Strategic Environmental Assessment – UK Public consultation for offshore energy licensing*. Available online at <http://www.offshore-sea.org.uk> [Last accessed May 2007]
- EC (2007) *Seventh annual survey on the implementation and enforcement of Community environmental law – 2005*. SEC(2006) 1143, Brussels.
- EC (2005) *The SEA Manual: A Sourcebook on Strategic Environmental Assessment of Transport*. Written by O. Bina, T. Fischer and B. Van Wee as part of the BEACON project. Available online at <http://www.transport-sea.net/docs/SEA%20Manual%20-%2021-10-05c.pdf> [Last accessed April 2007]
- EC (2002) *Commission communication on better monitoring of the application of community law*. COM(2002)725 Final, Brussels.
- EEA (2003) *Europe's environment: the third assessment*. European Environment Agency, Copenhagen. Environmental assessment report no. 10. Available online at [http://reports.eea.europa.eu/environmental\\_assessment\\_report\\_2003\\_10/en](http://reports.eea.europa.eu/environmental_assessment_report_2003_10/en) [last accessed May 2007]
- EU (2007a) The EU at a glance – maps. Available online at [http://europa.eu/abc/maps/index\\_en.htm](http://europa.eu/abc/maps/index_en.htm) [Last accessed May 2007]
- EU (2007b) Infringements. Available online at <http://ec.europa.eu/environment/law/index.htm> [Last accessed May 2007]
- Fischer, T.B. (2004) Transport policy making and SEA in Liverpool, Amsterdam and Berlin – 1997 and 2002, in *Environmental Impact Assessment Review* 24(2004)319-336.

Hildén, M., Furman, E. and Kaljonen, M. (2004) Views on planning and expectations of SEA: the case of transport planning, in *Environmental Impact Assessment Review* 24(2004)519-536.

IIED (2004) *Strategic Environmental Assessment: A sourcebook and reference guide to international experience*. Written by B. Dalal-Clayton and B. Sadler. Available online at <http://www.iied.org/Gov/spa/docs.html#sea> [Last accessed May 2007]

MPAP, DHV & POVVIK-OOS (2002) *Manual for Environmental Assessment of Plans and Programmes in Bulgaria*. Available online at <http://www.rec.org/REC/Programs/EnvironmentalAssessment/pdf/Bulgaria-EA-ManualEng.pdf> [last accessed May 2007]

MRI – Mitsubishi Research Institute (2003) *Effective SEA System and Case Studies*. Ministry of the Environment Government of Japan. Available online at [http://www.env.go.jp/policy/assess/2-4strategic/3sea\\_5\\_en/data/en01.pdf](http://www.env.go.jp/policy/assess/2-4strategic/3sea_5_en/data/en01.pdf) [Last accessed May 2007]

NCEA (2006) *Netherlands Commission for Environmental Assessment Annual Report 2006*. Available online at <http://www.eia.nl> [Last accessed May 2007]

OECD (2006) *Applying Strategic Environmental Assessment – Good practice guide for development co-operation*. Available online at <http://www.oecd.org> [Last accessed May 2007]

OECD (2000) *Strategic Environmental Assessment for Transport*. European Conference of Ministers of Transport. OECD, Paris.

POST (2004) *Strategic Environmental Assessment (SEA) – Parliamentary Office of Science & Technology Note 223*. Available online at <http://www.parliament.uk/post> [Last accessed May 2007]

REC (2003) *Creating congruence: highlights and achievements of the REC activities in Central and Eastern Europe under the Environmental Action Programme* Available online at: <http://unece.org/env/documents/2003/kievconference/ece.cep.97.e.rev.1.pdf> [Last accessed Dec. 2007]

Therivel, R. and Partidario, M. (1996) *The practice of Strategic Environmental Assessment*. Earthscan, London.

UNECE (2007) *Protocol on Strategic Environmental Assessment (SEA)*. Available online at [http://www.unece.org/env/eia/sea\\_protocol.htm](http://www.unece.org/env/eia/sea_protocol.htm) [Last accessed May 2007]

World Bank (2005) *Integrating Environmental Considerations in Policy Formulation: Lessons from Policy-Based SEA Experience*. The World Bank, Washington D.C. Available online at <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20687943~menuPK:549265~pagePK:148956~piPK:216618~theSitePK:244381,00.html> [Last accessed April 2007]

World Bank (2002) *Strategic Environmental Assessment in World Bank Operations: Experience to Date – Future Potential*. Written by O. Kjörven and H. Lindhjem, ECON Centre for Economic Analysis in Oslo, Norway. The World Bank, Washington, D.C. Available online at <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20687529~menuPK:549265~pagePK:148956~piPK:216618~theSitePK:244381,00.html> [Last accessed April 2007]

WWF (2005) *Where are all the SEAs? Project finance, and Strategic Environmental Assessment of major oil and gas developments*. Available online at <http://www.wwf.org.uk> [Last accessed May 2007]