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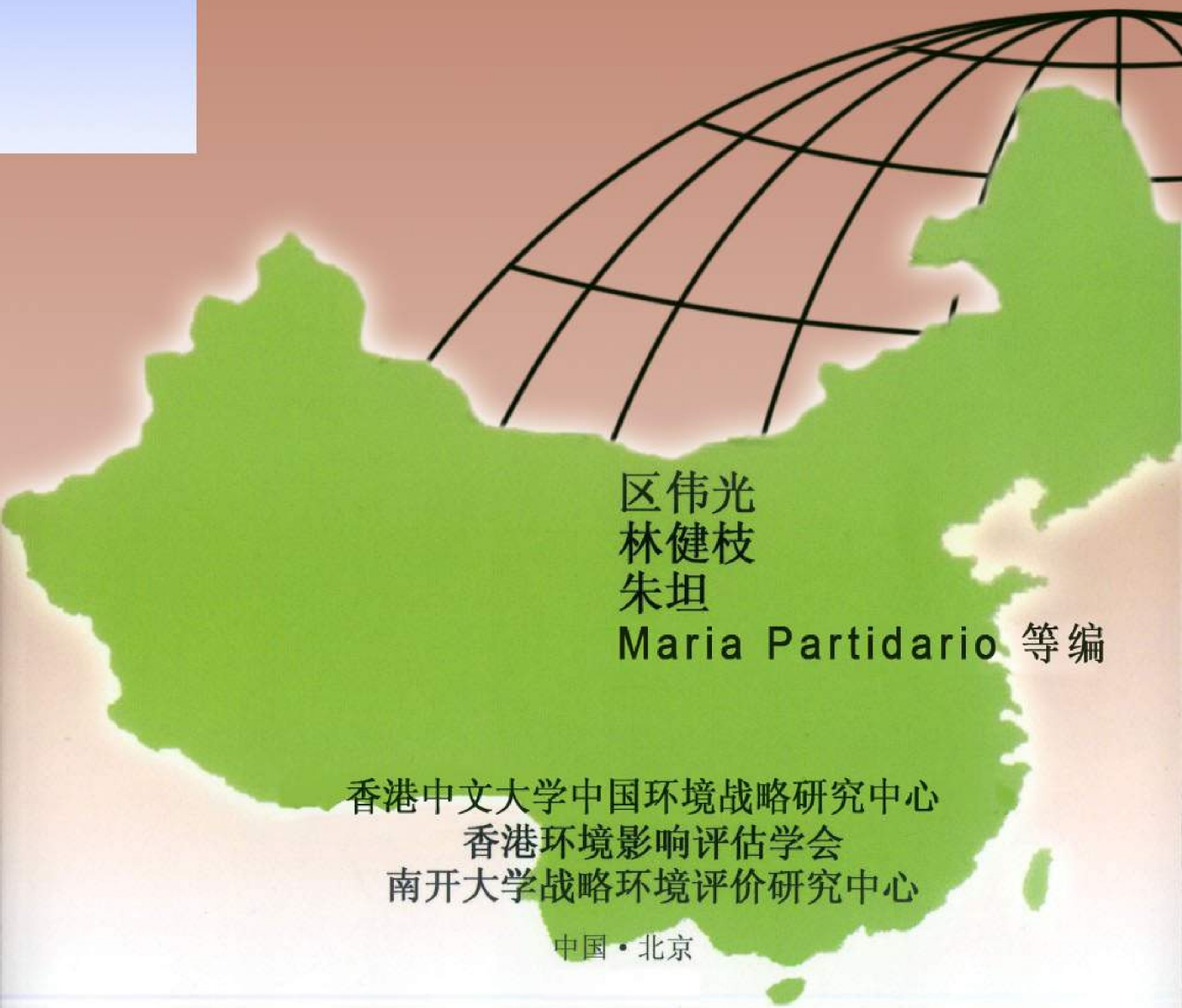
International Experience on Strategic Environmental Assessment

国际战略环评经验交流专辑



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International Experience on Strategic Environmental Assessment

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来自译者的话

本专辑收录了数十位国内外专家和学者撰写的战略环境评价领域国际进展和经验的论文。为了便于国内同行和专家参考，本专辑的编委委托南开大学战略环境评价研究中心组织部分科研人员对原文进行翻译。南开大学战略环境评价研究中心多年来一直致力于战略/规划环境影响评价的理论研究和实践活动，通过开展培训、出版专著和译著、组织课题研究等形式推动我国战略/规划环境影响评价的能力建设。参与翻译的人员有白宏涛、王会芝、徐楠、田洗、伯鑫、翾雪坚、冯晓飞、文琛、刘梦、陈海英和傅银银等。南开大学战略环境评价研究中心吴婧博士和香港中文大学刘春玲女士对翻译初稿进行校译，林健枝教授、徐鹤副教授和陈永勤副教授作为翻译顾问，对本书的翻译进行了指导。

最后，对关心和支持本专辑出版的朋友们一并表示感谢。欢迎学界同仁和各位读者提出宝贵的意见。

From the Translators

This monograph collects ten papers from SEA experts and scholars all around the world to review the latest development and application of SEA in different countries and to examine how these international experiences may be of relevance to China. For the convenience of Chinese EIA practitioners, the editors commissioned Research Centre for Strategic Environmental Assessment, Nankai University to translate the papers into Chinese. The Center is devoted to SEA research and practices since its establishment in 2004 with the goal to facilitate capacity building in SEA through training activities, publication, research and pilot studies. Several Master and PhD. Students are involved in the translation work; including BAI Hongtao, WANG Huizhi, XU Nan, TIAN Xian, BO Xin, XUAN Xuejian, FENG Xiaofei, WEN Chen, LIU Meng, CHEN Haiying and FU Yinyin. Dr. WU Jing from the Center and Ms. LIU Chunling from Chinese University of Hong Kong (CUHK) proofread the translation. The translation team is grateful to Professors LAM Kin Che and CHEN Yongqin of CUHK and Associate Professor XU He of Nankai University for their support and advice. We are also grateful to those who made publication of this monograph possible. We also welcome suggestions and comments from readers.

Message from Elvis Au, the Chair of the International Advisory Committee

On behalf of the International Advisory Committee, I would like to express our full appreciation of the foresight, dedication and commitment by the State Environmental Protection Administration (SEPA) under the leadership of Mr Pan Yue, Vice Minister of SEPA, and , Mr Zhu Xinxiang, the Director of General of EIA Department of SEPA, together with the Appraisal Center for Environment and Engineering (ACEE) and the International Cooperation Center of National Development & Reform Commission (NDRC), in holding this International Forum on Strategic Environmental Assessment in Beijing. The theme of this conference fits in very well with the recent developments in China and the world in promoting better harmony between development and the environment and better use of scientific approach for resolving development dilemmas.

This international forum on strategic environmental assessment is an excellent follow-up to the First China's International Conference on Environmental Impact Assessment held in BoAo', Hainan Island in China in December 2004. At that time, among others, five current and former Presidents of the International Association for Impact Assessment (IAIA) and the Chief Executive Officer (CEO) of IAIA attended the conference to witness the important advancement of EIA policies and practices in China and the good collaboration between IAIA, SEPA and other participants and experts from all over China and the rest of the world. This Forum is also one of the key items of cooperation between SEPA and Hong Kong Environmental Protection Department after the visit by Mr Pan Yue to Hong Kong in October 2006.

When Mr Wu Bo, the Director General of ACEE approached and invited me in April 2007 to establish an international advisory committee by engaging the best international experts, I felt honored and gladly accepted this challenge as it would provide another excellent opportunity for learning and sharing experiences and insights among practitioners in the world and those in China. On behalf of the Organizing Committee for the Forum, I put forward the collaboration proposal to the Board of IAIA. I am very grateful for the full support from both the current IAIA President, Charlotte Bingham, and the CEO, Rita Hamm, and for the endorsement of the IAIA Board at their Board meeting in June 2007.

I wish to sincerely thank the support from the Chinese University of Hong Kong, Instituto Superior Tecnico of Portugal, the Nankai University and the Hong Kong Institution of EIA. I am indebted to the support and contributions from our friends and partners for sharing their insights and experiences, including Barry Sadler, Rob Verheem, Ross Marshall, Lone Kornov, Thomas Fischer, Linda Ghanime, Olivia Bina, and Kirsten Oleson. I am also grateful for the help and guidance from Mr Wu Bo and Miss Zhao Xinfeng throughout the process. Last but not the least, this monograph and the works of the International Advisory Committee could not be made possible without the dedicated efforts and very significant contributions from my close partners and the co-editors for this monograph, Professor Maria Partidario, Professor Lam Kin-che and Dr Xu He. I would like to extend my heartfelt appreciation of their efforts. This is a great international team on a great topic and I am confident that the Forum would be a great success.

Elvis Au

Chair of International Advisory Committee and the Former President of International Association for Impact Assessment

序　言

自從十多年前戰略環評的概念出現以來，其理論不斷完善，內容及方法亦不斷更新。近年來，國家的社會發展和經濟建設突飛猛進，在高速發展的同時，保護環境質量和維護生態平衡至為重要，戰略環評可以發揮其重要作用，為促進科學發展和建設和諧社會提供重要依据。本人及香港中文大學環境政策與資源管理研究中心很高興能夠通過本論文集的編輯工作，為國家的可持續發展事業和國際戰略環評研究作出一點貢獻。

今年初區偉光先生和本人接受了國家環保總局環境工程評估中心的委托，收集一些國際戰略環評的個案和經驗編輯成集，供國內同行和專家參考。近幾個月來，區先生及本人在瑪麗亞 • 帕蒂达羅教授和朱坦教授的協助下，邀請了一些國際上經驗豐富和成就卓越的環評專家撰文，亦得到香港環境影響評估學會及香港中文大學的資助，本人在此謹向各方致以衷心的感謝。

在籌辦出版本論文集的過程中，我們得到國家环境保护总局潘岳副局長、祝興祥司長、环评三处负责人李天威博士和环境工程評估中心吳波主任以及其他領導的關心和指導，使我們感到十分鼓舞。

要在短短幾個月內完成編輯的工作，殊不容易。編委們有幸得到南開大學戰略環評中心主任徐鶴教授的大力幫助，正是在他的領導下組織了一班精英的隊伍，在非常緊迫的時間內把文稿翻譯成中文，滙編成集。

本人期望此文集的誕生，能為促進國內外環評專家的交流，為祖國的環保大業盡點綿力。

林健枝

香港中文大學中國環境戰略研究中心主任

Message from Maria Partidario, Co-editor of this monograph

At the First China's International Conference on Environmental Impact Assessment held in BoAo', Hainan Island in China, in December 2004, Strategic Environmental Assessment (SEA) was still a recently legal enacted instrument in China. As one of the international speakers invited with great honor to participate at that occasion, I keep the memory of the excellent, strong and encouraging speech of Vice Minister of SEPA Mr Pan Yue illuminating the exchange of experiences and the professional networking amongst Chinese and international professionals. The many high quality papers offered on different international and Chinese SEA experiences filled in a highly participated conference.

Three years later, and four years following the adoption of the Chinese SEA requirements, the debate with respect to learned lessons and emerging capacities in using SEA in China is promising very stimulating discussions. At this 2nd Conference, now specifically addressing SEA, the Conference organizers SEPA and the Appraisal Center for Environment and Engineering (ACEE) established detailed guidance for the Conference, driven by topics concerning sustainable decision-making and SEA for macro-economic policies, other topics including Policy SEA, regional and sector development plans SEA (including energy, transports, land use, urban development, tourism and resource development plan) and hot issues in SEA including biodiversity, public participation, SEA efficiency and monitoring and compliance.

It is with much regret that I am not able to be present, in person, taking a more active part in this International Forum on Strategic Environmental Assessment that is taking place in Beijing. I am honored to be have been invited to participate as an international expert and to have had the benefit and the joy of working together with my colleagues Mr. Elvis Au and Professor Kin Che Lam to bring to the attention of Conference participants this monograph that illustrates just a small sample of much that is happening in the world with SEA. I wish to thank SEPA ad also my colleagues Mr. Elvis Au and Professor Kin Che Lam for this very honorable invitation, that at least allowed me to join them in editing this monograph.

Strategic Environmental Assessment (SEA) is a challenging instrument that holds many features still to be explored. The priority topics listed and the expected high quality Conference presentations, both from international and Chinese experts, will certainly contribute to a lively debate into dimensions of SEA that deserve due attention and require exploration now, and in the coming future. I believe the conference will deliver positive and meaningful conclusions that we can all share at the international level, in a much fortunate world network and participated exchange.

I wish you all a highly successful Forum on Strategic Environmental Assessment.

Maria R. Partidário, from Lisbon, Portugal

序　言

战略环境评价作为实现可持续发展的重要手段，已被许多国家和地区纳入宏观决策和规划过程中。这次国际战略环境评价研讨会的举办，为国内外战略环境评价经验交流提供了一个很好的契机和平台，也将更好地推进中国战略环境评价的开展。

我国的战略环境评价起步于 80 年代末、90 年代初的区域环评，在此基础上也尝试性地开展了一些政策、计划、规划的环境影响评价。2002 年，我国颁布了对推动中国战略环境评价具有深刻意义的《环境影响评价法》，它强制性要求政府部门规划需要开展环境影响评价，确立了战略环境评价的法律地位。目前，中国正处于经济社会的快速发展时期，资源环境压力日益突出。政府对环境保护给予了高度重视，已认识到决策源头预防环境污染和生态破坏的重要性。这为战略环境评价提供了很好的发展机遇，我国有关战略环境评价的研究和实践正迅速开展起来。我相信，通过大量实践，不断积累经验，中国战略环境评价将为环保真正融入综合决策发挥更大的作用。

当然，我国的战略环境评价实践还存在不少问题，需要进一步深入探讨和研究。为了更好地学习和借鉴国际战略环境评价经验和教训，我们组织编写了战略环境评价论文集。希望通过相互学习和交流，促进战略环境评价在中国乃至世界的发展，全面推动可持续发展战略的实施。

朱　坦

南开大学战略环境评价研究中心主任

Message from Josh LAM, Chairman, Hong Kong Institute of Environmental Impact Assessment

The Hong Kong Institute of Environmental Impact Assessment would like to wish success to the Appraisal Center for Environment and Engineering, China State Environmental Protection Administration (SEPA) and the International Cooperation Center of the National Development and Reform Commission, in hosting the International Forum on Strategic Environmental Assessment.

On behalf of the Institute, I would like to express our gratitude to our colleagues from the International Association for Impact Assessment (IAIA) who form the international panel of experts, for their valuable contribution to the monograph on strategic environmental assessment. The monograph emerging from the Forum covers a full range of topics such as policy, macro-decision, system and mechanism, theory and methodology, practical experience, biodiversity, public participation and follow-up assessment.

In expressing our good wishes, I would also like to add that I am very pleased to see the active participation of our Institute in contributing to the advancement of environmental impact assessment in China. We look forward to continuing our close collaboration with SEPA, the Environmental Protection Department, Nankai University, and Chinese University of Hong Kong, following recent successful events, such as the Regional Conference in Public Participation in EIA held in Hong Kong, Public Participation Workshop in Xinjiang, and, in Beijing, the First National Forum on EIA - Planning, Technology and Management, and Public Participation - 3D EIA Training Workshop.

Josh Lam

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English Version

Overview

Kin-che LAM[1], Maria Rosario Partidario[2], Elvis AU[3] and He XU[4]

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[2] Associate Professor, DECivil, Instituto Superior Tecnico, Portugal
[3] Assistant Director, The Government of Hong Kong Special Administrative Region (HKSAR), Former President of the International Association for Impact Assessment
[4] Associate Professor, Research Centre of Strategic Environmental Assessment, Nankai University, China

1. Introduction

The idea for this monograph was conceived when we learned that SEPA, in conjunction with the Appraisal Center for Environment and Engineering (ACEE) and the International Cooperation Center of National Development & Reform Commission (NDRC), would hold an International Forum on Strategic Environmental Assessment in Beijing. The organization of such a conference is both timely and significant.

By the end of 2007 when the conference is held, the Chinese EIA Law which embodies the elements of SEA will be in the 5th year of implementation. It is high time to examine the grounds gained, review the lessons learned and explore how SEA can be made a more effective tool to assure sustainability.

This is particularly important because there are already signs of tension between China's recent rapid development and the demand on her limited and stressed resource base. China's current 11th Five Year Plan (2006-2010) emphasizes increased energy efficiency, environmental protection, strengthening infrastructure and improving the economy and living standards of China's massive rural population. All these recent developments underscore the need to integrate environmental assessment with strategic planning and the making of national policies. SEA has received strong support from the government for ensuring regional, sectoral and municipal development plans are sustainable from the environmental, economic and social perspective.

SEA is a relatively recent development appraisal tool in China. To ensure that future growth is both scientific and harmonious, there is much scope for SEA to be used to appraise not only projects and plans but also policies and development strategies in China.

As with other parts of the world, strategic environmental assessment in Asia has been gaining greater attention over the past few years, because of the increasing challenges being posed by the cumulative or mega environmental implications arising from major strategies or policies. In April 2006, the World Bank completed a review of the Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements in East and Southeast Asia. According to this World Bank's study, Hong Kong Special Administration Region (HKSAR), Korea, Japan, China and Vietnam are the most advanced stage of applying or introducing SEA. Other countries such as Philippines, Indonesia and Thailand also show strong

interest in SEA. This trend of the application of strategic environmental assessment is expected to continue and spread across more economies in Asia.

The purpose of this monograph to review the development and application of SEA in different parts of the world and to examine how these international experiences may be of relevance to China. It can be seen from the collection of articles in the monograph that, starting with a relatively simple idea to address the limitations of project EIA, SEA has embraced different notions and has been applied to many facets of development planning.

2. International Perspective and Experiences

The world has witnessed a challenging evolution of SEA that struggles to reach an agreed concept. The literature over the years has been showing the multiple faces of SEA, expressed in what different countries, organizations, experts and academia expect SEA to reach out, and deliver.

The European Union Directive 2001/42/EC is largely quoted to represent the cornerstone of SEA. Yet, many authors, including EU officers with responsibilities in the implementation of this Directive, have often reminded that the Directive is about environmental assessment, that it does link very strongly to the EIA of projects and that its purpose is to apply to those plans and programmes that set the context for the EIA of projects. The Directive does not really contain a strategic emphasis, or even refers to SEA. In this context, all discourses that attach SEA exclusively to the purpose and limitations of this EU Directive are cutting off SEA's full potential and capacity, even before it has been able to prove it.

The experiences in Europe and other parts of the world on strategic environmental assessment are relevant to China because the provisons for plan EIA in the PRC EIA Law, which came into effect in 2003, have a lot of similarities to some of the provisions in the EU difrective on strategic environmental assessment.

IAIA annual conferences have been a significant stage of debates, where new ideas are confronted with old discourses. In 2005 an IAIA conference was held in Prague designed to specifically discuss SEA, showing how evidently the concept of SEA is following different directions. A large spectrum of SEA was shown, from an EIA-oriented discourse, to a strategic-oriented concept of SEA which main purpose is its capacity influence strategic decision-making. The small sample of world experiences with SEA that are collected in this monograph extends such debate, which is now brought to the attention of Chinese high-level governmental officers, and to the community of SEA experts in China.

The chapters in this monograph can be set in two main sections. One that illustrates the evolution of SEA and current process approaches in SEA at international, regional and national contexts (Au, Ghanimé and Risse, Sadler, Partidário, Au and Lam, Bina). Another section provides case examples of how SEA is being used, or can be used, at policy or plan/program level, adopting a broader-environment oriented scope, or otherwise a strictly physical-environmental scope (Oleson, Kornov, Marshall et al, Verheem and Laeven, Fischer and Phylip-Jones).

In the first section Linda Ghanimé refers the OECD/DAC Manual, currently the development assistance manual for SEA, and to how countries in Asia, and particularly in China, implement the Millennium Development Goals. She then develops the case of Benin to

exemplify how SEA can successfully assist the implementation of the Millennium Development Goals in Benin, namely to address the poverty dimension.

Barry Sadler has two articles. The first one outlines major international trends and developments in SEA process and practice. He refers to the evolution of SEA in different countries, stating the EU Directive as a world model of SEA and focusing on the need to move to a sustainability appraisal agenda. This is an interpretation of SEA evolution that fits well with the evolving efforts of promoting sustainability appraisal, leading to the emptiness of SEA as a strategic-decision oriented tool. His second article supplements the first one by reviewing how SEA can be applied to policy making. He explains why there was initial hesitance in apply SEA to policies and how the number of policy-level SEAs has increased remarkably. Sadler argues that SEA at the policy level offers tremendous opportunities for integrating environmental, economic and social considerations.

Maria Partidario critically analyses the evolution of SEA in Europe, and how the European Directive has imposed a re-alignment of SEA practices in many European members-states, that often had to retreat in relation to strategic advances already achieved. The multiple existing forms of SEA within Europe support the argument that SEA is far from having reached a consolidated discussion, not only because the models of SEA are strongly linked to cultures of decision-making, but also because there is an emerging trend around strategic-based decision-making practices which will call on SEA strong strategic capacity yet to be explored.

Au and Lam review the current context for SEA in Hong-Kong and how it has evolved. Aspects particularly noted include the inter-sectoral communication amongst the different professionals involved, their different heuristics and how that may affect SEA practice, the shaping of the connections between sustainability concerns and existing decision making processes, as well as the need for a pragmatic approach that enable workable methods in a world that is short of data, and data gathering tools, for rigorous analysis of sustainability. Au and Lam argue that it is a fallacy that one single SEA concept and approach can solve all complex sustainability issues and that SEA is doomed to become a paper-based exercise unless there is an equally rigorous strategic environmental follow up and audit mechanism.

Olivia Bina addresses SEA in China, setting the scene around the relationship of growth, environment and SEA. She develops around the theory of SEA and then exposes a strong critical analysis of the PEIA (Plan EIA) in China based on recent research she is conducting in China. She addresses issues of methods, of consideration of alternatives and timing of SEA in relation to decision-making. She concludes with an analysis of how SEA could be made context specific for China.

Elvis Au speaks about smart growth and prudent development for a sustainable future, highlighting the urgency to adopt strategic approaches in environmental assessment that have as main purpose to influence strategic decision-making. In his view, growth and development in Asia are inevitable for various socio-economic reasons, and many specific issues and challenges facing the region, however, would need to be tackled through SEA, to strategically conciliate environmental and social issues with economic priorities, if smarter growth and more prudent development are to be realized.

In the second section, with case-examples, Kirsten Oleson develops a macro-economic case intended to demonstrate how SEA can play a role in the ongoing green accounting effort in

China, analyzing how China could tally the external costs of exports in the balance of economic gains versus natural resource-intensive consumption. Oleson refer to the use of SEA in tracking virtual transfers, a concept that relates the natural resources inputs and pollution burdens, as external costs, involved in producing goods domestically, to the destinations of exports.

Lone Kornov provides a case on the application of SEA at the policy level, focusing on the SEA of the bill that establishes city environmental zones in Denmark, based mostly on air emissions. She addresses aspects related to public participation, to how politicians have engaged in the public debate. Interestingly she concludes that politicians are triggered mostly by the public reaction, and less by SEA!

Verheem and Laeven provide a case study on a plan for flooding protection in the Netherlands. It is presented in a way that is close to the Plan EIA concept in China, providing a detailed analysis of alternatives and methods used in the SEA, concluding on the importance of participative integrated SEA and planning that takes environmental issues into consideration, a critical condition for enabling the SEA to significantly influence the plan. They further refer to the institutional set up that enable cross-sectoral communication between different ministries involved in carrying out the SEA in such interactive way.

Marshall et al paper is also about flooding but more from the perspective of climate change adaptation and mitigation. It addresses separately the issue of flood risk management and the issue of SEA, in this case concerning the institutional approach of the Environment Agency, rather than a national or regional approach to SEA.

Fischer and Phylip-Jones address the role of SEA applied to the development of renewable energies and provide a local level case that applies the Scottish planning guidance for renewable energies (the SEA for the Fife planning guidance). The case refers to the impacts of windfarms on each of the environmental factors in the EU Directive and concludes on the reactive nature in this case (the process started too late, the planning guidance become more environmentally sensitive, other technologies should have been considered, etc).

3. Final Remarks

Some of the chapters in this monograph discuss the meaning and role of SEA to meet the international agenda (e.g. Ghanimé and Risse, Sadler), the different regional contexts (e.g. Partidario, Au, Au and Lam), as well as why SEA need to fit the national context in China (e.g. Bina). The different authors expose how SEA can be used at policy and macro-economic level (e.g. Kornov, Oleson), as well as in addressing major global problems both at the global level (e.g. the Millennium Development Goals and poverty issues in Ghanimé and Risse) and at the national level (e.g. climate change adaptation and mitigation in the UK in Marshall et al, and the national flooding plan in Verheem and Laeven). Other authors exemplify the rather reactive application of the EU Directive as it currently stands, at planning and programme level (e.g. windfarm in Scotland in Fischer and Phylip-Jones). This brings evidence to the wide spectrum of SEA potential capacities, with varied levels of success in meeting strategic decision-making needs. We hope the experiences described in this monograph can contribute to the building of an effective SEA system that can help put China's development on a sustainable path.

Environmental Sustainability, Strategic Environmental Assessment and Poverty Reduction Strategies

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1. SEA in the Context of Development Cooperation

The role of Strategic Environmental Assessment (SEA) in development is recognized by the Paris Declaration on Aid Effectiveness, adopted in 2005, where both donors and development country partners made a commitment to 'develop and apply common approaches for strategic environmental assessment at the sector and national levels' (OECD, 2005). China is a party to this international commitment both as a key partner country and a donor.

In response to this commitment, the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) and its Network on Environment and Development Co-operation (ENVIRONET), established a Task Team on SEA, co-chaired by the United Kingdom Department for International Development (DfID) and the United Nations Development Programme (UNDP).

This Task Team developed the SEA guidance: *Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation*. (called hereafter the OECD DAC guidance on SEA). Building on the SEA practice so far, this work provides a commonly-agreed and shared model for developing appropriate, fit-to-purpose applications of SEA in diverse areas. SEA is defined as: 'analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter linkages with economic and social considerations' (OECD, 2006). SEA is understood as being not a single, fixed and prescriptive approach, but rather an umbrella approach using a basket of analytical and participatory tools:

- largely principle-based;
- continuous, iterative and adaptive;
- applied throughout the entire decision making process;
- focused on strengthening institution and governance;
- adapted and tailor made to the specific process.

Beyond the traditional approach and more common practice of assessing the environmental consequences of a given policy, plan or program, Strategic Environmental Assessment offers opportunities to directly address coherence in policy making and planning and the sustainability of development outcomes and impacts.

The OECD DAC guidance identifies twelve entry points for the application of SEA to policies, plans and programmes which are typically the object of development cooperation:

- *Strategic planning processes led by a developing country:* These include national overarching strategies, programmes and plans; national policy reforms and budget support programmes; sectoral policies, plans and programmes; infrastructure investments plans and programmes; national and sub-national spatial development plans and programmes and trans-national plans and programmes.
- *Development agencies' own processes:* These include donors' country assistance strategies and plans; partnership agreements with other agencies; donors' sector-specific policies; donor-supported public-private infrastructure support facilities and programmes.
- *Other related circumstances:* These include independent Review Commissions and major private sector-led projects and plans.

In order to deepen the use of SEA and enhance the effectiveness of the guidance, task team member agencies are engaged in initiatives to further institutionalize the practice of SEA within their organizations. For example, UNDP has developed a Strategic Environmental Assessment Implementation Plan comprising a series of interventions to systematize SEA application within the Agency. The Plan also includes ways for SEA to support countries in the process of developing and implementing MDG-based national development strategies, including Poverty Reduction Strategy Papers (PRSPs).

2. The Millenium Declaration and the Millenium Development Goals (MDGs)

The Millenium Declaration, adopted in September 2000 by 189 countries highlights global priorities of the new Millennium, recognizing the interdependence between growth, poverty reduction, health and environmental sustainability, as well as the shared responsibilities of developing and developed countries.

Eight Development Goals-the Millenium Development Goals (MDGs) - serve as a global results framework supporting the implementation of the Millenium Declaration. The MDGs have set time-bound targets for 2015 and verifiable indicators, used as references in measuring the progress achieved on a national and international scale towards the overall objective of reducing the extreme poverty.

Reversing the loss of environmental resources, including forests, biological diversity and the earth's ozone layer, are among the targets for Millennium Development Goal 7 on Environmental Sustainability (called hereafter MDG7), along with provision of safe water, adequate sanitation and decent, affordable housing for the world's poor.

The integration of environmental considerations into mainstream development processes is the means called for in target 9 which stresses the need to: 'Integrate the principles of sustainable development into Country policies and programmes and to reverse the loss of environmental resources.'

Just past the midpoint to the target date of 2015, the progress so far is too timid and the outlook is grim. Most countries have committed to the principles of sustainable development and to incorporating them into their national policies and strategies, as well as to the implementation of international environmental accords. However, good intentions have not translated into sufficient progress on the ground to reverse the loss of our environmental capital. Even regions that have

made significant progress towards achieving other Millennium Development Goals, such as parts of Asia - and China in particular - have a much poorer record on environmental issues. Deforestation continues especially in biologically diverse regions; despite increased efforts to conserve land and seas, biodiversity continues to decline and old growth forest ecosystems continue to be lost. Growing greenhouse gas emissions continue to outpace advances in sustainable energy technology. Global efforts to eliminate ozone depleting substances are working, demonstrating the impact of international accords. (UN, 2005, UN, 2006).

A UNDP assessment of over 150 MDG Country Experiences concludes that most countries continue to face fundamental challenges to the achievement of progress on MDG 7 (UNDP 2006). Countries report lack of political will, increased pressure on environmental resources from high use and natural disasters, insufficient governance and planning policies, social unrest, and a lack of financial resources.

For many countries, particularly those of Africa, Poverty Reduction Strategy Papers (PRSPs) are policy-level documents used to manage development aid and the social equity agenda which are considered the national development framework and a main implementation vehicle for achievement of the MDGs. A 2003 evaluation of PRSPs showed that less than half of the proposed targets aligned with the MDG7 goal of environmental sustainability, with attention almost exclusively to water and sanitation, and concluded that a major effort was needed to raise the level of attention to environmental sustainability (MDG7) in the PRSPs. Bojö and Reddy (2003a) Earlier evaluation had also noted that most PRSPs lack adequate considerations of environmental sustainability. Since then there have been some country successes and improvement from the interim to thein the full PRSPs; however, overall integration of environment into PRSP processes has remained low (Bojö and Reddy, 2003b and Bojo et al 2004).

Based on the same review of 150 MDG experiences, UNDP (2006) concludes that while the majority of countries report on environment, more than half are further embracing the MDG framework by reflecting country-specific environmental targets that are increasingly woven in their core national development plans and budget processes. The review highlights lessons learned and the following essential prerequisites for ensuring environmental sustainability:

- context-specific responses;
- management of trade-offs across all sectors;
- integration across different disciplines and actors;
- country- specific institutional arrangements;
- international cooperation.

3. SEA Facilitating Progress on the MDGs

SEA can be an effective policy instrument to progress the MDGs, particularly MDG7 on environmental sustainability. SEA helps to determine whether poverty-environment considerations have been well addressed, monitored and evaluated; offers the opportunity to move beyond the analysis of the adverse ecological impacts of development to upstream considerations for the direct purpose of improved development planning; and it identifies human development opportunities through effective use of natural resources and environmentally friendly innovation in the choice and design of policies, plans and programmes.

To date, the full application of SEA to PRSPs has been limited. Countries where SEA has been applied to such policies include Benin, Ghana, Rwanda, and Tanzania. An analysis of these SEA processes (Ghanime *et al*. 2007) shows that the following key elements represent opportunities of success for mainstreaming environment and reach the MDGs.

- *Identify key entry points, and recognize and effectively use windows of opportunity:* Introduce SEA at the beginning of the PRSP process, elaborate SEA concomitantly to the PRSP and integrate environment in a cross-cutting manner to other sectors to contribute to good environmental mainstreaming results.
- *Formulate problems in such a way as to facilitate engagement*: Defining issues in terms of 'Livelihoods', 'Health' and 'Vulnerability' helps to overcome traditional fears of SEA as an environment focused process that fails to address broader social concerns.

· *Stop stand-alone environmental assessment writing exercise:* Avoid considering SEA only as a document ; recognise its function as a process which needs to be integrated within the broader strategic national development planning process.

· *Institutionalize the practice:* Adapt SEA to national government specificities, and ensure that capacity needs assessment, as well as capacity building actions, and support materials are part of the process.

· *Encourage broad and effective participation to ensure local ownership and innovation in the SEA process:* Involve a wide range of national, sectoral and district level stakeholders to raise awareness on environmental issues, opportunities and constraints, and resolution of conflict in the process.

· *Make the SEA reliable and relevant*: Ensure quality of analytical work and the adequate articulation of development-environment linkages in a language meaningful to decision makers.

· *Develop dialogue*. Build a common vision on key environmental components to align stakeholders on the priority to be mainstreamed in policies and strategies and to facilitate resources allocation for programmes emanating from the SEA process.

· *Ensure economic and financial analyses are part of the SEA process:* Encourage economic and financial estimates of the cost and benefits of policy measures and of the cost of proposed interventions.

· *Create space for cooperation between SEA and Poverty and Social Impact Assessment practitioners.* Improve integration of environmental considerations in poverty impact assessments and bring together the best of both processes to the common objective of support to human development.

While seemingly far from China realities, examples of application of SEA to Poverty reduction and growth strategies can provide helpful universal lessons. The applications are part of a growing practice of applying SEA to shape overarching development strategies and related policy, plans and programs to make them MDG based. As well, they address the development of the institutional capacities needed to make progress on the MDGs. This mainstreaming process involves explicitly addressing the linkages and interdependencies between environmental sustainability, poverty reduction and economic growth.

4. Case Example: Economic Development and Poverty Reduction Strategy 2007-2009

The Benin Economic Development and Poverty Reduction Strategy 2007-2009 is an example of successful application of SEA for environmental mainstreaming and progress on the MDGs. (Sources : UNDP, 2007 Ghanime, 2007 ; Ghanime *et al*., 2007 ; Guedegbe, 2007 ; ABE

2007)

In Benin, the second PRSP, called *Stratégie de Croissance et de Réduction de la Pauvreté or SCRP (Economic Development and Poverty Reduction Strategy –EDPRS 2007-2009),* was designed as a framework to reach the MDGs. One of its specific aims was to ensure 'greening' of the PRSP by a better integration of environmental aspects and by improving the relations between environment and poverty through an integrated approach to SEA.

The greening process was motivated by various factors including: high costs of environmental degradation; very poor agricultural system based on slash and burn practices; and high greenhouse gas emission rate for sectors like agriculture, forestry and transport. In addition, there is a legal requirement for "greening" the PRSP. Article 27 of the Constitution (December 11 1990) considers the environment as a fundamental right and requires that the State protects it. Article 3c of the Main Law (*Loi Cadre*) requires that the protection of the environment is integrated into the economic and social development plan as well as in the application of this plan.

The SCRP was prepared by the Permanent Secretariat of the National Commission for Development and Fight Against Poverty (*Secrétariat Permanent de la Commission Nationale pour le Développement et la Lutte contre la Pauvreté*). The greening process was managed by the Benin Environmental Agency (*Agence Béninoise pour l'Environnement*) and supported by various donors: the Netherlands Commission for Environmental Impact Assessment (NCEIA), the German Agency for Technical Cooperation (GTZ Benin, GTZ Rioplus Germany) and the United Nations Development Programme (UNDP).

4.1 SEA Objectives and Key Functions

Four objectives were set for the SEA process:

- integrating environmental sustainability measures both as a sector itself as well as within each of the other component of the SCRP;
- setting up a mechanism for an effective implementation and monitoring of the SCRP environmental measures;
- raising up decision makers' and stakeholders' awareness on the importance of environmental issues;
- improving local empowerment for natural resources and environmental management.

4.2 Progress and Outcomes

SEA implementation was characterized by an integrated and participative process. Nine thematic groups were in charge of the formulation of different policies that formed the basis of the Strategy (e.g. social sectors and basic infrastructures; good governance, decentralization and capacity building; private sector and employment, etc.). One of these groups, called 'Environment and Quality of life' had representatives involved in all of the other eight thematic groups in order to ensure the integration of the environment in the thematic policies. The general public was consulted at different steps of the SCRP process. For example, the national forum on the elaboration of the SCRP involved more than one-hundred participants from ministerial departments, technical services, the civil society and the private sectors. The objective of this forum was to define key principles for the development of the SCRP. Consultations going from

central to local levels were also organised to contribute to a better understanding of the SCRP issues. Local and/or national governments were involved through information and training workshops, and press representatives were engaged to ensure communication between local elected representatives and their constituent communities.

Capacity development was ensured through workshops organized with communal authorities, national decision makers responsible for planning and programming and national ministries. For example, delegates from the key institutions involved participated in a week-long workshop in Accra to learn from environmental mainstreaming experiences of Ghana, Tanzania and Uganda PRSPs. Local authorities were assisted in implementing SEA recommendations through pilot demonstration projects and long-term measures were put in place for continued improvements (e.g. preparation of a dashboard on environmental protection sectoral priorities at the level of each ministry and each prefecture, with visibility on the related budgetary resource needs).

Negotiations were held between the Benin Environmental Agency and the Ministry of Finance for including the SEA within the global SCRP planning process. SEA was used with projections on financial needs, and policy measures, recommendations, and interventions to reach the MDGs (including MDG7 on environmental sustainability) were costed in the SCRP[1].

A mechanism was implemented to eliminate duplication between donor activities. All donors' activities were coordinated by the Benin Environmental Agency**.** Donors active in environment met on a monthly basis and partners who are supporting the SEA process of the SCRP (e.g. UNDP, GTZ) developed and shared information within the group. This process helped to build a common vision around some key concepts such as environmental costs and environmental assessments, and increased the awareness of donor group members on the importance of mainstreaming environmental issues in policies and strategies.

Finally, a monitoring and evaluation system has started to be put in place to collect and manage data for a better development and use in future SEA. Environmental indicators have been defined for monitoring and evaluation purpose, and will be integrated in the monitoring system of the overall SCRP and serve to track progress on MDG7.

One of the main outcomes of the SEA, and its application in a cross-cutting manner throughout the SCRP development process, was that it helped to structure and define the environmental actions of the SCRP. Each of the following four strategic axes of the SCRP match with corresponding environmental measures:

Growth acceleration (axis no 1): the Government will ensure all investments are matched with a social and environmental assessment and risks management plan, systematic integration of environmental considerations and a permanent system of monitoring;

Capacity Development, reinforcing human capital and promoting employment (axis no 2): the Government will involve environmental matters, clean technologies and renewable energie in the capacity development programme.

Good governance (axis no 3): the Government will increase the intervention capacities in environmental matters at different levels including more systematic application on

[1] Group meetings were organised frequently to ensure that the SEA process was in harmony with the global costing process and priorities of the SCRP.

environmental assessment;

Balanced national spatial development (axis no 4): The Government will apply SEA in policy, sectoral plan and programme elaboration, with a monitoring system to include water quality and other environmental dimensions.

Moreover, SEA increased opportunities for mobilizing resources to support environmental sustainability. Environmental measures have been taken into account in the budget support programme of the World Bank, and agreements were made for Intercommunity Coastal and Marine Ecosystems Management Project and Energy Sector Support. The SEA opened political space to test policies and strategies through project recommendations in the 'greened' SCRP.

Also the SEA further raised awareness on environmental issues and enhanced partnerships and inter-agency cooperation between, for example, the Benin Environmental Agency, the Permanent Secretariat of the National Commission for Development and Fight Against Poverty and the Ministry of Finance.

4.3 Key Challenges

The Benin's SCRP SEA experience showed that progress was sometimes difficult, not only due to lack of political support but also to lack of human resource and institutional capacity. The SEA process was also characterized by a very tight timeline, weak capacity for prioritization and weak mainstreaming of gender issues.

To face these challenges, measures will need to be taken, including the incorporation of resources for capacity development in national budget planning and the allocation of adequate time for the environmental mainstreaming process.

Another important challenge is the implementation of a robust environmental monitoring system. Need for support was identified for environmental data and indicators organization (time series, aggregate, etc.), environmental economics analysis, and effects analysis and modelling tools. Donor coordination efforts are being arranged to support implementation.

5. In Brief

The Benin experience with SEA and those of other PRSP illustrates that the process can be effective in mainstreaming of environment and poverty reduction in macro development policies and in policies and programmes of development sectors. Experiences in Strategic Environmental Assessment in context of the preparation and implementation of macro development strategies such as Poverty Reduction Strategies show that to be effective SEA needs to:

- Move beyond analyzing the adverse environmental consequences of development to recognizing environmental sustainability's contribution to human development outcomes;
- Extend to the full policy making process and determine whether poverty-environment considerations have been well addressed in planned outcomes, monitored in implementation and evaluated;
- Focus on development outcomes with positive reinforcement of the poverty – environment linkages and tradeoffs;
- Identify poverty alleviation opportunities including sustainable use of environmental resources in the design of policies, plans and programmes.

A certain number of considerations are to be addressed to fully achieve this potential. These include:

- Reduce the gap between concept, analytical framework and measures of poverty and environmental sustainability
- Ensure economic and financial analysis are part of the SEA process
- Connect the assessment work to the national policy making process, including MDG frameworks
- Contribute to robust environmental monitoring system for policy-making
- Work on the quantification, standards, and valuation.

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International Trends and Developments in SEA Process and Practice

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1. Introduction

This paper is intended to outline major trends and developments in SEA process and practice, internationally. It gives particular attention to the different forms of SEA that have evolved in recent years, to the institutional arrangements that are in force in selected countries and to experience with their application. As the review indicates, SEA is a fast moving sub-field. Much has changed in a short period of time, new areas of coverage and emphasis are being added all the time and an increasing number of countries are adopting this approach.

Notable among them has been China, where the implementation of SEA of plans and programmes now underway will be watched with interest in light of the country's unparalleled economic and environmental transformation. For SEPA officials and others involved in this process, SEA practice and operational experience elsewhere may be equally of interest for policy learning and institutional capacity building. With that in mind, this paper also takes stock of the strengths and weaknesses of certain longer established SEA systems with a view to identifying strategic ways forward and options for improvement.

The paper is organised into four main sections:

- brief review of the evolution of SEA with particular reference to defining events and issues of the last decade;
- comparison of the nature and scope of SEA frameworks established in leading countries;
- review of national experience with SEA implementation in several leading countries; and
- consideration of future prospects for SEA including its possible transition toward sustainability appraisal (SA).

2. Background on the Status of the Field

In this paper, SEA is understood to be a generic process or approach that encompasses a family of instruments, which may have different names and features but are functionally related by common aim of integrating environmental considerations into the higher levels of decision-making. The membership of this family can be classified in different ways and its boundaries defined narrowly to include only formally designated SEA systems or cast more

widely to include informal, near-equivalent or para-SEA processes (see Box 1). From both empirical and international perspectives, this wider net of analysis best captures the scope and diversity of SEA practice, although most attention will be given to experience with the implementation of formal procedures in relation to plans and programmes, i.e. the aspect of most immediate interest to Chinese SEA practitioners.

Box 1: SEA as a generic family of instruments

- *SEA as a formally prescribed process* under legal or administrative arrangements established by countries and/or laid down in supra-national (e.g. EC Directive) or international (e.g. SEA Protocol) instruments
- *Near-equivalent processes* that broadly correspond to SEA in their aims and elements of approach and are applied formally (e.g. regulatory impact assessment) or informally or flexibly (e.g. policy appraisal)
- *Para-SEA* processes and elements, which have the same function as formal and informal SEA processes and some of their characteristics but are applied in an ad hoc manner or internalised as part of policy or plan-making

Sources: adapted from Dalal-Clayton and Sadler (2005), Sadler (2005)

3. Major Trends and Developments

SEA has developed through the convergence of two main paths. First, it has been a product of imperatives in EIA, driven particularly by concern about the limitations and narrow, project-specific focus of the early phase of EIA application and the lack of coverage of higher-level decisions. A second, top-down impetus has come from the recognition of the importance of taking a strategic, holistic approach to the implementation of sustainable development, promoted in Agenda 21 and the Plan of Implementation agreed at the World Summit on Sustainable Development (2002). Although neither mentions SEA specifically, this process is understood by international agencies such as UNEP to be a key means of giving effect to such an approach (Abaza et al 2004).

From an EIA standpoint, the SEA can be seen as a 'second-generation' process that has evolved in three main phases (Sadler 2001):

1) The formative stage (1970–1989) when the legal and policy precedents for SEA were laid down and implemented primarily at the programmatic level under the US National Environmental Policy Act (NEPA), but had limited application in other countries, except for prototype or incidental approaches such as major public inquiries or EIA reviews of large-scale projects with significant policy and planning ramifications (e.g. Mackenzie Valley Pipeline Inquiry, Canada);

2) The formalization stage (1990–2001) when varied provision was made for different forms of SEA in a number of countries or jurisdictions, initially as a separate non-statutory

procedure that was undertaken in parallel to legislated EIA (e.g. Canada, Denmark, Hong Kong) and later progressively diversified under other legal and institutional arrangements; and

3) The expansion stage (2001 onward) when use and adoption of SEA has proliferated, primarily as a result of a new generation of international legal instruments and policy frameworks for development cooperation that together establishes institutional cornerstones for promoting wide take-up of this approach. Already, a number of developing and transitional countries have established SEA systems in response to domestic and/or international events (e.g. China, Vietnam) or propose to do so (e.g. Thailand).

These trends suggest that SEA appears to be following the earlier path of project level EIA towards world-wide institutionalisation. In that regard, the expansion phase of SEA development can be conveniently dated from the issue of Directive 2001/42/EC, which was binding on member states of the European Union and came into operational force in mid-2004. Following its transposition into national law and regulation, the Directive approximately doubled the number of countries with formal provision for SEA. As a supra-national legal framework that establishes minimum procedural requirements, the Directive also seems likely to be a force for greater standardisation of approach to SEA of plans and programmes. Similar implications are likely to follow from the conclusion of the SEA Protocol to the UNECE Convention on EIA in a Transboundary Context (adopted 2003, not yet ratified), which closely follows the provisions of the SEA Directive in certain respects but is more comprehensive in others. The SEA Protocol is also open to accession by non-UNECE member countries, which potentially opens the door to its application in other regions. A comparative review of the EC Directive and SEA Protocol can be found in Therival (2004).

At the same time, other developments have both reinforced the trend toward increasing use and application of SEA and promoted its further diversification rather than standardisation. This is especially evident in appraisal-type processes that are applied to policy and legislative proposals, (examples are described in the next section). In addition, a broadened version of regulatory impact assessment (RIA) is used within the European Commission (EC) and in some countries (e.g. UK) to promote policy integration to implement sustainable development, as well as improve the quality of regulation (see George and Kirkpatrick 2007). The EC system was introduced in COM (2002) 276 to subject the Commission's legislative and policy programme to 'a coherent method for impact analysis' (called for in COM (2001) 726) and recently new guidance was issued in order to strengthened the process (COM (2005) 97). At the level of land use planning, a new integrated process of SEA and sustainability appraisal has been introduced in the UK (Jones et al 2005a) and elements of this approach are evident in SEA processes in many other countries (Jones et al 2005b) including Hong Kong SAR (Au and Lam 2005).

SEA and other strategic tools have also gained increasing prominence in international development aid and lending policy. In recent years, donor agencies have shifted from project-level to strategic delivery of funding priorities in order to better respond to the Millennium Development Goals and the imperative of poverty reduction. SEA (as a generic approach) has been widely employed to integrate environmental considerations into a new generation of lending and assistance instruments, including direct budgetary support, policy and

institutional reform, sector-wide programming and trans-boundary planning. The World Bank, in particular, has promoted increased and improved use of SEA tools internally and in many borrowing countries through its technical assistance and capacity building activities (Mercier and Ahmed 2005). Currently, a major effort is underway to harmonize and align the SEA requirements and procedures of donor agencies as part of the broader reform agenda set out in the 2005 Paris Declaration on Aid Effectiveness. OECD Guidance on the application of SEA good practice in development cooperation issued in 2006 represents an initial response that is also intended for use by developing countries (OECD DAC 2006, www.seataskteam.net).

Despite such advances, there are also many concerns and issues related to the status of SEA process development and implementation, the quality of SEA practice and the emerging transition toward integrative, sustainability appraisal. Their nature and severity vary jurisdictionally but there are a number of problem areas and aspects of debate that appear to be generic or at least common to many countries or agencies. Much of the SEA literature is devoted to such themes. For present purposes, these are grouped into six general shortcomings of SEA practice (Sadler 2004):

- the gap between SEA theory and practice, between what should be done (e.g. as defined by IAIA principles of good practice) and what is done (a shortfall which is to be expected);
- the failure to fully or systematically implement the procedure laid down for SEA or the gap between what is required and what is done (which is far more worrying than the above)
- the poor quality of many SEA reports, which limits the value added to policy or plan-making (thereby undermining the rationale for undertaking the process);
- the discrepancy between the potential of SEA to address the cumulative effects of proposed strategies (widely stated) and the realities of delivery (restricted at best);
- the limited extent to which SEA findings are tiered to subsequent phases (e.g. project level EIA) in order to focus and streamline assessment and decision-making (which is widely promoted in the literature); and
- the lack of connection of SEA processes and decision-making to results and outcomes, which reflect the notable and widespread absence of monitoring and follow up procedures.

4. Comparative Review of the Status of SEA Arrangements in Selected Countries and Institutions

This section focuses on the status of SEA arrangements that may be of interest in discussions of how to advance SEA practice in China:

- SEA regimes that apply internationally, i.e. establish legal or policy-based requirements or otherwise influence SEA practice of large groupings of countries (Table 1); and
- SEA systems in place in certain countries or jurisdictions, which collectively illustrate different types of process development and application (Table 2) and individually include leading systems that are considered to be innovative or trend setting (Table 3). In many cases, experience gained under these SEA systems has featured prominently in framing notions of good practice.

Table 1: SEA frameworks that apply internationally

Organisation	Provision	Scope and relationship to decision-making	Elements of process and procedure
European Community	Council Directive on the assessment of certain plans and programmes (2001/42/EC); entered into force on 21 July 2004	Mandatory application to plans and programmes in defined sectors and areas which set a framework for consent of projects subject to [EIA] Directive 85/337/EEC or which require assessment subject to [Habitat] Directive 92/43/EEC	Framework law based on EIA Directive; specifies common procedure to be adopted by member states
	Communication on Impact Assessment (COM (2002) 276 final)	Legislative and work programme of the Commission	Integrative procedure based on regulatory impact assessment
UNECE	SEA Protocol (2003) to the Convention on EIA in a Transboundary Context (1991)	Mandatory application to plans and programmes; discretionary application to policy and legislation (Article 13)	Based on EC Directive for plans and programmes; no reference to procedure for policy or legislation
World Bank	EA Operational Policy and Bank Procedures OP/BP 4.01 (1999)	Applies to designated plans and programmes; establishes requirements on borrower	EA procedure for sector and regional assessments
	OP/BP 8.60 (2004) on Development Policy Lending (DPL)	Applies to all forms of DPL (e.g. for structural adjustments)	Integrative analysis of effects of policy support, and country capacity
	Environment Strategy (2001)	Used to ensure environmental concerns are integrated into development planning processes	Adapted to a range of Bank activities, e.g. technical assistance
OECD Development Advisory Committee	Good Practice Guidance on Applying SEA in Development Cooperation (2006); responds to the *Paris Declaration on Aid Effectiveness* (2005)	Advisory and non-binding framework for discretionary use of DAC members and their developing country partners	Organized in four generic stages and subdivided into a number of steps and tasks that are typically undertaken in SEA

Table 2: SEA frameworks of selected countries （Cont'd）

Country	Provision	Scope and relationship to decision-making	Elements of process and procedure
Australia	Environment Protection and Biodiversity Conservation Act (1999)	S 146 provides for ministerial discretion to assess effects of actions under a policy, plan or programme; s 147- 154 provide for specific application to fisheries management	SEA activated by an agreement with proponent; s 146(2) describes its content and basic procedure
Canada	Cabinet Directive 1990, (amended 1999)	Policy, plan and programme proposals submitted to Cabinet or issued under ministerial authority	Informal, two-stage procedure, flexible application
Denmark	Act on Environmental Assessment of Plans and Programmes: Consolidated Act No 316 (2004) Prime Minister's Office circular (1993, amended 1995 & 1998)	Listed plans and programmes in compliance with EC Directive Bills and other Government proposals sent to Parliament or on which Parliament must be consulted	Procedure strictly consistent with EC Directive Minimum procedure, flexible application
Finland	Act on Environmental Impact Assessment Procedure (1994) Guidelines on EIA of Legislative Proposals (1998)	Policies, plans and programmes (will be amended to comply with SEA Directive) Laws, decrees and resolutions	Formal procedure consistent with Directive 2001/42/EC Minimum procedure, flexible application
The Netherlands	SEA Decree (2005) Cabinet Order (1995)	Listed plans and programmes in compliance with EC Directive) Draft regulations and other policy intentions sent to Cabinet (Environmental test)	Two-tier procedure; basic approach as in Directive, extended for proposals affecting protected areas Minimum procedure, coordinated with business and regulatory tests

Table 2: SEA frameworks of selected countries

Country	Provision	Scope and relationship to decision-making	Elements of process and procedure
New Zealand	Resource Management Act (1991, various amendments)	No specific provision for SEA of policy and plans; except for s32, which refers to evaluation of the objectives and policies in meeting the purposes of the Act	No definable procedure, but aspects of SEA identifiable in policy and plan-making
USA	National Environmental Policy Act (1969) and Regulations (1978)	Legislation and programmes or actions that can be grouped geographically, generically or by technology	NEPA process applies; specific guidance on preparing generic and programmatic EISs

Source: Dalal-Clayton and Sadler (2005)

4.1 Internationally Applicable SEA Regimes

The EC Directive, the SEA Protocol, World Bank Operational Policies and the DAC Guidance are four cornerstones of SEA approaches that apply internationally to many countries and across a spectrum of applications. A brief comparison of their institutional profiles can be found in Table 1. It indicates the basic division between:

- the prescriptive arrangements enshrined in the EC Directive and SEA Protocol, which establish minimum procedural standards that are binding respectively on EU member states and signatory countries (pending formal ratification); and
- the multi-form approach included in the SEA frameworks established at the World Bank or incorporated into OECD Guidance on SEA good practice.

4.2 Key Features of SEA Arrangements in Selected Countries

Currently, formal SEA systems are estimated to be in place in some 40 countries, more if states in federal jurisdictions are included. The majority are EU member states, although this picture is changing driven by the trends described earlier. For present purposes, the SEA frameworks of seven countries are annotated in Table 2 with a view to illustrate the different arrangements under which their processes operate. In addition, reference is made to the UK system of SEA which is particularly distinctive in terms of the number and diversity of its processes as a result of its devolved administration and the introduction of a joint SEA-sustainability appraisal (SA) process for spatial (but not sector) plans (see Box 2).

Even though a small sub-set, these arrangements are collectively diverse, more so than their EIA counterparts at a comparable stage of development. They vary in mandate, procedural requirements, scope and level of application and relationship to decision-making. Some SEA systems are based on and follow EIA legislation and procedure; others flexibly apply modified or minimum procedures. EIA-based arrangements are commonly applied to plans and programmes and as noted earlier the EC Directive and SEA Protocol likely will promote further standardization.

The scope of application of the processes shown encompasses policy, legislation, plans, programmes and other strategies across a range of different sectors. Even so few, if any, SEA systems are comprehensive in their individual application to all strategic proposals with potentially important environmental effects. Some SEA processes cover all the main forms of strategic decision-making (i.e. policy, legislation, plans and programmes) but within a specified process of decision-making (e.g. submissions to Cabinet in the Canadian federal system or Parliament in the Danish system). Others subject only certain strategic proposals to SEA (e.g. listed plans and programmes in Directive 2001/42/EC) or focus on initiatives in a particular sector (e.g. offshore fisheries under the Environmental Protection and Biodiversity Conservation Act, Australia).

Box 2: Multiple-forms of SEA in one country: the example of the United Kingdom

Since 2000, the overall approach to SEA in the UK has been reconfigured as part of the larger change in the culture and structure of policy-making and planning. The current system is based on three cornerstones:

- Non-statutory policy appraisal processes that operate independently from and are not affected by the Regulations that give effect to the SEA Directive in the UK;
- SEA of plans and programmes as specified in the Regulations that came into force on July 20 2004, replacing some forms of SEA and allowing for joint procedures with others; and
- Sustainability appraisal (SA) of regional and local spatial plans as mandated in the *Planning and Compulsory Purchase Act* (2004) and subject to guidance that incorporates SEA requirements of the EC Directive.

In the UK, SEA also takes place within a devolved system of territorial administration. For example, *The Environmental Assessment of Plans and Programmes Regulations* (SI 2004, No. 1668) passed by the central government to implement the SEA Directive apply only to England (or to England along with any other part of the UK). Separate regulations are in force in Northern Ireland, Scotland and Wales for plans and programmes that apply within their respective territories. Except for Scotland, all UK territories have enacted the requirements of the Directive as they stand but with the radical intent of merging the SEA and SA processes in support of spatial planning. The Scottish Executive applies SEA as a stand alone process but to a wider range of plans and strategies, including policies.

Source: Sadler 2005

As shown in Table 2, some countries have established more than one SEA system, reflecting the emergence of a differentiated approach to policy as compared to plans and programmes. At the policy level, there is a greater mix of legal and administrative instruments and procedural models, and continued debate about their respective efficacy. In many cases, non-statutory approaches appear better adapted to the fluid reality of policy making (as compared to more structured process of plan-making and programming). On the other hand, legal frameworks offer greater assurance of compliance and consistency of implementation (see

review of North American experience below). More on this issue can be found in a companion paper.

What can be said here is that the current pattern of SEA take up for policy is more incremental and ad hoc than for plans and programmes and likely to remain so in the immediate future. For UNECE and EU member countries, the SEA Protocol and the SEA Directive do not act as comparable drivers at the policy level, although when the former enters into force there will be an obligation on Parties to endeavour to apply its provisions to policies and legislation. As to the SEA Directive, the debate over the exclusion of policy may be parked until at least 2009 when the Commission must report on the first five-years of application of this framework and, if appropriate, provide proposals for its amendment and possible extension to other areas (Preamble citation (20)). In the interim, the implementation of the SEA Directive will worth monitoring to see if the policies embedded in plans or programmes are captured de facto even though excluded de jure.

4.3 A Typology of SEA application

Based on international experience, several different types of SEA procedural or institutional models can be identified. These have been variously classified and described. In Table 3 below, the SEA approaches adopted by different countries and international organizations are organized into four main categories:

EIA mainframe – SEA is either a) is closely modelled on or b) applied as part of the procedural requirements of EIA legislation. This category dates back to NEPA at the programmatic level; more recently it is exemplified by the SEA Directive and SEA Protocol.

EIA modified/appraisal style – SEA is carried out a) as a process separate from the EIA system and b) using modified procedure and elements of approach in the manner or having the characteristics of policy appraisal. This convergence of styles is manifest in several processes that are linked to Parliamentary or Cabinet decision making (e.g. respectively Denmark and Canada). In some cases, SEA is carried out with other policy tests (Netherlands) or as part of a broader assessment (Norway, UK).

Table 3: SEA architecture: institutional models and examples

Institutional model	Examples
1) EIA-mainframe	SEA Directive, SEA Protocol, USA, Czech Republic, Finland, Slovakia, Poland, Australia, Western Australia, World Bank (OP/BP 4.01 applications)
2) EIA-modified	Canada, Denmark, Finland (legislative proposals only), Netherlands, Norway, UK (informal application), World Bank (OP 8.60 applications)
3) Integrated land use/ resource management	New Zealand (comprehensive approach), Australia (fisheries specific), UK (SEA/SA integration with land use planning)
4) Integrated assessment/ Sustainability appraisal	European Commission, UK (RIA process, SEA/SA), Australia (ad hoc application), Hong Kong SAR

Source: Sadler (2005)

SEA as an integral part of land use/resource management – SEA is either a) woven generically into a tiered system for land use and resource planning or b) applied specifically as part of the preparation of a specific resource strategy. The New Zealand process of effects-based policy and plan-making to set the context for resource consent corresponds to the former criteria; the mandatory requirement for strategic assessment of all export or federally managed fisheries in Australia meets the latter definition.

Integrated assessment/sustainability appraisal (SA) – SEA is superseded by or incorporated within a broader process of impact assessment or appraisal of the environmental, economic and social effects of policy or legislative proposals. Still emerging, forms of this approach are in place in the European Commission, the UK and Hong Kong SAR. Elsewhere, there are examples of ad hoc application, notably in support of regional forest policy agreements in Australia.

5. North Americal Experience with SEA

A considerable body of SEA operational experience has been accumulated in North America. No other region has a comparable track record. In the US, federal departments and agencies have carried out ‘programmatic impact statements' as part of NEPA implementation since the early 1970s and California has a similar record. As noted earlier, in the early formative stage of SEA, this was the only primary example of process application, although Canada was also among a handful of other countries that undertook this approach de facto and occasionally in the form of EIA of large scale projects that incorporated policy or planning presumptions or preemptions. Canada was also the first country to establish an SEA system separately from and parallel to EIA. The two countries thus have contrasting approaches that makes comparison of their experience of interest, not least because it exemplifies application of the EIA-mainframe and EIA-modified institutional models (Table 3).

5.1 Aspects of US Experience

The National Environmental Policy Act (NEPA 1969) applies to "proposals for legislation and other major federal actions significantly affecting the …environment.” It has been interpreted by the Council on Environmental Quality (CEQ 1986) as applying to policies, plans and programmes. CEQ Regulations on NEPA implementation (1978) set out procedures that apply generically to all proposed actions and give specific guidance on the preparation of 'programmatic environmental impact statements' (PEIS) for broad federal actions, such as the adoption of new land use plans or sector programmes (e.g. at Section 1052.4(b)). Typically these will include actions that can be grouped regionally, generically by stage of technology development, or which are otherwise connected (e.g. by reference to potential cumulative effects).

Although this approach is long standing, the contemporary use of PEIS remains limited in comparison to other types of NEPA application comprising only a small proportion of the c.500 draft, final and supplemental EISs that are completed each year in the USA (Clark and Richards 1999). Some commentators consider this approach to be under-utilized given its widely acknowledged value in considering alternatives and addressing the cumulative effects of subsequent projects and activities. PEIS provide a framework for any further EIA of individual

projects, and subsequent requirements for analysis can be 'tiered' to results of the PEIS. This is acknowledged to save time and resources, particularly where there is a multi-stage sequencing of activities.

Table 4: Types of actions addressed in NEPA programmatic analyses

Category of Action	Description	Examples
Policy or strategy	National or regional analyses that establish programme goals and objectives.	Tennessee Valley Authority "Integration of NEPA into a Comprehensive Environmental Management Systems". Bonneville Power Administration "Business Plan" - an example of use in "Longview Energy Development Plan".
Land use	Integrated planning analyses for a geographical or landscape area - may prescribe general standards and controls and procedures for project implementation	White River National Forest Plan and EIS . APHIS - "Bison Management Plan for Montana and Yellowstone National Parks".
Programs	Resource plan or programmatic-analyses that decide future priorities for development and scheduling and set controls for implementation of site-specific actions	Animal and Plant Health Inspection Services - "Rangeland Grasshopper and Mormon Cricket Suppression Programme" Bonneville Power Administration - "Fish and Wildlife Improvement Plan"

Source: Clark (pers comm), cited in Dalal-Clayton and Sadler (2005)

PEIS vary substantially in their strategic focus and in the way that agencies use and adapt the approach. A study of the effectiveness of NEPA after its first 25 years of operation noted that the process was rarely used to formulate specific policies and was often skirted in developing programmes (CEQ 1997). More recently, the use of 'programmatic analyses and tiering' was one of five key themes addressed in the report of the NEPA Task Force (2003). It noted that this approach was used in a variety of ways and decision contexts and summarized the continuum of actions addressed in PEIS or related documents in three main categories (Table 4). It also emphasized that there are no clear-cut boundaries and some activities might fit into more than one category. (NB this typology also refers to SEA-type applications at the policy level that are not labelled as programmatic and may challenge some of the conventional wisdom about NEPA).

The NEPA Task Force (2003) also reported that the use of PEIS are increasing at most government levels, their coordination is improving and most federal agencies view these processes positively. Specifically they are considered to be particularly valuable to address issues at the broad landscape, ecosystem or regional level, pointing agencies toward environmental law or policy obligations such as the protection of threatened and endangered species. However, there is also considerable criticism and public concern about aspects of

programmatic analysis. Some agencies reportedly have abandoned the concept of tiering, concluding that it is ineffective and inefficient (a finding that challenges the conventional wisdom on SEA that accords tiering an iconic status).

5.2 Aspects of Canadian experience

As a formal procedure, SEA in Canada is undertaken primarily at the federal level (although elements of this approach can be recognised in the EIA systems of certain of the provinces and territories). The federal process was established by Cabinet Directive (1990), making it one of the first of the post-NEPA generation of SEA systems. It was established as a non-statutory procedure, separate from EIA legislation, and intended to be applied flexibly and pragmatically to integrate environmental considerations into policy and programme proposals submitted to the federal Cabinet or considered by individual Ministers of state on their own authority.

SEA is thus applied at the highest level of political decision-making in Canada and represented a major innovation at the time it was introduced. In practice, however, SEA implementation was and remains ad hoc and uneven, limited by insufficient awareness and uneven application on the part of the federal departments and agencies responsible for subjecting proposals to this process. Early principles of discretion and flexibility were intended to encourage the use of approaches and procedures suited to circumstances. Over time, this has not proven to be the case as a number of reports have shown, most tellingly a series of recent audits by the Commissioner for the Environment and Sustainable Development (CESD most recently 2004), which registered much higher on the scale of political attention than the earlier procedural reviews of the Canadian Environmental Assessment Agency.

In response to the initial reviews of the Commissioner, a revised Cabinet Directive on SEA was issued to clarify the obligations of federal departments and agencies in implementing this process and to link it more firmly to their statutory obligation to prepare and implement sustainable development strategies (introduced in 1997). Updated guidelines for implementing the SEA process were prepared by the Canadian Environmental Assessment Agency in 2000 with minor revisions in 2004. Current guidelines still place a premium on an approach that is flexible (applicable to a variety of policy settings), practical (not necessarily requiring specialist skills) and systematic (based on logical, transparent analysis and on current, proven good practices within federal departments and agencies). They also emphasize that SEA should be "linked with the ongoing economic and social analyses on the proposal" and note that there is no single "best" methodology for conducting an SEA of a policy or plan proposal. Rather departments and agencies are encouraged to "apply appropriate frameworks or techniques, and to develop approaches tailored to their particular needs and circumstances" (following a general two-stage process).

The most recent CESD audit provides a sobering picture of SEA implementation (Box 3). Many departments are reported to be making slow and unsatisfactory progress in implementing the Cabinet Directive on SEA and, at best, achieve mixed results. In its fundamentals, this trend has changed little from earlier reviews of SEA practice (which reported a pattern of ad hoc compliance). Three conclusions stand out from the latest review (CESD, 2004):

- most departments and agencies do not know how their assessments have affected the decisions made or what is likely to be the ultimate impact on the environment;
- because there is little assurance that 'environmental issues are assessed systematically, it is questionable if Ministers and the Cabinet receive sufficient information to make informed decisions' on proposals put before them; and
- basic mechanisms for SEA monitoring and follow-through to provide this information are not yet in place (i.e. 14 years after the SEA system was established).

The CESD audit also drew attention to important variations in SEA practice and performance across the federal government. Perhaps most significantly, it found that certain departments with development mandates had made better progress than those with a stronger environmental mission. Although SEA implementation across government was generally wanting, the review also indicated at least some recent assessments demonstrated elements of SEA good practice (CESD, 2004). These cases were not detailed but certainly would include the SEA of the policy moratorium on west coast offshore oil and gas development (see companion paper).

Box 3: Audit of SEA implementation in Canada

According to a 2004 audit, the Canadian SEA system has structural and operational weaknesses that call into question its effectiveness in meeting basic procedural and environmental objectives. These limitations are caused by three types of gaps:

- Institutional gaps associated with the minimal level of the procedural requirements and from dependence on the good faith of implementing agencies. The measures for quality control in the SEA process are decentralized and insufficient to ensure full compliance or best effort.
- Implementation gaps related to poor levels of compliance with the Cabinet Directive and the SEA Guidelines. When commitment is lacking, the flexibility in approach that is encouraged to promote adaptation of SEA to the circumstances of policy and plan making becomes a licence for superficial consideration of environmental concerns.
- Information gaps underlie the limited contribution of SEA to decision making and to environmental protection. There is no assurance that the SEA system provides sufficient information to make informed decisions.

Source: CESD 2004

6. Future Directions: From SEA toward Sustainability Appraisal (SA)?

Currently, SEA is applied primarily as a means of minimising the adverse environmental effects of the implementation of proposed strategic actions. In that regard, SEA can be seen as a necessary but not sufficient mechanism for promoting sustainable development. Recently, considerable attention has been given to the role of SEA as a means of sustainability assurance, which some consider to be a 'third generation' approach in the context of EIA history. For summary purposes, this emerging framework reflects two main lines of approach, currently parallel but ultimately converging.

The first avenue is represented by attempts to strengthen and better focus SEA as a process for environmental sustainability assurance (ESA, Sadler 1999). Guidance on this process draws on established sustainable development objectives, principles and criteria to evaluate the significance of environmental effects against either 'top' or 'bottom' lines, respectively defined by policy ends to achieve and thresholds to avoid. As a form of assurance, such tests are likely to be highly approximate and at best indicate whether and to what extent development options and proposals are moving in the right or wrong direction in relation to environmental sustainability. Operational interpretations of this concept can draw on a number of sources including fundamentals of sustainable development as outlined in Agenda 21 or national strategies, use of demand (or precautionary) and supply-side (or capacity-based) principles of "strong sustainability" to safeguard critical source and sink functions; and selection of relevant criteria and indicators to be incorporated into an environmental sustainability test.

The second avenue leads toward integrative assessment of the economic, environmental and social effects of development options and proposals and their implications for sustainability assurance. As noted earlier, some countries have established such a process already and many observers assume the transformation of SEA into SA to be the future direction of the field. Others worry that this trend risks marginalising the environment if SEA is subsumed within SA as a limited or non-transparent process (e.g. Sheate 2003). This does not appear to be the case in the UK system of sustainability appraisal, which reflects the requirements of the EC Directive. However, it is not yet clear how effectively economic and social effects are treated in this process. More generally, many issues regarding the framework and methodology for undertaking integrated assessment remain to be resolved, and particular attention needs to be given to ways and means of relating and reconciling the economic, environmental and social dimensions of proposed strategies such as rules for trade-off among triple objectives and bottom lines (Gibson et al 2005).

7. Conclusions

The rapidly increasing use of SEA has been the most striking feature of the last decade in the field of impact assessment. It has been both product and cause of developments and innovations in law, process and institutions, and, by any standards, SEA practice is on a much sounder footing than a decade ago when it was subject to review as part of an IAIA effectiveness study (Sadler 1996, Sadler and Verheem 1996). Much has been achieved but much remains to be done, particularly to improve the quality of analysis and information, the value of SEA for decision-making and the role and contribution of the process in safeguarding the environment and supporting sustainable development. New directions for SEA include the development of a more systematic approach to environmental sustainability assurance, which should provide a basis for moving with confidence toward a process of integrative assessment.

The relevance of these trends for China, both in terms of the progress made in SEA application and outstanding issues, come into sharp focus when viewed against the report of the Standing Committee of the National People's Congress 2006 on the state of the environment and the 11th Five Year Plan, which, inter alia, calls for a reduction in emissions of major pollutants to 2010, improvements in energy and resource efficiencies per unit GDP and rates of municipal solid waste generation to be capped. SEA is a frontline instrument for getting there

from here but its implementation in China is still at an early phase. As and where possible, this process and the capacities and skills necessary to deliver it might draw on lessons of experience with SEA internationally. Specifically, the purpose of SEA is to provide information for sound decision-making and ensure the environmental impacts of development proposals are within safe margins and damage to natural resources and ecological functions is avoided, mitigated or otherwise offset. Methodology, procedure and reporting are means to that end; a point often forgotten in many western countries.

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The Experience with SEA in Europe

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1. Introduction

SEA (Strategic Environmental Assessment) processes and approaches in different countries around the world mirror prevalent decision-making systems and supporting instrument. Rooted in the experience gained with project's EIA, SEA evolved at times deeply immersed in the rational of planning and policy-making, particularly where these have established strong bridges with the project's development process.

In Europe this used to be the situation before the adoption of the European Directive 2001/42/EC, whereby a large part of the emerging SEA systems in european member states were exactly linked to their respective policy-making and planning contexts (for example in the UK, Denmark, the Netherlands, Sweden, Finland, France, Belgium, Germany and Austria) and often as different from each other as the respective public decision-making culture in policy-making and planning.

The issue of the environmental impact assessment of policies, plans and programmes was on the European political agenda ever since the first discussions on the Directive on project's EIA took place in 1975. As well known and debated, the 1985 Directive was limited to projects assessment provided difficulties in establishing a common understanding across european members states at how policies, plans and even programmes could be addressed with respect to their environmental impacts (Feldmann, 1998). The debate went on while the five years review on the implementation of the 1985 Directive undoubtly evoked the absence of EIA applied to earlier stages of decision-making as largely responsible for the deficiencies of project's EIA.

That conclusion was crucial for the last effort undertaken by the European Commission and member states to finally come up with an european directive on the environmental effects of certain plans and programmes in 2001. By then, however, SEA had taken off and several different approaches were in place, shaping SEA in Europe in a multitude of forms.

2. SEA in Europe – One Instrument, Multiple Concepts

The situation regarding SEA in Europe could be described as a living laboratory of multiple concepts, and consequent forms, of SEA. Before 2001 SEA evolved in Europe in the absence of an umbrella model of SEA. During that period approaches to SEA shaped across Europe, both in member states and also within the EC, creating multiple concepts around one single instrument - SEA.

Europe therefore exhibited, before the adoption of Directive 2001/42/CE (EC, 2001), how SEA could, and should shape, to be more adapted to different decision-making systems.

SEA is frequently identified in the literature as the assessment of the environmental effects of policies, plans and programmes. While this can be quite sufficient to identify the instrument, it certainly is very short to identify its concept.

When looking at the practice with SEA in different European member-states, the approaches to SEA that can be observed are, often (1) linked to land-use planning and sectoral planning and management approaches (for examples the ICZM - Integrated Coastal Zoning Management) or (2) directly addressing planning proposals for specific contexts (e.g. coastal planning and development or transport corridors).

The EC in particular has been promoting the (3) use of SEA notably in the context or coastal erosion (EC, 2004), Structural Funds (EC, 1998), Trans-European Transports Network (EC, 1999), and the assessment of commission sectoral policies (EC, 2002a and b), often known as the Commission IA communication.

Regarding the concept of SEA, and as illustrated by the above paragraphs, three different concepts of SEA can clearly be distinguished as they are being used across Europe:

- SEA integrated in sectoral planning and strategic management instruments to facilitate the planning processes, particularly to generate development options that have less negative impacts and consequently can be more sustainable;
- SEA as a reactive impact assessment instrument addressing planning and programme proposals as they are formulated, to assess their impacts and make recommendations to avoid or minimize impacts, before final decision is taken;
- SEA as an environmental policy instrument through which environmental problems get deserved attention and can be addressed in a wider range of policy and planning sectors in view of sustainable development.

In the case of coastal areas the EC (2004) exposes 8 principles in formulating national strategies for integrated coastal zone management (ICZM):

- A broad overall perspective
- A long-term perspective
- Adaptive management
- Local specificity
- Working with natural processes
- Involving all the parties concerned
- Support and involvement of relevant administrative decision levels
- Using a combination of instruments

These clearly expose the more political, governance driven character of SEA, as opposed to the technical, project oriented nature that characterizes environmental impact assessment (EIA). This may also be the difference between using SEA for its benefits as a strategic facilitator of sustainability processes, as opposed to applying SEA to ensure legal compliance with environmental requirements (Partidário, 1999; Bina, 2003; Partidario, 2005).

Since its adoption, the EU Directive 2001/42/CE, as a formal requirement, is seen as the umbrella model that should drive SEA practice in European member-states, however not necessarily directed at the European Commission practice on SEA. In theory the EU directive enables for all three ways of potential use of SEA and also for the principles above described, however the way Directive requirements are set tend to favour the second concept of reactively

assessing the impacts of formulated proposals, missing the capacity to actually influence the design of planning and programmatic proposals.

The question is whether this concept of SEA will not lead to the loss of legacy of good SEA practice that years of informal SEA practice in European member-states have created. The threat, as it appears likely, is that practice in most member-states will be following the minimalist implementation of SEA to fullfil the directive requirements, as Emmelin and Lerman (2005) describe for the particular case of Sweden, and will be adopting piece-meal approaches driven by the preparation of the required environmental report.

The following sub-sections address pre-Directive approaches to SEA by different selected Departments in the European Commission, the main requirements of the Directive 2001/42/CE, followed by the experience with SEA in a selection of member-states, before closing with comments forward-looking the future of SEA in Europe.

2.1 Approaches to SEA in the European Commission

The European Commission (EC) has been promoting the use of strategic forms of impact assessment in multiple ways, led by different motivations, and in many cases presented in the context of integrated approaches. The EC adoption of SEA is therefore a good example of how SEA can be amenable to so many different interpretations, some perhaps more strategic than others, but all so apparently relevant.

While there are various experiences worth exploring this section will focus particularly on three major experiences within the EC: the application of SEA to the regional development and cohesion policy, the application of SEA to transports network and infrastructures and the adoption of impact assessment to address EC policies.

SEA, Cohesion Policy and structural funds

A first and earlier adoption of SEA in the European Commission was led by regional development allocation of structural funds and the need to strategically assess proposals presented by member-states. The application for funding, through regional development plans proposed by member-states, was originally focused on economic development objectives, establishing strategic objectives and the framework for the future development of the region. But since 1993, with the adoption of specific regulatory requirements concerning the prior assessment of the environmental impacts of regional plans (Regulation EEC 2081/93), regional plans submitted under objectives 1, 2 and 5b were required to submit an assessment of their impact on the environment (Bradley, 1996).

Since 1993 all cycles of regional development requesting european funding have gone through these specific regulatory requirements, also in the framework of the Commission Cohesion Policy and Environment adopted in 1995, leading notably to the preparation and publication, in 1999, of a handbook to assist member-states in the preparation of their environmental assessments of regional development plans and EU structural funds programmes (EC, 1998). Directive 2001/42 deliberately excluded plans and programmes co-financed under the programming period 2000-2006, and until recently the two processes were seen separately, albeit overseen by DG Regions, with guidance provided by DG Environment.

For the 2007-2013 programming period however, and for the first time in the Cohesion Policy history, the requirements of Directive 2001/42/EC of the European Parliament and of the

Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment will apply to plans and programmes prepared for Cohesion Policy funding, and a dedicated handbook for SEA for Cohesion Policy 2007-2013 has been recently issued (GRDP, 2006).

SEA and European Transports

Equally relevant has been the adoption of SEA in the context of the trans-European Transports Network (TEN), under the leadership of DGTrans. Following efforts developed since 1990, in 1996 EC guidelines for multi-modal TEN were adopted (Decision 1692/96/EC) (Dom, 1998). In these guidelines SEA was considered an integral part of decision-making process for transport policies, plans and programmes, to link environmental assessment (article 8) with socio-economic assessment, particularly regarding transports infrastructure and investment decisions of the whole network and individual corridors.

Following a Green Paper on the Impact of Transport on the Environment, published in 1992, and which initiated the public debate on the issue of transport and the environment and the proposed strategy for sustainable mobility, the Common Transport Policy Action programme 1995-2000 provided for the development of SEA methodology and SEA corridor studies and the establishment of a system for environmental analysis (Dom, 1998).

Examples of studies undertaken include the SEA for the High-Speed Railway (HSR) network, the development of scoping and methodological aspects of SEA, reviews on state-of-the-art on SEA for transports infra-structures and many others, mostly led by DGTrans but also by DGEnv. Five pilot studies were conducted on the use of SEA to multi-modal transport corridors, which showed quite different approaches to SEA, many revealing a methdological application closely related to the experience with project's EIA (ERM, 2001).

In 1999 a Manual on SEA of Transport Infrastructures Plan was issued by DGTrans (EC, 1999). After several years of limited application of this manual, application DGTrans decided to commission another SEA Manual, this one to comply with the requirements of the 2001/42/EC Directive. A Sourcebook on SEA of Transports Infrastructure Plans and Programmes has recently been developed under the Beacon research nertwork programme and was disclosed in February, 2006 as a web document, waiting final EC adoption.

Impact Assessment Communication

In 2002 the EC introduced a new Impact Assessment (IA) tool to improve the quality of the policy development process (EC, 2002a and b). The process was set out in the Commission's Communication COM 2002/276 on IA, issued on the 5th June 2002. It applies to all major policy proposals adopted by the Commission, i.e. those listed in its Annual Policy Strategy or its Work Programme.

Introduced as an aid to political decision, the IA tool is conceived as an integrated tool to reinforce, streamline and replace all existing separate assessment and to create better informed decision contexts, notably by improving the assessment of trade-offs and comparison of different scenarios when deciding on a specific course of action, in particular where trans-sectoral dimensions are involved. It is generated in the framework of the Better Regulation Package and the European Sustainable Development Strategy, introducing two important political considerations:

- first to consider the effects of policy proposals in their economic, social and

environmental dimensions;

- second to simplify and improve the regulatory environment

A review of its effective application revealed the complexity of the assessments and longer preparatory phases, and also the need for equivalent practices in member-states and in the other institutions that input into the Community's legislative decision-making process. Steps and measures to improve the IA framework and to refine the IA method are set out in a Commission Staff working paper (SEC(2004)1377 of 21 October 2004), particularly in relation to:

- The need for a better achorage in the ESDS and Lisbon objectives
- The strengthening of the IA tools and methodology (e.g. need for better assessment of competitiveness factors)
- The quality of IA namely regarding improved assessment of trade-offs and inter-linkages between impacts, improved quantification and guidance
- The process of IA and the need for simplification
- Better consultation particularly, the involvement of other concerned services

The experience regarding the Impact Assessment in the Commission policy proposals suggests similar principles and approaches to those found in the use of Regulatory Impact Analysis (RIA). The use of this impact assessment policy tool has been criticized for being extremely vague and superficial, even for policy levels, a critique apparently made by the Institute of European Environmental Policy (IEEP) and the European Environment Agency (EEA) in a draft, unpublished, review conducted in 2004.

2.2 The European Directive 2001/42/EC

The Directive 2001/42/EC of the European Parliament and of the Council, of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment, entered into force in July 2001 (Official Journal L 197) (EC, 2001). Art. 13 of the Directive obliges the Member States to implement the contents of the Directive by July 21st 2004. By that date about nine Member-states had implemented national legislation to transpose the Directive. The first Commission's report on the application and the effectiveness of the Directive must be submitted to the European Parliament and the Council before 21 July 2006. By this date most probably a large majority, but not all, of the Member-States will have transposed the Directive.

The Directive 2001/42/EC was the result of a long and intense negotiation process between the EC and Member-states. For reasons well documented (Feldmann, 1998; Feldmann, et al, 2001), the need to require the environmental assessment of policies, plans and programmes was early recognized, during the preparation of Directive 85/337/ECE on the environmental impacts of public and private projects, but the full-flesh preparation of the Directive did not start before the late 1990's.

The EU is a single market made up of a significant proportion of developed countries, and is a major force internationally. The EU legal and policy framework on the environment and sustainable development has Europe-wide and global dimensions, as well having direct application to member states and accession countries.

Well promoted worldwide, the European Directive 2001/42/EC, on the assessment of the effects of certain plans and programmes on the environment, is currently considered the most visible EU approach to SEA. The Directive is introduced at a time when the practice of SEA

within the European Commission and across member-states was, in cases, quite consolidated. The need to agree on basic requirements that would apply in a equal manner in all Member-states have led to significant changes in national jurisdictions, in some cases leading to the introduction of formal requirements, in others determining significant modifications to established good practice.

The objective of the Directive clearly underlines the integration for sustainable development as its key mandate: "…to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development." (Article 1). These aims are consistent with the general objectives of the Community policies on sustainable development, as laid down in the EC Treaty. The Directive requires environmental assessments to be carried out for a range of plans and programmes likely to have significant effects on the environment. The Directive however does not specify *how* the assessment process should be carried out, nor *what* the end-products should look like which leaves scope for multiple interpretations of how practice may unfold.

The provisions of the Directive are mainly of a procedural nature. This means that the Directive rules the procedural steps, requirements and consequences, starting with screening and ending with the monitoring of plans' and programmes' implementation. Participation and consultation rights deserve a particular attention in the Directive. Environmental assessment is defined in the Directive 2001/42/CE as a procedure that entails the following tasks:

- the preparation of an environmental report on the likely significant effects of a draft plan or programme, that documents the plan or programme and relevant alternatives, the environmental baseline, links to other plans and programmes and environmental objectives, the likely environmental effects of the plan or programme, proposed mitigation measures, and a monitoring programme (Article 5 and Annex I);
- carrying out consultation of environmental authorities on the draft plan or programme and the accompanying environmental report about the scope of the environmental report; and with the interested public, authorities with environmental responsibilities and other eventually affected countries (in case transboundary effects can be expected) once the environmental report has been prepared (Articles 6 and 7);
- taking into account the environmental report and the results of consultation in decision making, and providing information on how this was done (Articles 8 and 9); and
- providing for monitoring the environmental effects of the plan or programme (Article 10th) and
- ensuring the verification of the quality of the environmental report (Article 12).

The Directive makes the assessment mandatory for plans and programmes:

- which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent for projects listed in Annexes I and II to Directive 85/337/EEC (the "Environmental Impact Assessment (EIA) Directive)"; or

- which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC (the "Habitats Directive")

The environmental report is a key element of the environmental assessment required by the Directive. Where environmental assessment is required, an environmental report must be prepared in which the likely significant environmental effects of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.

The information to be included in the environmental report is listed in Annex I to the Directive and includes, among other things:

- the environmental protection objectives relevant to the plan or programme;
- the relevant aspects of the current state of the environment (i.e. without implementation of the plan or programme);
- the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, and the interrelationship between these factors;
- the mitigation measures envisaged; an outline of the reasons for selecting the alternatives dealt with; monitoring measures envisaged;
- a non-technical summary of the information under all the headings in Annex I.

The great benefit of this Directive is certainly to get plans and programmes as focal points for integration of environmental issues for sustainability process. This will impose the need to review planning and programming processes in order to improve the quality of plans and programmes regarding environmental concerns. However, as it stands, and for reasons that relate more to the politics of the decision context that supported its development, this Directive calls on EIA mentalities, practices and procedures to operate the assessment, which could be argued to be the least effective way to deal with highly complex strategic decision-making processes (Dalal-Clayton and Sadler, 2005; Partidário, 2005; Sheate et. al., 2005).

In fact the SEA expression never apears throughout the text of the Directive, and therefore the legitimacy of using the expression SEA to name this Directive could be questioned. There is very little in the Directive that calls on notions of strategic processes and approaches, and if it wouldn't be for its application to plans and programmes, not much would differ in this Directive from other requirements regarding project's EIA which is well-observed by Sheate, et al. (2005), in their comparative review of Directives 85/337 and 2001/42 and the identification of multiple cases of overlap in the requirements of the two Directives.

Other authors in the literature on SEA offer different views on the Directive. Jones et.al. (2005) consider that the Directive sets out a broad discretionary framework, defining desired outputs rather than specifying particular methods. Glasson and Gosling (2001) refer to a compromise lowest common denominator, to which Risse et al. (2003) agree stating that the general requirements are not restrictive and leave ample room for creativity, flexibility and adaptibility to suit each member's state context. Dalal-Clayton and Sadler (2005) on the other hand refer to a standardization of approach to SEA of plans and programmes modelled on the EIA Directive, which overtime will reshape the way plans and programmes are made in Europe

to infuse the environment in all aspects of preparation and implementation however this will be a tall-order and a long-term goal.

3. Overview of European Countries Approaches to SEA – Different Approaches

The history of SEA worldwide, but particularly in European member-states, is inevitably, and profoundly, marked by the adoption of Directive 2001/42/CE. Two periods can therefore be clearly distinguished for selected European countries: before and after Directive 2001/42/CE.

Before the Directive 2001/42/EC SEA was strongly linked to land-use planning and policy evaluation practices, which influenced the nature, method and procedures used in SEA. Formal requirements for SEA existed within EIA, land-use planning or other sectoral legislation in various European member-states, notably the Netherlands, France, Finland, Denmark, Sweden, Slovakia, Poland, Hungary, Check Republic, regions of Spain and Italy.

Interesting features in SEA practice included voluntary approaches, the link to sustainable development frameworks at national, regional and local levels, the key role determined by the context provided by national environmental plans, integration in sectoral development, the use of provisions for spatial, landscape planning and zoning planning or building-permit, different models and requirements for environmental reporting, monitoring, communication and environmental awareness. A good overview of the pre-Directive situation is provided in Dalal-Clayton and Sadler (2005).

The pre-Directive experience shows a wide scope in the areas of application of SEA, ranging from SEA applied to government bills and other proposals to Parliament (for example in Denmark and in the Netherlands with the Environmental-test), to economic strategies and proposals to European Structural Funds, physical or land-use planning (municipal and regional), town planning and building schemes, and accross multiple sectoral planning and programmes on:

- Transports
- Energy
- Waste management
- Water development
- Forestry
- Mining

Trends and models for SEA after the Directive 2001/42/EC reflect the adoption of new legal requirements, through new acts or modification of existing provisions, and the subsequent practice in accordance with the requirements of the Directive. The absence of a dedicated site in the EU web page makes it difficult to know what is the exact situation with respect to the implementation of the Directive in each Member-State, however Jones et al (2005) attempted to provide some insight into progress of adoption of Directive requirements for the specific sectoral case of land-use planning, while Sheate et al. (2005) provide a detail review over the situation in seven member-states..

Member-states that have formally adopted the Directive include Austria (transports sector and amendments of sectoral acts), Cyprus, Check Republic, Denmark, France, Germany, Hungary, Ireland, Italy (some regions), Letonia, Lituania, Malta, Portugal, Slovakia, Spain,

Sweden, United Kingdom (separately for England and Wales and Scotland). Few cases, such as the Scottish and Check examples, manage to go beyond the scope of the Directive, notably by explicitely requiring the SEA for policies. Others are limited to a single article requiring the assessment of plans and programmes in the EIA legislation.

The following examples illustrate briefly how the situation evolved in the respective countries following the enactment of the requirements of Directive 2001/42/CE for a selection of member-states. Sheate et al (2005) provide more extended information on some of these examples, while addressing other examples not mentioned here (such as Austria, France, Germany, Ireland and Sweden).

Czech Republic

Genesis: Despite a strong planning system, the integration of environmental issues in plans and programmes was not required except for regional development plans supporting application to structural funds. This practice provided for the genesis of SEA in Czech Republic.

Scope of application post-Directive: EIA of concepts (any strategies, policies, plans or programs elaborated by public authorities at all levels of government) or submitted to them for approval even if their elaboration is not required by laws or administrative decisions.

Legal framework and Institutional framework: Amendment in 2004 of the Check EIA Act of 2001 under the responsibility of the Ministry of the Environment.

Denmark

Genesis: Land use planning was first regulated in 1925 and since the Planning Act of 1973 there was strong public involvement, rules for EIA, and the Ministry of Environment veto capacity. Influenced by such a strong planning system since the early 70's, the integration of environmental issues of plans and programmes was ensured through the Planning Act of 1999, including the requirements for project's EIA, in what was initially called environmental zoning. Policy assessment, through the environmental assessment of government legislative proposals, was also in place since 1993. From 1997 the preparation of a separate SEA report was required by planning requirements.

Scope of application post-Directive: Adoption of specific legal requirements in 2004 (SEA Act), follow strictly Directive requirements. However the SEA Act is overruled when other legally prescribed planning and programming activities comply with its substantive and procedural requirements (e.g. public participation). The SEA Act will be carried out largely for physical plans.

Legal and Institutional framework: Before the Directive an Administrative Order of the Prime Minister required an environmental assessment of all proposals submitted to parliamentary approval since 1993. The responsibility lied with the Ministry for the Environment. For plans and programmes responsibility stayed with competent authorities under the Planning Act. After the Directive a new SEA Act was adopted in 2004 on the environmental assessment of plans and programmes.

The Netherlands

Genesis: Similarly to the USA, the Netherlands initiated the SEA practice through the project-based EIA procedure extension to apply to the assessment of plans and programmes.

However at the level of policy assessment a different system, called the E-test (environmental-test), was established. The Dutch have been at the forefront of SEA in Europe.

Scope of application post-Directive: Following the Directive, the new system is essentially the same as in previous practice, adapting to the scale and flexibility of plans and programmes that are subjected to assessment. It is still unclear what will happen with respect to legislative proposals previously undertaking the E-test.

Legal and Institutional framework: The Environmental Impact Assessment legislation of 1987, and subsequently the Environmental Management Act of 1998 provided the legal context for both EIA and SEIA, under the administration of the EIA Commission. The E-test was based on an administrative order jointly issued by the Ministry of Economy and Ministry of Environment.

United Kingdom

Genesis: Before the Directive, influenced by a strong planning system since the early 70's, the integration of environmental issues in plans and programmes was achieved through the Town and Country planning process. The UK took a leadership role in SEA in early days by establishing the terminology but also by establishing guidance for good practice in SEA since 1991 (with further guidance issued in subsequent years) on policy appraisal, environmental appraisal of development plans and sustainability appraisal of regional plans.

Scope of application post-Directive: Regulations transposing the Directive into UK laws differ for England, Wales, Scotland and Northern Ireland, and were issued in 2004, in all cases applying specifically to plans and programmes, except for Scotland where the scope of application includes policies. In addition the Planning and Compulsory Purchase Act 2004 in England includes the requirement for mandatory sustainability appraisals. In 2004 new guidance was published on sustainability appraisal, integrating SEA requirements, while sectoral guidance has also been prepared for sectoral plans.

Legal and Institutional framework: The Office of the Deputy Prime Minister set the guidance on SEA in 2004, following closely the wording of the Directive, while respectively the English, Wales, Scottish and Northern Ireland Parliaments have adopted regulations in 2004 for the environmental assessment of plans and programmes.

4. Final Comments

This paper has undertaken a wide approach to the concept of SEA in Europe. It has attempted to highlight existing models and experiences with the application of SEA in the European Commission and Member-states, particularly those that evolved before the enactment of the Directive 2001/42/CE. Such experiences evoke the potential inherent in SEA as a decision-making support approach, which is driven by sustainability objectives, unfolds as a process, addressing objects of strategic nature, playing a major proactive role, and linking closely to decision-making systems and to the needs of strategic decisions.

The purpose of the approach was to help demonstrate that SEA, within the European Union, is not limited to the concept established in the Directive 2001/42/EC on the effects of certain plans and programmes on the environment, as sometimes the literature seem to imply albeit it is

recognized that the strength of the EU policies worldwide are likely to induce such understanding.

The current situation regarding SEA in the Europe Union is clearly going through a transition period, while in most cases member-states recent requirements for SEA generally follow strictly the requirements of the Directive, limiting its application to a few sectors, while very few go beyond the scope and requirements of the Directive (e.g. Scotland, Czech Republic).

Progress in different European member-states can be expected to be determined by the influence of past planning and policy experience, with the legacy of planning knowledge and practice with pre-Directive application of SEA playing a significant role in influencing success with the implementation of the Directive (particularly in the cases of Denmark, Sweden, UK or the CEE countries). For the success of implementation it is very important the regulatory, or policy, context that calls on the need to apply the SEA requirements (e.g. National Sustainable Development Strategies in Ireland, policy guiding documents such as the Partnership for better Scotland, etc.). However only time, and adequate review studies can tell.

The Directive major contribution is certainly to place a greater focus on the environmental integration and quality of plans and programmes, by improving planning and programme practice regarding the relationship to sustainable development, the systematic consideration of key environmental elements that will determine the quality of plans and programmes, public participation, institutional consultation, comparison of alternatives, monitoring and review. The Directive sets the minimum framework and where there is past and robust experience with planning and programmatic activities it is likely that the chances of success will increase, while the Directive calls for greater creativity in its implementation. However, where previous practice is more limited and the planning and programmatic systems are less robust, implementation is a greater challenge and its success yet to be seen.

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Strategic Environmental Assessment and the Spatial Planning Process in the Hong Kong Special Administrative Region

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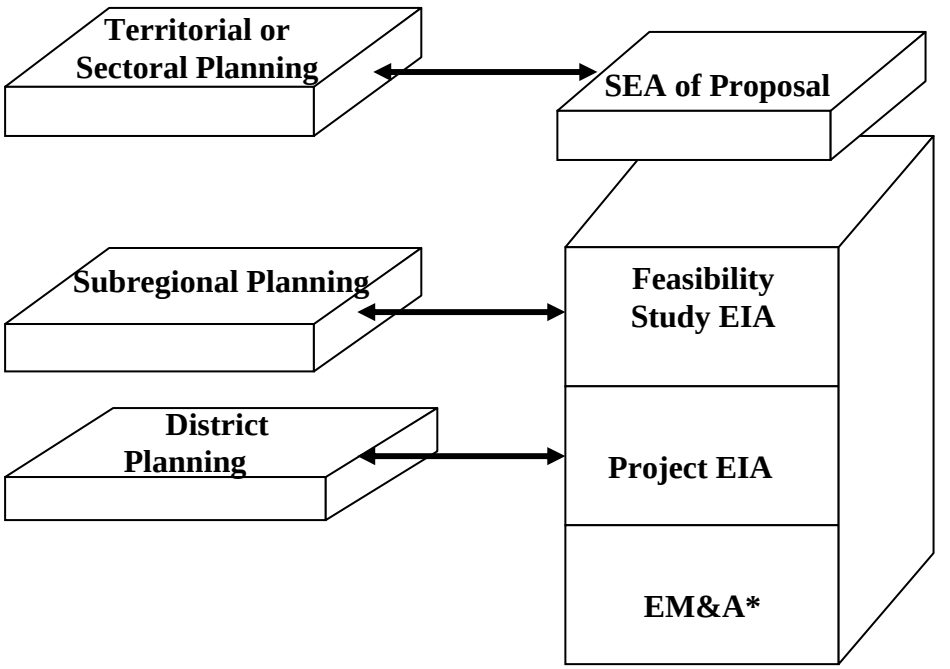
1. Introduction

In the last few decades, the economic growth in Hong Kong has been phenomenal, turning the once relatively small fishing village into a modern metropolis. Developments in Hong Kong are characterized by their high-rise and high density patterns. Many areas in Hong Kong are hilly and the coastline is rugged an indented, thereby creating a number of air sheds and water basins of limited dispersive capacity. The scarcity of land and the associated high concentration of activities give rise to different types of land use conflicts and a unique set of environmental problems.

With a potential increase of population from 6.4 million in 1996 to about 8.1 million in 2011, the associated land use conflicts and environmental stress are likely to be amplified if there is no comprehensive sustainability appraisal of the land use development strategy for the whole of Hong Kong. In response to these challenges, the government has been looking for ways to harmonize the conflicts between development and the environment. An important part of this effort is the emphasis the government places on the better planning of development strategies and the application of Strategic Environmental Assessment (SEA).

2. Land-use Planning and Environmental Assessment of Development Plans in Hong Kong

Hong Kong has a three-tier planning system (Figure 1) comprising of a development strategy at the territorial and the sub-regional levels, and various types of statutory and administrative plans at the district/local level (Planning Department, 2000). Territorial development strategy (TDS) aims to provide a planning framework, which integrates, and to some extent balances, considerations in terms of land use, environment and transport. Such a framework aims to facilitate the preparation of sub-regional and district plans, integrate public policies on major land and infrastructure development, and increase the emphasis on large-scale long-term redevelopment strategy and cross-boundary cooperation.



*Environmental monitoring and audit

Figure 1 Planning Hierarchy and Strategic Environmental Assessment in Hong Kong

Sub-regional development strategies are prepared to translate the TDS into more specific planning objectives and initiatives for all the five specific sub-regions of HK in full. They stand between TDS and local district plans to provide a framework for preparation of more specific and detailed statutory district plans and work programmes. District/Local Plans are formulated and executed through two kinds of statutory plans under the provisions of the Town Planning Ordinance which constitutes outline zoning plans (OZP) and development permission area plans (DPA) along with two kinds of administrative plans; outline development plans (ODP) and layout plans. The OZPs highlight the proposed land-uses, such as residential, commercial, industrial, open space, institutional, green belt, conservation areas or other specified purposes, and major road systems of individual planning scheme areas.

In the last decade, Hong Kong has witnessed an integration of the environmental assessment (EA) process with the spatial planning process (Au, 2000). This is especially noticeable in the preparation of the TDS framework and associated major new development plans. The application of the EA process in the spatial planning process is particularly apparent in the areas of strategic environmental assessment (SEA). This process was instigated largely due to the fact that in 1988, the government issued a circular on the Environmental Review of Major Development Projects, covering new town developments as well as all major projects. Since then, major development plans have been required to be subject to environmental

assessment studies. More than a dozen major environmental assessments of plans or new town developments have been carried out. Examples of such type of strategic-level environmental assessment include the Tseung Kwan O New Town for more than 400,000 populations and the North Lantau Development New Towns for more than 250,000 people (Environmental Protection Department, 2002). Major strategic-level environmental assessments for the strategic growth areas in North West New Territories and North-East New Territories are now being carried out.

This category of environmental assessment activities fits with the definition of SEA in that, unlike project specific environmental assessments, the process aims to assess, at an early stage in the planning process, environmental issues to aid planning decision making, to examine a range of possible alternatives, and to evaluate the likely cumulative environmental implications of the proposals and plans.

A strong link between SEA and the general planning hierarchy (Figure 1) has been developed within the framework of environmental planning standards and guidelines in Hong Kong (Hong Kong SAR Government, 1990). These standards and guidelines provide assistance for planners, architects and engineers in planning and designing major developments in Hong Kong (Au, 1998). The SEAs conducted so far have become an important tool within this set of "environmental yardsticks" available to the planning process at territorial, strategic and sub-regional levels. The planning standards and guidelines also provide for the systematic integration of environmental factors and cumulative environmental concerns into planning decision making (Au, 2000).

Hong Kong's experiences on SEA cover a wide range of areas, including strategic growth areas, territorial land use planning, transportation strategies and policies, and strategic proposals on power generation technologies and siting options (EPD, 1999 & 2004). Examples of Strategic Environmental Assessment of major development strategies are included in Table 1.

3. The Study Case: Territorial Development Strategy of Hong Kong

The Territorial Development Strategy Review (TDSR) was the first application of SEA in Hong Kong providing a comprehensive review of the land use development strategy for the territory (Hong Kong SAR Government, 1995). Commenced in 1992 and conducted in two stages, the SEA of this Strategy was completed in December 1995. It was presented to the Advisory Council on the Environment in July 1996 for consultation. The assessment analysed the environmental implications of more than 20 different alternative development options for different rate and extent of economic and regional development. Throughout the process, the findings of the SEA led to a number of environmentally damaging options being discarded or significantly modified. Examples of modifications included the deletion of potentially damaging development options to the East and South of Hong Kong, areas that are to be preserved for nature conservation, amenity and recreation.

Table 1 Key Examples of Strategic Environmental Assessment Experiences in Hong Kong

Study	Key Sectors Involved	Scale	Dimension of Environmental Issues	Strategic Environmental Concerns and Foci
TERRITORIAL LAND USE PLANNING				
Territorial Development Strategy Review (TDSR)	Territorial Land Use Transportation	Territory wide population from 6.8M in mid-1999 to 8.1M in 2011	Territorial District	Potential environmental implications and acceptability of various development options.
TRANSPORTATION STRATEGIES				
The Third Comprehensive Transport Study	Transportation	Territory wide cross boundary population from 6.8M in mid-1999 to 8.9M in 2016	Territorial District Local	Environmental implications due to different transport modes, polices and major development
The Second Railway Development Study	Transportation fuel consumption Land Use	Territory wide cross boundary population from 6.8M in mid-1999 to 8.9M in 2016	Territorial District Local	Potential environmental implications due to the railway development options
Electronic Road Pricing Study	Road Transport Economic and Equity Charging Technology	Territory wide 960,000 private car by 2016 if unrestrained	Territorial District Local	Environmental performance of and potential benefits of various charging schemes.
1800MW Power Station	Power supply Local Land Use Fuel Supply Power Generation Technology	1800 MW power generation capacity	Global Regional Territorial District Local	Potential environmental implications and acceptability of various fuel, technology and site options.

As the first major SEA of Hong Kong's TDS, the study developed some fundamental sustainability principles which formed the basis of the assessment framework. The key principles include:

- Principle 1 (Connection Principle): this emphasizes the building of connections or "bridges" between sustainability concerns and concepts, development approaches and policy guidelines that are being used in Hong Kong;
- Principle 2 (Integration Principle): this aims to promote the greatest possible integration of the SEA with other economic and planning approaches to encourage holistic strategy formulation;
- Principle 3 (Pragmatic Principle): this addresses complex, multi-sectoral, multi-media, and multi-disciplinary issues with the aim of developing pragmatic, realistic and workable

approaches.

Guided by these principles an analytical assessment framework was formulated which is underpinned by a number of central themes: natural capital, environmental carrying capacity and tiered sustainability issues (Au, 2002).

3.1 Natural Capital

Natural capital is the stock of environmental assets (such as soil, atmosphere, flora, fauna, water, wetlands) that provide a flow of useful goods or services, either renewable or non-renewable, and marketed or non-marketed. The concept of natural capital stock has been applied to territorial land use planning in Hong Kong in order to deterimine the linkages between land uses and various environmental attributes from a strategic perspective. The concept as applied to territorial land use planning studies is illustrated in Figure 2 below.

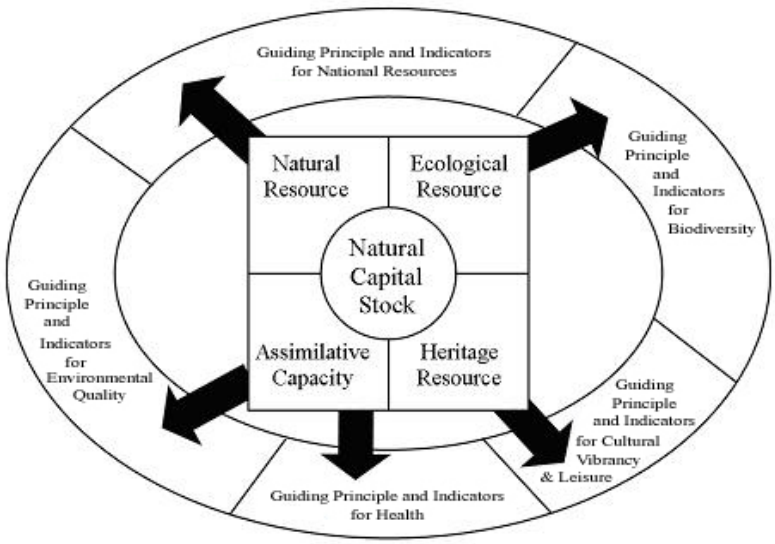


Figure 2 Elements of Natural Capital Stock

Source: Study on Sustainable Development for Hong Kong in the 21st Century – Environmental Baseline Report, Hong Kong SAR Government, August 2000 (http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/baseline.html)

Hong Kong is a city state that has no major natural resources, except for its unique natural harbour and diverse ecosystems. It relies on food, water and other natural resources from Mainland China and other parts of the world. Although the concept of natural capital still has its application in Hong Kong, it needs to be broken down into natural, man-made and ecological components. Natural component refers to the self-purification processes which maintain the health of the environment and local people. Man-made environmental infrastructure e.g. sewerage, sewage treatment and landfills help alleviate the burdens on the natural processes to assimilate waste. Ecological assets provide essential functions or services locally (e.g. leisure and recreation) and internationally (e.g. Ramsar site).

These three components derive:

- assimilative capacity of key local airsheds to assimilate air pollutants;

- assimilative capacity of main tidal currents, key water basins and the harbour within and outside Hong Kong;
- assimilative capacities of the regional airsheds and the Pearl River in Mainland China and their effects on Hong Kong;
- internationally important wetland in the region such as the Ramsar Site in Mai Po for migratory birds, and
- important land conservation areas and marine conservation areas essential for education, amenity and recreation for 6.4 million people.

In the SEA of the TDSR, qualitative, quantitative and semi-quantitative methods were used to identify critical natural self-purification processes as strategic environmental issues and assess their carrying capacities. Spatial mapping techniques are deployed to identify all key land and marine conservation areas and sites of special scientific interest. This helps to avoid inappropriate development and provides a means to evaluate, in a qualitative fashion, the extent of loss of ecological assets.

3.3 Environmental Carrying Capacity

Environmental carrying capacity and thresholds are key criteria for environmental sustainability and essential considerations in territorial land use planning in Hong Kong. The examples of parameters and approaches adopted to assess environmental carrying capacity and thresholds are shown in Table 2. Proposed development thresholds and strategies can then be tested against the environmental carrying capacities and the cost implications of mitigation or avoidance are incorporated into strategy formulation.

Apart from land uses, the environmental sustainability implications of sectoral issues need to be examined. The SEA may include environmental analyses by different media (air, water, waste, noise, ecology), together with environmental analyses by key sectors such as transport links, port related activities and industrial and commercial activities. Table 3 gives an example of guidelines for sustainable sectoral policies.

Table 2 Examples of Parameters and Approaches for Assessing Environmental Carrying Capacity and Thresholds

Environmental Carrying Capacity and Thresholds	Examples of Methods of Analysis
Air quality carrying capacities to accommodate industrial and traffic emissions	air quality modelling process to define the carrying capacities for individual airsheds and develop policy responses
Noise climate resulting from road traffic and industrial activities	forecasting major changes in noise levels due to development strategies and estimate the cost of mitigation
Carrying capacities of water bodies, and sewerage and sewage treatment facilities	forecast the increase in pollution loads in different water bodies, estimate the likely exceedance of statutory water quality objectives, assess the extent of overloading of sewerage and sewage treatment facilities, and identify associated cost implications
Carrying capacities of strategic landfills and waste transfer facilities	assess the extent of overloading of existing and committed landfills and waste transfer facilities, and identify policy and cost implications.

3.3 Sustainability Issues

Suitable spatial tiers of sustainability issues also needed to be developed for the SEA of the TDSR so that evaluation of different levels of issues and different types of study outcomes could be meaningfully carried out. Tiers of sustainability issues enable different types and levels of government responses to be worked out. Examples of such tiers of sustainability issues are given in Table 3 and Figure 3.

4. The Institutional Set-up for SEA of Development Plans

The TDSR case study illustrates that SEA can be applied even if there is no legislative requirement for undertaking SEA of strategies and policies. The EIA Ordinance, which came into force in April 1998, requires environmental assessment to be conducted for major development plans more than 20 hectares or involving more than 100,000 people. However, the application of SEA to major policies and strategies still relies on an administrative means. The administration must be convinced of the merits of undertaking such an assessment and the administrative directive must serve to engage relevant parties in the process. As mentioned in preceding paragraphs, this administrative arrangement has fostered a strong link between SEA and the planning hierarchy and there is a clear framework of environmental planning standards and guidelines which provide assistance for planners, architects and engineers in planning major developments. Such an institutional set-up ensures not only the participation of concerned government departments and bureaux, but also their early involvement in the assessment process.

Table 3 Examples of Tiers of Sustainability Issues and Types of Responses

Levels of Issues	Critical Environmental Sustainability Issues	Examples of Evaluation Methods and Types of responses
Local sustainability issues	• environmental carrying capacities and thresholds at the local levels (air, water, noise, hazards, waste, sewage) • effects on local terrestrial and marine ecological assets	• performance measures applied to options evaluation • types of responses: strategy modification, investment, technological fixes, and policy changes
Regional sustainability issues	• demand for and supply of food, energy, water and resources in the Pearl River Delta • the deterioration in air and water quality in the Pearl River Delta	• qualitatively evaluate regional sustainability implications of the entire strategy in the regional context • types of responses: cross-border environmental cooperation
Compliance with the UNCED's Agenda 21 components	• covering greenhouse gases, biodiversity, Hong Kong's ecological footprint, energy conservation, and the population issues	• based on the findings of quantitative and qualitative assessments, evaluate the entire strategy against key components of Agenda 21 • types of responses: policy changes, investment, technology, international environmental cooperation.

Without legislative backing, SEA studies for strategies or policies can potentially lose focus. In Hong Kong, this deficiency has been addressed by requiring a carefully prepared study brief, issued by the Hong Kong Environmental Protection Department (EPD) for each SEA study. The brief defines the scope and approach of the study and sets out the terms of references and other guidance to assist proponents. In the process of preparing the study brief, the EPD conducts a systematic scoping of key issues for proponents to consider when conducting the SEA. The EPD also chairs an inter-departmental Environmental Study Management Group to guide the SEA and review its findings.

The SEA study was also guided by adhering to the three sustainability principles and the central themes afore-mentioned. The involvement of the EPD throughout the study process helped tremendously in identifying and focusing the SEA on key sustainability issues.

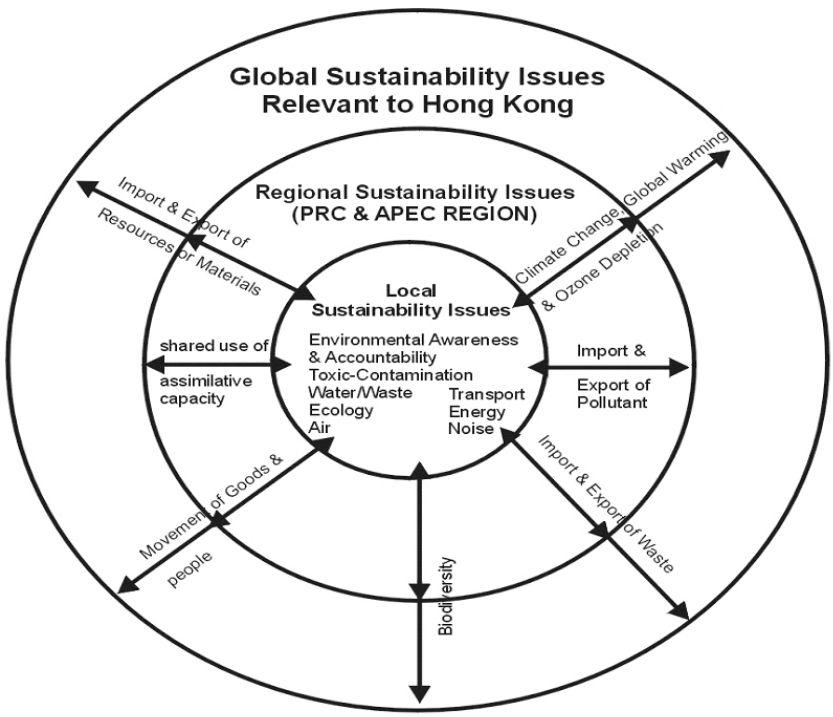


Figure 3 Relevance of Environmental Sustainability Issues to Hong Kong

5. The Study Approach and Process

The SEA process in Hong Kong has benefited from the experience gained from the project-EIA process since the 1980's. In the latter, the consideration of alternatives has been emphasised. Hence, the environmental benefits and disbenefits of various development options in the TDSR were thoroughly examined and compared. Discussion of these options also raised questions on some of the basic assumptions of population and economic growth made within the TDSR. The SEA study process for the Hong Kong Territorial Development Strategy is presented in Figure 4.

The SEA employed a two-tiered approach. It involved both top-down and bottom-up initiatives and a sectoral assessment and a component assessment. A matrix was used to link environmental carrying capacity; the ability to meet the Agenda 21 and issues involved including public health and survival issues; and, macro-level assessment to assess the environmental sustainability. In this study, several difficulties were experienced which are tabulated in Table 4.

One of the inherent weaknesses of SEA is its lack of focus on the most critical issues for a particular strategy or area. Many studies are either too broad in their attempts to deal with many issues/options or too shallow in their assessment and analysis. This has been partly solved in Hong Kong by adopting the "natural capital" approach, through which the key environmental attributes and strategic environmental constraints were identified during the environmental baseline study. It is also at this stage that the sustainability, precautionary and avoidance principles are applied to the formulation of assessment criteria and the generation of development options.

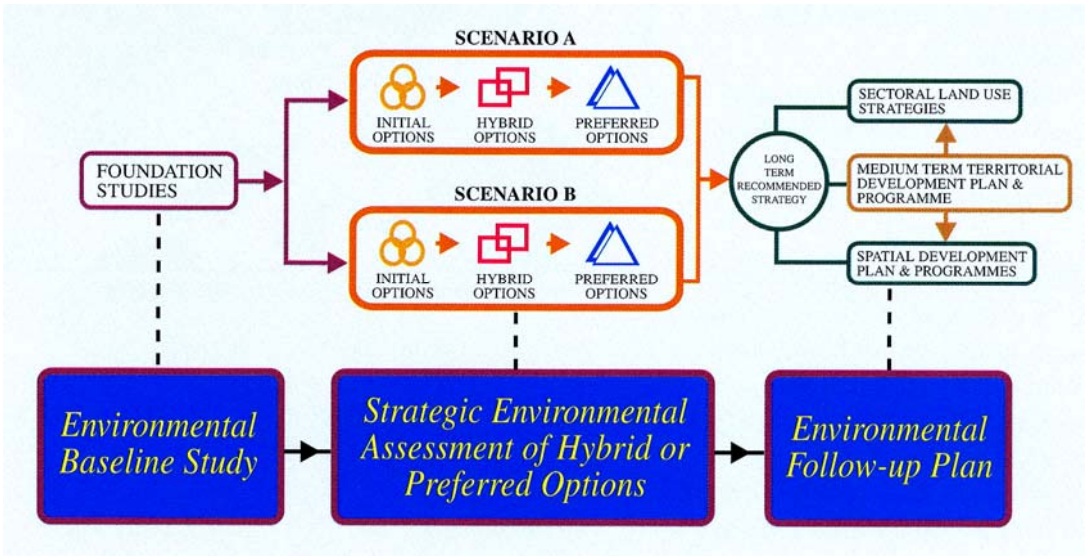


Figure 4 the SEA Study Process and the Landuse Planning Process for TDS

Table 4 Difficulties Encountered during the SEA of the TDSR

Key Difficulties	Solutions
Time/budget constraints	Reliance on existing available data and studies
Full quantification not possible	"best estimate" approach;
Continuous support from proponents/departments	Focus on common goal; Focus on stage 1 value added to the public; Simplified process

The unique high-rise and high-density development patterns in Hong Kong have rendered conventional assessment methodologies developed elsewhere of limited use. A number of

broad-brush assessment techniques specifically fitted to the purpose of SEA, have been developed in Hong Kong. An example is the widespread application of the Environmental Guidelines in the Environment Chapter of the Hong Kong Planning Standards and Guidelines (Hong Kong SAR Government, 1990).

Consultation with the general public and the Advisory Council on the Environment, which comprises representatives from industry, professional bodies, academia and green groups, on the findings of SEA is an important step in Hong Kong and has brought about significant benefits for the process. Major findings of the SEA are summarized for consultation with the relevant stakeholders before final decisions are made. Experience shows that comments received during the first stage of the public consultation process help to identify key sustainability issues, sharpen the study scope, and redefine the evaluation framework. It can also flag issues for the early attention of relevant government departments or bureaux.

Based on environmental carrying capacities, alternative strategies are evaluated against the environmental "bottom lines" so that appropriate strategies can be identified that can avoid or minimize the negative implications on environmental sustainability. Whenever sustainability issues are identified, cross-sectoral and cumulative impact analyses are undertaken. Appraisal of sectoral issues helps to establish linkage and causal relationship between sectoral policies, and can identify policy or institutional fixes. Evaluation of cumulative implications of development strategies against key sustainability indicators identifies necessary policy adjustments and planning responses.

The case of Hong Kong's TDSR demonstrates that such a study can precipitate government actions and policy changes. This usually begins with a scoping of possible Government's responses followed by the development of adaptive management techniques and action plans to tackle major outstanding sustainability issues. Hong Kong has also devised a strategic environmental monitoring and review framework to track policy and planning decisions.

One of the key ingredients of success in Hong Kong is that findings of the SEA must be presented in understandable and usable forms for the highest-level decision makers to consider the impact of future development strategies. This helps to provide them with a better knowledge of the sustainability implications of the action, and initiate follow up studies or actions on any outstanding sustainability issues.

6. Major Outcomes

The SEA of the TDSR has yielded considerable benefits to the decision makers, the public, the environment and those who were involved in the assessment process. The first major benefit was the consensus-building on the need for actions on sustainability issues. Through a more systematic approach towards sustainability issues, decision makers and some key stakeholders accepted the need to act, before it is too late, over some major local and regional sustainability issues. Secondly, it improved the sustainability of the TDSR. Key natural habitats could be protected against any major environmental damage. Thirdly, although the analysis of sustainability cannot lead to immediate solutions to all major outstanding issues, it has produced a more concrete agenda for actions.

The SEA successfully brought to the attention of the general public and decision makers the potential adverse impacts on environmental quality of the TDSR and the urgent need for actions to deal with sustainability issues. The SEA precipitated a number of follow up actions. Firstly, it

prompted the initiation of a major government study on sustainable development for Hong Kong; the *Sustainable Development for the 21st Century for Hong Kong* (SUSDEV21), which was completed in 2001. Secondly, it led to the compilation of an Environmental Baseline Report[1] which provided a comprehensive review of current development pressures and the environmental conditions in Hong Kong. The baseline report provides a platform to evaluate the environmental sustainability impacts of future policies or strategic proposals.

The TDSR SEA not only raised some critical issues underpinning sustainable development in Hong Kong but also laid the framework for a number of other SEA studies. Recognizing that transportation is a key determinant of sustainability, two strategic transportation studies were conducted by the Government of Hong Kong Special Administrative Region, each of which contained a SEA component. The first and most notable was the Third Comprehensive Transport Study (CTS3) which reviewed, identified and recommended transportation policies and major developments required to meet the growing internal and Hong Kong-Mainland transportation demand up to 2016 (Hong Kong SAR Government, 1999b). The accompanying SEA evaluated the potential environmental implications of various strategic options, identified various environmental constraints and opportunities, and set out a series of actions to be followed up. The findings of the SEA were presented to the Advisory Council on the Environment and the Legislative Council, and led to a much greater awareness of the long term environmental implications of various long term development options. Recognizing that land use and transportation are closely related, TDSR precipitated two SEA studies on transportation and rail development (CTS3 and Second Railway Development Study (RDS2)). .

With inputs from CTS3, the RDS2 intended to identify railway development options and railway management and operation improvements to meet projected transportation demands, and improve the efficiency of the railway network up to 2016. Commenced in March 1998, the SEA (Hong Kong SAR Government, 2000a) evaluated the potential environmental implications of various railway network options and individual links. It covered strategic environmental issues such as potential environmental advantages due to the modal shift from using road to using rail, and addresses the indirect environmental implications to environmentally sensitive areas. The study also identified the environmentally preferred option and established the environmental acceptability of other options.

Prompted by TDSR, the subsequent CTS3 and RDS2 studies underscored the importance of transportation in the spatial planning of Hong Kong and hence the need to:

- integrate land use - transport - environment planning and provide feedback from the environmental studies into the transport model and future development needs, and minimize the need for travel
- aim for air quality standards to prevent damage to health and control vehicle emissions
- increase the amount of personal travel and freight transport by less environmentally sensitive routes
- increase investment in and embrace public transport, especially passenger railway , to alleviate air pollution, and restrict private car ownership
- in cost comparison between transport options, include external costs such as the loss of land premium due to constraints imposed by roads and the capital and maintenance costs of

[1] For details of the sustainability appraisals, please see the Environmental Baseline Report at the website of Hong Kong Environmental Protection Department (http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/baseline.html)

mitigation measures.

7. Key Lessons Learned

The most notable lesson learned is that there is a need for very careful planning of the SEA approaches adopted, so that the concepts can be understood by other professionals working within the same study, and by policy makers. Much more effort needs to be given to build connections between sustainability concerns and existing decision making processes. Good intentions do not necessarily bring about good results, unless they can be fully understood by all those involved.

Any rigorous analysis of sustainability is likely to demand a huge amount of data, some of which may not be able to be gathered during the time frame of the study. Also, data gathering tools may not be well established. A pragmatic approach is needed to work out the best available workable methods for carrying out the analysis. There should also be suitable spatial tiers of sustainability issues and associated government responses, and equivalent suitable tiers of SEA and EIA to carry forward different sustainability issues. It is a fallacy that one single strategic environmental assessment can solve all complex sustainability issues. Moreover, like EIA, any sustainability analysis or SEA is doomed to become a paper-based exercise unless there is an equally rigorous strategic environmental follow up and audit mechanism.

The application of SEA in Hong Kong has proved to be worthwhile. Based on the experiences in Hong Kong, a SEA manual was published in 2004 (Environmental Protection Department, 2004). Several key elements of SEA can be highlighted that might have some general application:

Process Design: based on practical application experiences, it is apparent that SEA, as compared to the EIA process, has to be tailored to suit different types of policies and strategies, and to account for different types of decision making and political systems. Nonetheless, the most essential components that must be established include:

- the development of processes to critically assess the environmental implications of different policy or strategy alternatives assumptions and response options;
- the process to scope the types and levels of decision inputs that are appropriate to the types and levels of decision of policy and strategy; and
- the process to involve relevant policy stakeholders and stakeholders in the community for some meaningful, structured and informed debate or discussion on critical strategic environmental issues.

Process Management: as strategy and policy making, unlike projects, involve many policy bureaux, ministries and departments, suitable technical oversight is necessary in an objective and systematic fashion. Suitable interface and integration with the mainstream policy making process is also necessary. This is to ensure the objectivity of the assessment process, without undue influence by other policy making parameters, but also ensure maximum possible integration;

Stakeholder's involvement and public participation: compared to project EIA, this is easier said than done, because many policies and strategies are highly sensitive and are prone to being controversial. Late public consultation undermines the credibility of the process and results in a lack of focus during the SEA. Too early consultation would end up in a free flowing talking shop without too much meaningful information and options for discussion. Ideally, the participation

process needs to be truncated into meaningful stages with different purposes, and be based on varying types and levels of assessment information and results.

8. Conclusion

In short, the status of SEA in Hong Kong is summarized in Table 5. As illustrated in the case of SEA for Hong Kong's TDSR, the application of SEA has yielded considerable benefits to the decision makers, the public and those who were involved in the assessment process. SEA can help to build consensus on the need for actions on sustainability issues, identify key areas for attention by decision makers and the public, and greatly promote sustainable development. SEA can also help to establish a more concrete framework for the follow-up and review of land use plans.

Table 5 Status of Strategic Environmental Assessment in Hong Kong

CRITERIA	YES	PARTIALLY	NO	DON'T KNOW	COMMENTS
Legal Basis		★			The EIA Ordinance requires environmental assessment to be conducted for development plans more than 20 hectares or involving more than 100,000. For strategies or policies, the requirement is imposed through a government directive.
Integration	★				The findings of SEA are often taken into full consideration in planning decisions and clearly presented to the public.
Guidance	★				For each SEA study, the Environmental Protection Department (EPD) issued a detailed study brief setting out the scope, approach and other detailed guidance. Past SEA reports, examples and an interim SEA manual were also published.
Coverage	★				All major issues related to environmental sustainability are covered in the study
Tiering	★				Process allows for tiering hence facilitating more in-depth study of critical issues
Sustainable development	★				Sustainability has been the focus of SEAs undertaken in Hong Kong
Alternatives	★				All reasonable and practicable options need to considered with the preferred option justified
Screening	★				Developments larger than 20 ha must undergo an assessment as stipulated in EIA Ordinance

Table 5 Status of Strategic Environmental Assessment in Hong Kong (cont'd) (cont'd)

Scoping	★				All issues which have bearing on sustainability need to be assessed
Prediction / Evalutaion	★				Methodologies stipulated in the EIAO TM or as deemed fit for a particular study
Additional Impacts		★			Cumulative impacts need to be addressed, no provision yet for secondary socio-economic impacts
Review	★				Submitted to Advisory Council for Environment for endorsement
Mitigation	★				All known unacceptable impacts need to be mitigated
Monitoring	★				Mechanisms have been set up to monitor effects of the development and follow up the recommendations of SEA.
Consultation & Public participation	★				Consultation with ACE, reports available on government website
Decision Making	★				It has significant influence on the development strategy as well as on the transport strategy
Costs and beneifts	★				The benefits of SEA are perceived to outweigh the costs when dealing with major policies, strategies or plans that may have significant implications
Environmental Quality	★				It has safeguarded Hong Kong's environmental quality and injected environmental considerations into other policies such as transportation
System Monitoring		★			Some form of monitoring of the SEA system exists, but more need to be done in this area

The SEA of Hong Kong's territorial development strategy has not only provided succinct information on the environmental implications of various development and land use options, but also highlighted the need for (a) a sustainable transport strategy; (b) integration with neighbouring regions; (c) long-term monitoring and (d) undertaking the SEA at the conceptual stage. The first arose from the recognition that land use and transport planning are intricately linked and the two needed to be considered to minimize the need to travel, to reduce the cost of noise mitigation measures and to encourage a mode of transport that is environmentally friendly. At the same time, the TDSR has sensitized the decision-makers that the environmental sustainability of Hong Kong is becoming more and more driven by global and regional economics, transboundary environmental problems and global environmental issues. To bridge

the gap between local and regional environmental sustainability, due consideration needs to be given to regional cooperation and critical issues identified during SEAs. The experience in Hong Kong also affirms the need for monitoring to assess effectiveness of various measures. The key challenge is to develop appropriate procedures and methods to assess the environmental implications of major policies at a conceptual stage with a view to building early consensus on appropriate policy responses to major sustainability issues.

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[Views expressed in this paper are those of the authors and do not necessarily represent the views of their employers or their organizations.]

A Context-specific Interpretation of SEA in China

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Abstract

China is an illustrative – and extreme – case of the difficulties of balancing the pursuit of economic, social and environmental objectives. Its spectacular growth is undermining the environmental basis on which the health, wellbeing and the future of its 1.3 billion people depend. In 2003 it adopted a form of Strategic Environmental Assessment (SEA) for its plans and programmes (referred here as PEIA) with the aim of moving towards greater environmental sustainability. The literature has explored primarily the issue of methods and legal procedures. This paper considers SEA as a system (purpose, strategy and mechanisms) whose effectiveness is closely related to the wider context in which it operates. Drawing on primary data and the literature, it analyses of key aspects of China's wider context influencing the shape and effectiveness of PEIA practice; it critically reviews PEIA concepts and practice to date, suggesting that the present system appears inadequate to confront its major challenges; and concludes proposing elements for a modified, context-specific SEA system for China, aimed at strengthening the effectiveness of practice – including the strategic dimension – as it evolves.

Keywords: China, Strategic Environmental Assessment, effectiveness, purpose, strategy, methods, context

1. Growth, Environment and SEA in China

China is making its way out of poverty and underdevelopment at an unprecedented pace. Its success has lifted hundreds of millions out of poverty (Liu 2007), but it has also led to significant environmental degradation (Day 2005; Economy 2004). The resulting challenges impose a sense of urgency to integrating environmental concerns into development choices, and searching for improved environmental governance (OECD 2007). It is in this context that Strategic Environmental Assessment (SEA) – an increasingly popular mechanism for environmental policy integration and the strengthening of environmental governance (James *et al.* 2003) – is attracting attention in China (Xiuzhen *et al.* 2002). SEA is considered a 'tool', and a process, for the systematic analysis of the potential impacts of programmes, plans and policies

on the environment (Sadler and Verheem 1996; Thérivel *et al.* 1992).[1] Since the mid-1990s there has been a rapid uptake of this assessment mechanism throughout the developed and developing world (Dalal-Clayton and Sadler 2005). In line with this growing trend, China's State Environment Protection Administration (SEPA) and State Council's Environmental and Natural Resources Committee (ENRC) began negotiating the text for an EIA Law in 1998: 'the main motivation for SEPA and ENRC legislators to promote this law was to address the failure of development policies and plans in assessing the environmental consequences of government actions' (Zhu and Ru 2007:5). Five years later, the new EIA law of China (NPC 2002)[2] included provisions for an SEA-type procedure: the environmental assessment of plans (hereafter, SEA refers to international practice and PEIA refers to China's experience, after Tao *et al.* 2007).

The requirement entered into force in 2003 and experience is therefore still limited, however scholarly debate on this new field of environmental policy mechanisms is growing rapidly. The analysis has focused on the nature of legal requirements (Bao *et al.* 2004; Lindhjem *et al.* 2007; Wang *et al.* 2003) and on case reviews and methodologies (Bao *et al.* 2004; Tao *et al.* 2007; Xiuzhen *et al.* 2002). In terms of the literature on PEIA in Chinese, Che et al. (2002, cited in Zhu and Ru 2007:2) note that '[m]ost of [the] research (on SEA in China) has been focused on the concept, theory, and method of SEA'. A similar trend can be seen for Taiwan SEA studies (Liou *et al.* 2006). The contribution by Tao et al. (2007) introduces a new level of in-depth analysis from a sectoral perspective: that of landuse plans, which are a traditional area of application for SEA around the world.

Overall, this initial focus on regulatory and technical aspects follows the same pattern of inquiry that characterised research in Europe, the United States and elsewhere during the early 1990s (see two prominent examples: Sadler 1996; Thérivel *et al.* 1992). Although most of the authors mentioned above, notably Bao et al. (2004), list a number of PEIA examples 'successfully carried out' in China since the 1990s, the country's experience with PEIA is still in its early days. Zhu and Ru (2007:1) remark that '[t]opics such as the adaptation of SEA concepts, the motivation and politics underlying legally mandated planning EA [environmental assessment], and the implications of current institutional arrangements for the effectiveness of planning EA have yet to be examined' in China's context. By analysing the political and institutional dimensions underlying the EIA Law and its implementation their paper marks a shift in scholarly debate on PEIA in China. The shift is in line with recent discussions on the institutional context and the need to understand the organisations and the decision-making processes that SEA is intended to influence – discussions which have characterised the SEA discourse since the late 1990s (James *et al.* 2003; Brown and Thérivel 2000; Caratti *et al.* 2004; Owens *et al.* 2004; Partidario 2000; Wallington *et al.* 2007).

[1] As I will discuss later, the concept and practice of SEA have been evolving to embrace broader functions, turning SEA more into a framework concept, than a simple 'tool'.

[2] There are different nuances in the different translations available. In this paper I refer to the translated version that I received, upon request, by ACEE/SEPA (in October 2005). See Zhu and Ru (2007) for a comprehensive account of the origins of SEA or PEA in China.

In fact, the SEA discourse has changed significantly since the early idea of SEA as a development of project-EIA (Thérivel *et al.* 1992; Petts 1999; Sadler 1996). It eventually evolved into a much wider range of approaches and methods, but perhaps most importantly, it moved from the so-called technical and rational domain of assessment and evaluation, to embrace the diverse realm of good governance, rational and social learning (Bina 2007; EC 2005; Vicente and Partidario 2006; World Bank 2005). Two decades of practice have shown that good information alone – though essential – will not necessarily lead to better planning and better choices (Jasanoff and Wynne 1998; In 't Veld 1999; Owens *et al.* 2004). It is the context within which planning occurs, and especially all the qualities that are commonly recognised under the framework concept of 'good governance' that make the difference, hence the growing attention to the context and its institutions, which Zhu and Ru (2007) have contributed to unpack in relation to China.

The purpose of this research is to contribute to the analysis of China's experience to date through a different set of interpretative lens. While China is still new to SEA, it may need to move rapidly to learn and adapt to the new ideas and innovative approaches if it wants this mechanism to help deliver more sustainable plans. Thus, I propose to explore the concept and practice of PEIA from a systemic and context-specific perspective, and to suggest ways to strengthen the effectiveness of practice – including the strategic dimension – as it evolves. The paper develops in five sections: an explanation of the context-specific SEA system; an analysis of key aspects of China's wider context influencing the shape and effectiveness of PEIA practice; a critique of PEIA concepts and practice to date; the proposal of elements for a modified approach to PEIA in China that would assist in achieving its substantive purpose.

I will be basing my analysis on a range of sources. In addition to recent literature on the subject, I will use primary data, in the form of interviews with Government officials, academics, and practitioners, and will refer to comments made by experts during workshops and seminars (taking place in China) on and around the topic of SEA and China's environmental challenges.[3] The interviews were conducted between 2005 and 2007. Some were carried out as part of my on-going research into China's environmental governance capacity, and some as part of a project into ways of institutionalising SEA within a Ministry responsible for a *part* of China's transport systems (hereafter referred to as 'transport ministry'). To respect confidentiality, all interviews have been coded: the only specification is that 'CG' refers to informants working within a Chinese government organisation, 'A' refers to academics, and 'I' refers to informants working for non-Chinese agencies. Informants included senior bureaucrats from the transport ministry, SEPA, Appraisal Centre for Environment and Engineering (ACEE), technical experts from specialised government agencies in the field of transport (transport and economic planning) and environment (often translated as 'design' or 'research' institutes), and representatives from consultancies, academia and international organisations.[4]

[3] These included: 1) *Public Participation in EIA and SEA*, Training Course organised by ACEE and SEPA, Guiyang, China, 3-6 April, 2006, 2) *4th Meeting of the China Council for International Cooperation on Environment and Development* (CCICED) meeting in Beijing, 19 November 2005, 3) Workshop on *Green Accounting and new procedures for officer evaluations*, organised by SEPA, World Bank and Sino-Italian Cooperation, Beijing 24 November 2005.

[4] Further details may be obtained from the author, however names may not be released due to confidentiality clauses.

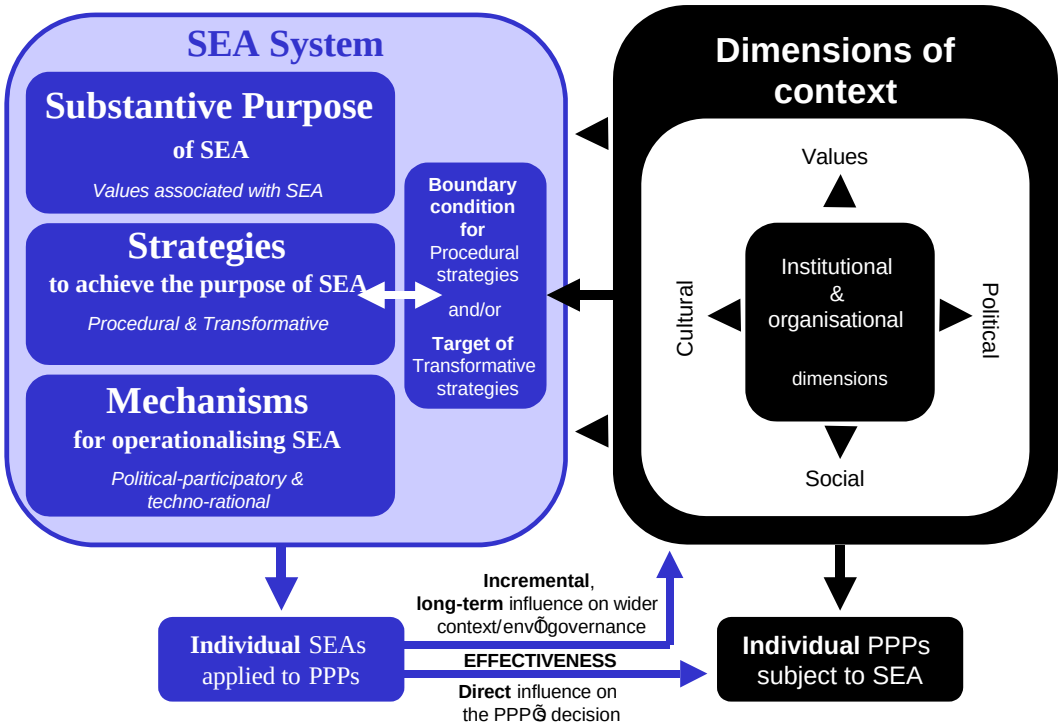


Figure 1 SEA as a context-specific system

Based on: Bina (2007) and Wallington et al. (2007)

2. SEA as a Context-specific System

The issue of effectiveness is at the heart of any debate on analytical systems (for a pratitioners' view: Dalal-Clayton and Sadler 2005; Sadler 1996; World Bank 2005; and for a theoretical discussion: Owens *et al.* 2004; Runhaar and Driessen 2007). I will refer to two conceptions: the traditional idea of a direct impact on decision-making linked to the plan or policy being assessed, and the idea of an incremental change in mindsets, in the level of awareness, the institutional and organisational setups and the culture that drives planning. These more long-term impacts refer to the wider context in which SEA is applied, and to the overarching theme of environmental governance, critical to China. This wider context (see Figure 1, right):

'includes the organisation and institutional location of the decision-making process (the institutional and organisational dimensions), which are themselves situated within and influenced by a given society and its broader social, cultural and political values (the political and social/cultural dimensions)' (Bina 2007:6; see also Hilding-Rydevik and Bjarnadóttir 2007).

The combination of direct and incremental impacts underscores the strategic nature of SEA.

Conceptualising and exploring SEA as a system, permits to focus on its interaction with the wider context and its potential role in terms of environmental governance, highlighted in the

more recent discourse on SEA (Bina 2003; 2007). The idea of SEA systems builds on the growing recognition of the relationship between assessment, planning processes and the wider context in which both are shaped and implemented (Audouin and Lochner 2000; Bina 2003; Partidario 2003). To define SEA's systemic dimension, I draw on the recent theoretical framework proposed by Wallington et al. (2007) who structured the ongoing discourse on SEA theory and the basic assumptions underlying practice in terms of three vital elements: 'the substantive purpose and values associated with SEA, the strategies chosen to achieve that purpose, and the mechanisms for operationalising SEA' (Figure 1, left).

The first element sets the overall purpose, 'the broad, long-term reasons for institutionalising a system of SEA within a legal framework, a planning context, and/or a particular organisation' (Bina 2007:6). It reflects the system of values that is to be upheld through the application of SEA, and Wallington et al. (2007) define the substantive purpose of SEA as 'a recovery of the original intention of environmental assessment: to promote change by inducing ecological rationality into systems of governance'. The second element refers to the different assumptions made about the values and rationalities that inform policy and plan making, the structural characteristics of the decision context, and SEA itself (Wallington *et al.* 2007). Wallington et al. (2007:7) suggest two extremes in a continuum of possible strategies: 'procedural' strategies, 'which depict SEA as a systematically "rational" process which seeks to influence the formulation of a specific PPP [policy, plan or programme]', and at the opposite end, 'transformative' strategies, 'which depict SEA as an intentionally "political" process intended to change the way decisions are made, and to induce learning about environmental values in institutions, organizations and civil society'. This element is closely linked to SEA's context-specificity: the idea that an SEA system is influenced by – and can influence – the context in which it is conceptualised and applied (see Figure 1). Finally, the third element concerns the mechanisms recommended to operationalise SEA. Owens et al. (2004) and Wallington et al. (2007) describe the methods and tools used in SEA as a heterogeneous group including political, dialogical and participatory methods, as well as more traditional techno-rational instruments. Both contributions recommend that the SEA community should seek to maximize synergies between the 'political' and 'technical' methods (Wallington *et al.* 2007:10), abandoning any attempt to polarize the debate and the practice, since the most appropriate methods are often likely to combine both typologies. Together, these three components capture the systemic and strategic dimension of SEA.

However, despite its importance, the relationship between assessment, planning and their 'context' is rarely defined in explicit terms. It underlies and influences the SEA system, implicitly. Wallington et al's (2007) concept of a strategy changes this, placing the relationship at the heart of SEA discourses. It introduces an intermediate step between the definition of *why* it is desirable to introduce SEA (the purpose) and *how* to do so, traditionally interpreted in more limited, methodological and technical terms (Bina 2007). In Wallington et al.'s (2007) framework, the 'how question' is answered in two steps: strategies and mechanisms. The two types of strategies proposed by the scholars are two broad versions of the relationship between assessment, planning and their 'context': a) procedural strategies – where context is a set of

'boundary conditions' to which SEA strategies adapt, and b) transformative strategies – where context is a target which strategies seek to improve. The idea of a strategy emphasises the context-specificity of SEA, and invites SEA practitioners and scholars to reflect on, and define, this relationship, so as to maximise SEA's potential for incremental improvements in environmental governance (Bina 2007; Hilding-Rydevik and Bjarnadóttir 2007).

3. A Challenging Context – or an Opportunity?

Following the conceptual framework outlined above, I begin exploring the idea of a wider context, which includes four, closely interrelated dimensions (Figure 1): socio-political and cultural dimensions influencing, and being influenced by institutions and organisations. In Tables 1 and 2 I summarise those aspects of the wider context raised by informants as particularly relevant to PEIA, and confirmed as significant in the literature and by my own observation during seminars and meetings.[5]

The implications of the tension between the growth priority (still strong despite the leadership's new agenda) and the environment, combined with weak environmental policies and delivery mechanisms – pose serious challenges to PEIA. Informants from the transport sector, and environmental experts (interviews CG1-CG6, CG8, CG9, CG11) illustrate this. They confirm that environmental protection is essentially perceived as a 'sector' in itself, and not a dimension of development or economic growth. Although many viewed the new emphasis on energy saving and environmental protection in the 11th Five Year Plan as a clear priority for their sector's development, nevertheless the *balance* between these and 'development' remains squarely in favour of the latter, and current PEIA is unlikely to change this. In the words of a senior transport expert (interview CG19): the new priorities are important but they will not be "equally important as [the priority of] increasing capacity" [6]. In discussing the State Council's preliminary guidance for the development of the transport sector, which suggests target increases for each mode by 2020, interviewees (CG13-15) explained that planning starts by defining what is required to meet economic growth and meet energy consumption and air pollution concerns, however, "sometimes environmental protection has to be compromised for economic growth". They felt it will be necessary to "push the environment at the top of the agenda", so that in planning efforts such as the Five Year Plans, the problems and solutions can be framed taking into account the environment as well as predicted increases in demand.

Table 2 summarises three more aspects of the wider context that challenge PEIA's effectiveness. In particular, the quality of cooperation, which is at the heart of sustainability and environmental governance (Jordan and Lenschow 2008) and affects SEA/PEIA practice (Caratti *et al.* 2004; Owens *et al.* 2004; Vicente and Partidario 2006). Informants show it also directly affects the effectiveness of PEIA in China.

How do these aspects of context affect PEIA (cf. Wallington et al.'s idea of 'procedural strategies')? Can PEIA's operation influence the context, improving the level of policy integration and environmental governance (the 'transformative strategies')? Without

[5] Especially those taking place during my work on the institutionalisation of SEA/PEIA within a transport-related Ministry.
[6] Direct quotes from interview material are marked thus "…". Quotes from published material are marked thus '…'.

coordination and collaboration, PEIA processes are likely to develop along parallel tracks, thus resulting in a greater use of resources and a limited capacity to inform and influence the plan formulation: the well-known problem of 'little effect' (Weiss, cited in: Owens *et al.* 2004). Nevertheless, in line with the concepts of system, strategies and broad effectiveness, all six aspects of the context pose challenges, but also opportunities. PEIA could provide the forum where: growth of GDP as the predominant value on which to gauge the balance of economic, social and environmental priorities could be questioned; where the mindset accepting trade off between growth and environmental protection (interview CA2, CA3) is challenged; where the underlying rationality, whereby planning (development) comes first, and assessment (and mitigation of unwanted effects) follows (interviews CG13-15, CG19), is replaced by process integration; and where coordination and cooperation are progressively enhanced as a result of repeated applications of PEIA.

4. China's Conception and Practice of SEA: Plan EIA

Part of the answer as to whether the context is a challenge or an opportunity lies in the strengths and weaknesses of current practice. To gauge this, I turn to three aspects of China's PEIA system which are especially revealing, as well as being considered critical in SEA literature: 1) purpose and concept of assessment, 2) quality of the process: timing, consideration of alternatives and public involvement, and 3) methods and uncertainty.

4.1 Purpose and concept of assessment

Article 1 of the EIA Law (NPC 2002) defines 'purpose' as:

'realizing sustainable development strategy, preventing adverse impacts on the environment from implementation of plans and construction projects, and promoting coordinative development of the economy, society and environment'.

Thus, PEIA and EIA are intended to help implement sustainable development, by coordinating its three pillars and preventing negative effects. This is in line with international trends (Sadler *et al.* 2008), and is *especially* relevant to China's political and institutional context, as discussed above.

However, the common framing of PEIA's purpose is more akin to Bao et al.'s (2004:29) narrow interpretation: '[t]he purposes of SEA' is the 'prevent[ion] and mitigat[ion of] negative environmental effects caused by the policy, plan and to control environmental degradation from the sources'. This view focuses on one aspect of Article 1: to prevent impacts. It is a view supported by the analysis of practice to date (for example, Tao *et al.* 2007; Liou *et al.* 2006) and by the majority of practitioners I interviewed between 2005 and 2007 (though with notable exceptions: CG9, CG34). But preventing impacts (and coordinating socio-economic and environmental interests) is a means to an end – it does not represent a substantive purpose (Wallington *et al.* 2007). Such inaccuracy affects the framing of PEIA's effectiveness: it becomes exclusively linked to direct impacts on decision-making, ignoring incremental improvements in the capacity for coordination, as well as in wider environmental government practices (cf. Figure 1). Often, it is incremental improvements such as more or new ideas that are

used in the following rounds of decision-making, or 'impacts on processes and situations other than those of which the EA forms a part' which make the greatest contribution (Runhaar and Driessen 2007:3).

The remainder of the Law explains why Chinese practitioners focus narrowly on adverse impacts. If Article 1 presents the purpose of PEIA, the content of Chapters I ('*General Provisions*') and II ('*Environmental Impact Assessment for Plans*') of the EIA Law, explain the concept of 'assessment' itself. They reveal elements of a traditional concept of project-EIA: the rational objective discourse and the impact assessment mindset. Assessment is defined as an 'analysis, projection and evaluation [of] the potential environmental impacts' resulting from the plan (Article 7) or project, and the proposal of 'countermeasures and measures to prevent or alleviate adverse impacts' (Article 2); it is intended to provide 'objective, open and impartial' information, and 'thus provide scientific basis for the decision-making' (Article 4). The Law therefore supports an impact assessment mindset centred on traditional prediction and evaluation ideas, and a search for solutions in terms of prevention, mitigation and compensation.

This contrasts with principles of good SEA practice (for example: IAIA 2002). Preventing and mitigating environmental degradation should be seen as a mechanism of last resort, once all else – including the shaping of objectives and alternatives – has been tried. The need to strive for objectivity and impartiality is acknowledged and shared in many countries. However, there is also a need to engage with the very significant body of work that highlights the limits, as well as the desirability, of such objectives – and points to the inevitable need to balance rationality with power, to take into account values as well as data, and to acknowledge uncertainty as an inevitable aspect of strategic-level assessment (Hildén *et al.* 2004; Owens *et al.* 2004; Sadler *et al.* 2008; Vicente and Partidario 2006). Chinese experts and practitioners involved in early PEIAs repeatedly acknowledge such needs and difficulties (interviews CG9, CG22, CG23, CG34, CG35, I5 – see also the Section on Methods and tools, below).

There is however an interesting common thread in the discourse on PEIA, which may help refine the generic purpose of contributing to sustainability, while taking advantage of the impact assessment mindset. Scholars (Bao *et al.* 2004; Zhu and Ru 2007) and interviewees reveal a special concern for cumulative impacts. A senior bureaucrat from SEPA (interview CG8) explains that EIA had not helped significantly in terms of "protecting the environment" and "controlling total emissions", and that it is now necessary: "to calculate the total amount of pollution in an area" (interview CG8). Concern for cumulative impacts within a spatial area (such as a river basin, or administrative region) echoes the preoccupation with the limited, and rapidly depleting natural resource base of China. Consistently, the first PEIA guidance document, *Technical Guideline for Environmental Impact Assessment of Plans and Programs,* published in August 2003 (SEPA 2003), refers to the need to define the 'territorial scope' of the assessment by combining geographical and administrative dimensions, and emphasising the need to consider 'ecologically sensitive regions… habitats'. The guidance is replete with direct and indirect references to the concept of ecological sustainability and carrying capacity.

Pan Yue explains in the *Study Times,* an influential Communist Party publication, that '[w]e need to make environmental assessments that can set the environmental capacity of an area ...

and ensure that economic development does not surpass the capacity of the environment' (cited in: The Peninsula Quatar 2007). The concern about China's limited (and deteriorating) resources is central to the ecological discourse in China (Economy 2004; Liu and Diamond 2005), and Pan Yue has repeatedly linked this to PEIA. In 2005 he identified the following key issues in relation to the adoption of SEA in China:[7]

- 'Conduct SEA so as to take more seriously the *natural resource base* and the implications of demands on this base;
- As part of the assessment SEA should *contribute to the achievement of circular economy*; [8]
- SEA should *ensure environmental policy integration and inter-sectoral coordination*;
- SEA should consider cumulative impacts;
- SEA should consider social impacts;
- SEA should consider indirect impacts;
- SEA *promotes the importance and practice of public involvement*' (emphasis added).

These aspects help interpret the legislation and direct its application. Based on this analysis, I would suggest that the substantive purpose of China's PEIA system – expressed in terms of implementing sustainable development in the 2002 Law – could be framed more specifically, to refer to the concepts of circular economy and the maintenance of the natural resource base of China in balance (the end), and that the efforts of PEIA could be focused on securing the respect of ecosystem's carrying capacity, and the promotion of the wider concept of footprint (the means). Finally, important lessons might be learned from the focus on environmental justice in the SEA system adopted for Scotland (Jackson and Illsley 2007). Given the rising inequality between the poor and increasingly rich Chinese (the 'Gini coefficient of inequality in household income rose by 7 percentage points (18%) between 1988 and 1995', (Liu 2007:257; see also: Pei 2006)), and growing inequality between urban and rural incomes (the ratio is now 3:1), environmental justice could be an important part of the purpose.

4.2 Quality of the process: timing, alternatives and the public

Nothing illustrates the above criticisms better than the issue of timing. SEA literature is replete with recommendations for the need to start the assessment tasks as soon as possible and in close interaction with planning (for example: Caratti *et al.* 2004; EC 2005; Partidario 2000). Put simply, starting SEA once a draft plan is already in place (even if still preliminary) is tantamount to no strategic assessment (Bina 2007). This is assuming that the essence of SEA – as argued earlier – is to improve planning, strengthen environmental governance and ensure that environmental policies have shaped the ideas of development, in line also with the expectations by Pan Yue, summarised above.

[7] These were presented at the Green China Forum (2005). The list reported here was read out from the original document in Chinese, by an interviewee from one of the SEA licensed research institutes. Note that the informant used 'SEA' rather than Plan EA in translating from the Chinese text.

[8] A draft law on the circular economy is supposed to be submitted to the Standing Committee of National People's Congress (NPC) for review in August 2007 ('China drafts law on circular economy' http://english.people.com.cn/200611/16/eng20061116_321892.html, November 16, 2006).

Table 1 Critical aspects of PEIA's wider context: Politics and the environment

Politics and the environment	Description of key aspects
The extreme tension between development and environment	• Resource depletion, pollution, long-term or irreversible damage is affecting all vital resource bases in China (see for example: CCICED 2005; Crawford *et al.* 2006; Day 2005; Economy 2004; Liu and Diamond 2005; World Bank 1997; Worldwatch Institute 2006). • Main cause is rapid economic growth, driven: By the need to lift hundreds of thousands of people from poverty, and by the link between growth and the legitimacy and future of the current autocratic regime (Liu 2007; Pei 2006). • The objectives of the Government's harmonious society policy are not easily reconcilable: they for efficient and fast economic growth to narrow the income gap, while aiming to conserve energy and reduce energy consumption and pollution (Hua 2007). These are bound to increase the already critical levels of pressure on the environment, posing major risks which PEIA practitioners are asked to confront at the planning stage.
The changing development policy by Central Government	• Leadership proposed new agenda for the country's growth model in 2006: *efficiency* is to replace *speed* as the priority (President Hu Jintao in: Xinhua 2006b). • Efficiency and 'scientific development' discourses are driving the modernization of the State (People's Daily 2004). • Circular economy law currently being discussed. Concept: the full and efficient use of resources and the minimization of waste discharge – leading to 'low consumption of energy, low emission of pollutants and high efficiency, through its 3-R principle: reduce, reuse, and recycle' (Xinhua 2006a). However: • Government's capacity to implement its policies is not strong (Liu 2007; Pei 2006). • Intractable problem: Central Government has limited leverage over Provincial Governments and municipalities (OECD 2007) • This is particularly problematic for PEIA's attempts to integrate policies in provincial or local planning (interviews CG1-CG6, CG8, CG9, CG11).
The way environment is perceived, and the weakness of environmental policy.	• Changing from traditional view of environmental issues as externalities to a *more proactive* view of environmental management, stressing its potential economic and financial benefits, its *contribution* to establishing better *governance* and *sustainable* development practices (Michalak 2005). • Definition of 'environmental protection' evolved 'from being a scientific and technical issue, to one incorporating social and political considerations' (Child *et al.* 2007 in press). However: • Change in the perception of the environment is very slow. • Pan Yue (Pan 2007), SEPA Vice Minister, remains concerned: '[i]n China, we have always looked at the environment as an isolated subject… the state still has no systematic policy framework on the issue of the economy's confrontation with the environment, and has not developed ways of thinking… on the issue'.

Table 2 Critical aspects of PEIA's wider context: Institutions, organisations and actors (Cont'd)

INSTITUTIONS, ORGANISATIONS AND ACTORS	Description of key aspects
The low levels of coordination and transparency	• Rules and culture governing cooperation and coordination between organisations (both between sectors, such as landuse and transport, and between the environment and all major development authorities) is not conducive to good working relations (Michalak 2005). • General "inability [of Government departments] to speak to each other… the bureaucratic culture is against collaboration across departments" (interview I11). • Most interviewees highlight insufficient coordination between departments as a major problem (interview CG8, CG9, I11, I6): "getting people to talk to each other… is a difficult quest". • Cultural and socio-political context of planning leaves limited space for transparency and debate. This limits the flow of information and the opportunity to develop common understandings of the problems and solutions, critical to SEA's effectiveness (Owens *et al.* 2004; Runhaar and Driessen 2007; Vicente and Partidario 2006). • Rigid hierarchical structures combine with a culturally and institutionally embedded divide between technical experts, bureaucrats and senior leadership to limit the quantity and quality of information being disseminated from the top down. This leads to limited capacity to see the bigger picture in which certain measures would fit – essential to sustainability.
The lack of clarity in terms of roles and responsibilities	• EIA Law is ambiguous in terms of the role of environmental authorities (i.e. SEPA, the EPBs and ACEE (Bao *et al.* 2004; Wang *et al.* 2003)) in reviewing planning EA reports or in approving them (Zhu and Ru 2007). • Current practice undermined by confusion over roles and responsibilities. • Environmental authorities are concerned about limited capacity to enforce the uptake of PEIA and the respect of the assessment's report (interview CG9, CG23, CG34). • Confusion also in terms of who, which organisation, takes leadership of the process of PEIA (interviews CG3, CG18, CG23).

Table 3 Critical aspects of PEIA's wider context: Institutions, organisations and actors

Institutions, organisations and actors	Description of key aspects
The choice to designate project-EIA research institutes to carry out PEIA.	• Institutes already certified to prepare project-EIAs were nominated as the technical agencies that carry out PEIA (Zhu and Ru 2007). Strengths of this choice: • Significant experience. • Existing network. • Wealth of technical, scientific and sector-specific knowledge. • Nature of the institutes ensures independence and greater transparency to PEIA. Weaknesses: • Discussions with the directors of several such agencies (CG3, CG9, CG18, CG20, CG22, CG23), suggest such institutionalised continuity will encourage a narrow interpretation of PEIA, essentially as an extension of EIA. • Heavy bias in favour of natural sciences and engineering within the licensed research institutes is inadequate to address strategic and sustainability agenda underpinning PEIA's purpose. Need wider range of skills (especially in the social sciences). • Status of external agency is an obstacle to close process integration (of planning and assessment), and fails to benefit from learning resulting from carrying out most of the work in-house. • Institute's access to decision-makers is very poor. • EIA experts have limited opportunities to engage, analyse and openly discuss strategic options with planning authorities: most experts explained their work focused on the search for technical solutions to the environmental problems, often narrowly defined (interview CG9, CG18, CG20, CG22, CG23, CG34).

The problem lies with the legal requirements, as well as with the concept of assessment reviewed earlier. On the one hand, Article 7 of the EIA Law, establishes that PEIA of several plans, including land-use master plans, 'should be conducted "during the preparation of a plan"' (Tao *et al.* 2007:252). However, for other types of plans, the law establishes that PEIA will start 'after the draft plan is developed and before it is submitted for review and approval' (Tao *et al.* 2007: Table1). The difference is of little consequence in practice: interviewees point out that PEIA almost invariably starts once a full draft of the plan is completed (CG3, CG9, CG23, CG34). Moreover, experts argue that given the current cultural, political and institutional context it is unlikely that PEIAs will be initiated before a draft plan is completed, except in limited cases (interview CG9, CG34), probably coinciding with sufficient political leadership to do so.

This is crucial. Taking carrying capacity as the potential focus of PEIA in China, it would be substantially different to consider this dimension as an input to, for example, the definition and allocation of land-use categories, or as a criterion for assessing the likely adverse impacts of what is already proposed in a plan. Yet Tao et al.'s (2007:260) analysis of land-use master plans

confirms the late start of PEIA, and its implication for the second distinguishing character of strategic-level assessments – the contribution to the debate on alternatives:

'[g]iven that SEA is started after a draft plan has already been prepared, the identification of environmental status and analysis of environmental impacts would be separated from the planning preparation process, and hence comparison of alternatives is practically impossible. When SEA is initiated after key decisions on the plan have already been made, it is difficult to significantly influence the plan'.

The same is true for the transport sector, where PEIA is limited to the discussion of alternative routings of pre-determined transport solutions: it can advise on sensitive areas that should be avoided and on mitigation, but not on the strategic choices that led to select a particular transport mode, or infrastructure instead of demand management (interview CG13, CG20, CG22, CG23, CG40, CG41).

The wider context adds to the problem. The Government's top-down approach to decision-making and the general lack of transparency (see above) limits the scope for openness and participatory approaches to planning and assessment. Although some degree of iteration from the bottom is envisaged, the result of classic five-year plans, for example, is essentially a top-down definition of macro objectives and targets which can limit significantly the power of planning and decision at lower levels of government (interviews CG2, CG12). This does not bode well for objectives-led approaches to SEA, and indeed they are rare in China (see below). In the transport sector, for example, provincial administrations are told the length of new infrastructure that needs to be built (interview CG5), reducing the range of alternatives that can be reasonably (and meaningfully) discussed. These reasons, together with the earlier analysis of 'organisations and actors', explain why even in the event of an early start, the capacity of using PEIA to help define sustainable development objectives and solutions is often curtailed.

A third aspect of process is that of public involvement. Article 11 of the Law (2002) makes refers to the need to 'hold expert meetings and public hearings' and invites those responsible to give the resulting comments 'serious' consideration, and to provide an explanation of how these were adopted or rejected. Zhu and Ru (2007:7-8) argue that 'Chinese laws and regulations have yet to fully address the three prerequisites for meaningful public participation, that is, access to information, public participation in decisionmaking processes, and access to justice'. Here again, timing is problematic. In terms of current project-EIA practice, public consultation tends to occur at the late stages of the EIA process and if it influences the decision, it tends to be in terms of mitigation measures, the same has been true for the limited PEIAs completed to date (interview CG23, CG28).[9] Even if the above problems were less frequent, bias towards top-down directives and the tendency is to 'lectur[e]' the public on the need to protect the environment, instead of informing 'the public on problems and solutions' and creating space for dialogue (Michalak 2005:522-523), remain an obstacle.

Pan Yue (Xie 2007) has been a staunch supporter of the people's right to know, participate and supervise (monitor) environmental matters. He has promised new legislation to strengthen the role of public participation, arguing that '[t]he ultimate impetus to the solution to China's

[9] This problem was widely acknowledged at a two day training course on public participation for EIA and SEA, in Guiyang, China, 3-6 April, 2006.

grave environment issue will come from the public', and that the public should 'fully implement their right[s]… so that they can engage in deeper participation in the environmental protection campaign' (Xie 2007). SEPA is therefore hoping that the public can support the Government in shifting the balance away from blind pursuit of growth to a more respectful form of development – the two policy shifts summarised earlier. To this end, SEPA has proposed new *Regulations on Open Government Information* (expected to take effect from May 2008), demanding that officials disclose information about air and water quality, pollution spills, and the names and misdeeds of violators (Reuters 2007). Furthermore, in 2006 SEPA issued a set of guidelines on public participation in project-EIA (GOV.cn 2006), pledging that it will use this to set up a comprehensive system which releases environmental information and make procedures more specific to ensure effective public involvement. It is a step in the right direction.

Overall, however, the quality of PEIA processes falls short of three fundamental criteria of good practice (IAIA 2002), while several aspects of the wider context further inhibit progress. The experience of many countries has been similar and it has taken over a decade for such criteria to become common knowledge (if not yet practice, see: Sadler *et al.* 2008), but unless China's process is improved, PEIA is unlikely to achieve its purpose, stated in Article 1 of the law and further elaborated by Pan Yue (above).

5. Methods and Uncertainty

Having discussed purpose and process, I now turn to the final part of an SEA system: mechanisms – the aspect of PEIA on which scholars have focussed most to date (Bao *et al.* 2004; Tao *et al.* 2007; Xiuzhen *et al.* 2002). I will be contributing to the debate by reflecting on the issue in context. The choice of methods is influenced by most of the issues raised above, although two are especially influential: the emphasis on techno-rational interpretations of the concept of assessment, which is further entrenched by the certification of EIA research institutes to carry out PEIA. The literature and fieldwork data show that there is no clear understanding of the difference between EIA and PEIA. This, once again, was also common amongst practitioners in Europe in the 1990s. However, the fact that in the Chinese system SEA is an EIA of plans, may not be helping matters.

When asked about the biggest challenges they were facing in applying PEIA**,** experts from certified research institutes (interview CG18, CG20, CG24) express confusion in "deciding what technological [methodological?] background to use", and admit somewhat apologetically that they "tend to do SEA as we do EIA". Decisions typically taken during scoping are posing the biggest challenge: "what depth [of analysis] to aim for… EIA is very specific and detailed… including issues of air and noise pollution… [PEIA] is at a much higher level", requiring consideration of a larger number of projects, more issues and the focus on a "wider scope". A senior bureaucrat from a transport-related ministry (interview CG3) considered PEIA "very difficult", due to the high level of "uncertainty" in planning: it was difficult to know enough about the likely projects and thus produce sufficient "baseline data" to "quantify" things. Another expert (interview CG18) explained that there was a "need to learn how to quantify ecological impacts and other external factors" and that they did not "have the skills [to do] economic studies [analyses]" in PEIA.

Discussions with the experts suggest a gap between the essence of strategic-level assessment and the way PEIA is understood and practiced. SEA requires experts to prioritise strategic questions and issues, reducing complexity and highlighting the key factors on which planning decisions should be taken. To do so, it requires close collaboration between planning and environmental actors – something that I have shown to be very difficult in the current Chinese context. Instead, experts are struggling to apply project-EIA concepts to fully drafted plans, and in doing so they are confronted with the limits of data and intrinsic levels of uncertainty. Many informants are uneasy about the lack of detail in PEIAs (and SEA examples), viewing them as "a very simple description of EIAs" (interview CG23). The hard science background of many certified practitioners makes it difficult to accept even semi-qualitative methods (such as for example matrices using simplified symbols to show trends rather than exact changes), and reassurance that these practices are widely applied internationally does not reduce scepticism.[10] These concerns characterise the challenges of moving to strategic-level assessments. Experience with SEA in Taiwan reveals similar difficulties: there are problems relating to the unfamiliar character of the methodologies, and crucially, to the incompatibility between existing 'administrative frameworks' and requirements for SEA's implementation (Liou *et al.* 2006:174). Most administrations and experts have struggled with them during the initial stage of transition from EIA to SEA.

Based on the findings from this analysis, it seems an effort should be made to streamline, prioritise and simplify the strategic levels of assessment so as to leave the detailed analyses to project-EIA. At present, the late start of the PEIAs means that the level of analysis is very similar to project-EIA, and SEPA is aware of the problems this causes. Two aspects of SEA experience might help to refocus the assessments towards more strategic questions and advice and increase at least the direct impact (cf. Figure 1) of current practice: the objectives-led approach (Sheate *et al.* 2007) and a balance between techno-rational and more participatory processes and tools (Owens *et al.* 2004).

Explaining the rationale of the internationally accepted practice of objectives-led SEAs, where the assessment is driven by a set of environmentally sustainable objectives, could help to focus the analysis, reduce the need for detailed quantification (as relative trends often are sufficient) and gain legitimacy for the outcomes (if discussed and agreed through wide consultation), (Taiwan has interesting lessons: Liou *et al.* 2006). One expert (interview CG22) acknowledged this: "it is the objectives and [environmental] standards that are crucial", but illustrated the difficulties and the default need for quantification: "who sets them?… yes, we can take some from legislation and from statements, but some of these are very vague – so how do we quantify them?". The objectives-led method is also dependent on knowledge of the "macro environmental policy framework": another major gap (interview CG9) that SEPA is trying to address through training. An objectives-led approach would include the evaluation of policy coherence (between environmental and sectoral priorities), and would systematise the evaluation of a proposed plan's contribution to environmental objectives, thus increasing the policy relevance of PEIA's findings. Focus on objectives may also assist in cumulative impact

[10]Discussions about methods and the validity of qualitative approaches has been a constant theme in the meetings, interviews, seminars and training sessions I was involved in between 2005-2007.

assessment, carrying capacity studies and footprint analyses (mentioned in relation to the purpose of PEIA) as it can facilitate the selection of impact factors. Furthermore, all these methods can use (albeit with varying levels of detail) sensitivity and vulnerability mapping and linkage statements in cause and effect flow diagrams (Sheate *et al.* 2007).

Finally, the evidence presented here supports the greater use of participatory mechanisms. Planning, and thus its assessment, involves dialogue and communication of environmental, social and economic values (Caratti *et al.* 2004). Vicente and Partidario (2006:697) argue that 'SEA must be able to successfully communicate environmental values in order to reach the core of decisions'. In other words, in order not to fall into the trap of 'little effect', mentioned above. Not least because uncertainty is intrinsic to strategic-level choices and it can rarely be solved through increasingly complex quantification efforts. Instead, it requires balancing data with discussion about the objectives and values at stake, even in the case of cumulative impact assessment or carrying capacity analyses (which inevitably include judgements of value as to what is at stake, what is to be counted). Workshops, regular meetings, joint task-forces all help achieve a better understanding of worldviews and constraints. They also help to promote learning in the medium and longer term, and could lead to incremental improvement in collaboration and transparency (Bina 2003; Runhaar and Driessen 2007; World Bank 2005), which are highlighted above as a serious contextual challenge.

The argument for a better combination of techno-rational methods and approaches geared to promote dialogue, coordination and greater collaboration across agencies and sectors has become central to SEA discourse (Owens *et al.* 2004; Vicente and Partidario 2006), and will hopefully influence the debate on the future of PEIA.

6. Conclusion: towards a Context-specific SEA System

6.1 Taking the opportunity

PEIA in China operates at the point of greatest tension between rapid environmental degradation and persistently high growth targets. However, on the basis of the critical review of its concept, practice and context of operation, I have suggested that the current system does not appear to be designed to deliver sustainable development and better environmental, social and economic coordination, as per Article 1, nor Pan Yue's six-point vision presented above: 1) the implications of China's limited resources can only be considered in terms of mitigating losses, possibly preventing them, but rarely as the primary input into the development concept, 2) the pursuit of low consumption of energy, low emission of pollutants, reduced waste and high efficiency is considered – albeit almost exclusively from a technological perspective, less in terms of prevention, 3) the need for environmental policy integration remains a significant gap, 4) the need for inter-sectoral coordination remains a major challenge, 5) the need to consider the social and cumulative implications of development is being considered, but there is still room for progress, and 6) the importance of promoting public involvement has been acknowledged, but is rarely practiced in meaningful ways.

SEA is, first and foremost, an opportunity. It can assist governments in meeting challenges reiterated at the international level since the 1970s,[11] and identified here in the context of China: a complex and nuanced range of obstacles, linked to culture, politics, society, and the institutions and organisations operating therein. To address these, it is not enough to define good, or even excellent, assessment procedures and methodologies. Introducing new mechanisms, such as PEIA, requires legislation, guidance, training, and the adaptation of existing administrative procedures, all of which draws on limited financial and human resources. It is therefore essential that the 'opportunity' is maximised, and I have argued that the definition of a context-specific system, could be a way to achieve this, especially at a time when new EIA regulations are being discussed (interview AC1). It would also help to clarify in what way PEIA is (or should be) different from project-EIA. The fact that it applies to plans, not projects, is not a substantive explanation of this difference (Bina 2007) and there is little in the current purpose, process or mechanisms that illuminates this question further.

Figure 2 outlines the elements of a possible SEA system for China, based on the theory and empirical findings of this analysis. In my critique of the purpose, process and methods I have suggested a number of improvements that would strengthen the existing system's effectiveness (see also Table 3 below). I now conclude by exploring the last element of the framework for context-specific SEA systems, proposed in the introduction: the SEA strategy. Throughout this paper I have referred to China's practice as PEIA, in line with the law, but also in line with the narrow interpretation of the purpose and concept of assessment revealed in the analysis. The following suggestions for a context-specific system seek to shift China's practice towards more strategic interpretations of assessment. I therefore use the term SEA hereafter.

6.2 Elements of an SEA strategy

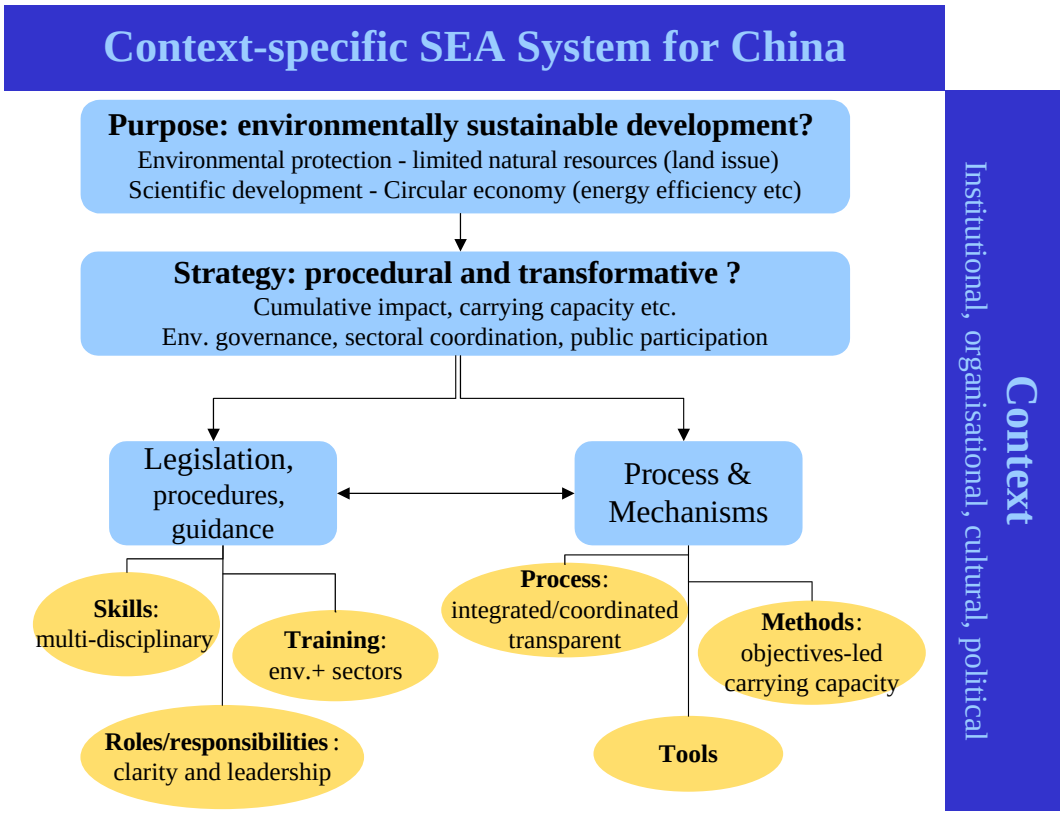
Articulating the purpose of an assessment system (see above discussion) deals with the '*why*' question. The next step is to define a strategy for '*how*' to operationalise SEA, defining its role in relation to the main challenges in planning, decision-making and the wider context. This sets boundaries for the definition of legislation, guidance, training, as well as details of the process and mechanisms (Figure 2).

The substantive purpose suggested above is likely to remain an aspiration, unless the current implicit strategy for PEIA is radically revised. At present, PEIA is being driven by an implicit procedural strategy (Figure 1) that subscribes to a narrow interpretation of impact assessment as a techno-rational mechanism, which identifies likely adverse effects and operates in an essentially confrontational environment, where the interests of growth are the primary input for planning, and those of the environment are more or less effectively retrofitted. It subscribes to the rationale whereby lack or incomplete information on the environmental effects is the main reason why plans are damaging the environment. Such implicit strategy relates to the wider context as a boundary condition (above) thus further entrenching some of the obstacles examined in the reviews of context and practice.

[11] Including: the need to move away from the idea of the environment as a separate sphere of policy (WCED 1987:313); the need to address environmental issues 'as part of the overall economic policy rather than project-by-project' (World Bank's Development Committee, in: Noble 2002:4); and the call for improvements in decision-making, information for decision-makers, and assessment and planning tools, according to the theme of integration – of sectors and processes (Chapters 8 and 10 of Agenda 21UNCED 1992).

If SEA in China is to have a more strategic purpose, it is essential that the concept of assessment be revised. Interviewees from SEPA and ACEE reveal that there is already an expectation that SEA ought to:

- Promote incremental technical (and short term) change, notably through the assessment of the cumulative impacts of multiple projects located within geographic areas with ecological coherence (typically a river basin, where different dam construction projects are being proposed);



Source: Author

Figure 2 Elements of a context-specific SEA system

- Facilitate fundamental institutional (and long term) change, whereby authorities will increasingly need to consider the environmental dimension during the planning process.

Interviews with SEPA and some of the research institutes confirm that the expectation is to give the Chinese Law as wide an interpretation as possible, albeit being aware that it will take time for practice to get up to speed (indeed, it has taken over a decade for the international community to reach a certain understanding of these issues).

On this basis, it seems reasonable to propose the development of an SEA strategy that seeks to combine procedural and transformative elements (cf.: Wallington *et al.* 2007). I have made proposals for procedural aspects earlier (see Table 3 for a summary). Here I focus on the transformative aspects that can promote a shift from PEIA to strategic-level assessment and broader effectiveness criteria (as understood in this paper). Transformative strategies consider environmental governance weaknesses in the wider context as a further target of SEA (in

addition to PPPs themselves). A similar strategy for China's SEA could actively promote SEA as a policy transfer mechanism that ensures wider dissemination of macro-environmental policy concepts among actors from sectoral ministries, and promotes a shift in the understanding of environment that is not limited to technical aspects, but includes also a socio-political dimension. Through its repeated use, assessment can also promote organisational and social learning, thus SEA could be used to question the current predominant view of growth's priority forcing reflection about the long-term implications for society and its natural resource base. Furthermore, a transformative strategy could promote a new culture of collaboration both between sectors and with environmental authorities, to improve the flow of information between top bureaucratic levels and more technical specialist agencies so as to enable the latter to see the big picture to which they are meant to contribute, to promote greater transparency and opportunities for dialogue, and to democratize the decision-making process by promoting meaningful public involvement at different stages of planning and assessment.

In more pragmatic terms, some of the challenges identified above could be addressed in the short term by making the National Development and Reform Commission (NDRC) and related provincial offices (so-called DRCs) the champions of SEA. The common view amongst interviewees was that the NDRC was virtually the only organisation that had the capacity (and legitimacy) to develop a comprehensive, cross-sectoral view – essential if you want to take a sustainable development perspective. The case of transport, which is divided amongst several ministries for air, road, water and rail transport, illustrates the importance of this perspective. The NDRC and related DRCs could be seen as an advantage in the Chinese context. They provide an existing network of institutions which have the benefit of overview, as well as strong political leverage, thanks to their close links with the State Council. If central Government is serious about pursuing the policy shifts mentioned above, NDRC's adoption of SEA as part of its regular practices would be a major step forward.

These elements of an SEA strategy set out the broad values, rationalities and criteria that can make assessment more effective in pursuing its purpose. These can then inform the practice of SEA by influencing: 1) legislation, procedures and guidance, and 2) process and mechanisms. Suggestions for these aspects of an SEA system are included in Table 3.

In conclusion, China's spectacular growth is undermining the environmental basis on which the health, wellbeing and the future of its 1.3 billion people depend. China's leadership is well aware of the challenges it faces and is searching for a broader perspective of the interaction between man and its environment. It has proposed courageous policy changes, but the pace and scale of growth and deterioration requires even more decisive action to protect peoples' health and the environment they live in.

PEIA and SEA can help in different ways, depending on what purpose and effectiveness is sought. This contribution has set out the main challenges and opportunities that need to be considered as the Government revises its approach. If the Government intends to invest further in strategic-level assessment, it should take the opportunity to redesign the system so as to introduce SEA as a transformative force which can improve individual plans in the short term, as well as promote longer-term change in the socio-political, cultural, institutional and organisational context, through the strengthening environmental governance practices. Whatever the direction, stronger political support for the purpose and functions of PEIA (or future SEA)

seems essential, and the leadership's concern with scarce per capita resources and with the discontent of rural poor might raise the issue on the agenda.

Table 4 Summary suggestions for a context-specific SEA system for China

Elements of the System (as illustrated in Figure 2) • Suggestions for a Chinese-specific system
Purpose
• The substantive purpose of China's PEIA system – expressed in terms of implementing sustainable development in the 2002 Law – could be framed more specifically, to refer to the concepts of circular economy and the maintenance of the natural resource base of China in balance.
Transformative Strategy
• SEA as a policy transfer mechanism; • SEA as a contributor to organisational and social learning; • SEA as a means to promote collaboration between sectors, and between development and environment agencies; • SEA as a means to democratize decision-making; • Consider making NDRC and DRCs the champions of SEA in order to give it the political leverage necessary for greater (more rapid) effectiveness.
Legislation, Procedures and Guidance
Legislation • Revise Article 1, distinguishing between the substantive purpose (the goal) and the means to achieve it. Make the purpose as specific as possible; • Ensure timing of all SEAs is linked to the beginning of planning: make the early start of SEA mandatory; • Strengthen requirements for the collaboration and consultation between development and environment agencies (ideally from the scoping phase onwards); • Improve the quality and timing of the public's involvement; • See also Zhu and Ru 2007 for more detailed recommendations.
Skills and training • Urgent need to complement strong natural science and technical background with social sciences; • Consider raising political support for the importance of SEA training for staff from within the sectoral ministries (to date participation has been regrettably limited).
Roles and Responsibilities • Given the existing policy of focusing on certified EIA research institutes, consider nominating an SEA leader or champion from within the sectoral ministry responsible for the plan under scrutiny: o The champion could ensure closer integration between planning and SEA and seek to maximise opportunities for learning. o This could help strengthen the profile of the assessment process amongst planning departments and reduce confusion over roles and responsibilities.

Process and Mechanisms
Process
• Make the early start of SEA mandatory; • Promote close integration between planning and assessment (see for example: EC 2005), especially in terms of the definition of the problem, the objectives, the alternatives to be considered and the actual evaluation; • Promote systematic collaboration and consultation between sectors and between development and environment agencies during the definition of the problem, the objectives, the alternatives to be considered and the actual evaluation; • Require the consideration and discussion of alternatives from the perspective of environmental sustainability and focusing on the priorities expressed through the purpose of SEA (suggested here in terms of maintaining the natural resource base and promoting environmental justice); • Promote systematic consultation and involvement of the public during the definition of objectives, of the alternatives to be considered and to discuss the results of the evaluation.

Table 5 Summary suggestions for a context-specific SEA system for China (Con't)

Mechanisms
• Widen the range of methods and tools being adopted for these assessments (balance techno-rational and participatory mechanisms); • Promote an objectives-led approach (and link this to the interest in cumulative impacts and carrying capacity analyses); • Provide guidance on how to develop carrying capacity analyses tailored to the limited data availability and resources on the ground; • Strengthen synergies between existing assessment practices (for example, sectoral analyses, economic and social evaluations currently carried out outside the PEIA framework) to improve understanding of the problems and possible solutions; • Training on macro-environmental policy (especially for sectoral ministry staff); • Consider a policy of reasonable (if not free) access baseline datasets.

Source: Author

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The Role of Strategic Environmental Assessment in Strategic Decision-making

– An International Evolutionary and Learning Process for Smart Growth and Prudent Development

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1. Introduction

The endorsement of the European Directive on Strategic Environmental Assessment in 2001 has led to a much greater interest around the world on the subject of strategic environmental assessment, but at the same time has also posed a number of questions on how to put into practice a Strategic Environmental Assessment (SEA) system that could have a positive influence on the decision making process. It also poses a question on how such a system interacts or contributes to the sustainable development initiatives. Similar questions are also relevant for China as the PRC Law on EIA with provisions for plan EIA has come into effect since 2003. In many aspects, there are a number of similarities in the provisions for SEA in respect of plans, and both the EU directive and PRC EIA law have no explicit provisions for policies.

There is going to be a long journey, an evolutionary process and an important learning process for all those involved in major policy and plan formulation and decision-making around the world, especially for those countries like China who still face considerable pressures for growth and development in the 21st century. Looking forward requires us to look back to learn and reflect upon the key pointers for smart growth and prudent development.

2. IAIA's Contributions to the Evolution of Strategic Environmental Assessment

Well before the endorsement of the European Directive on SEA in 2001, the IAIA has been taking a proactive approach in promoting discussion and good practices on SEA. According to Maria Partidario (see Ref. 1), concern about SEA among IAIA individual members dated back to 1980s, and the first formal SEA oriented meeting under IAIA was in fact held in 1992 at its 12th Annual meeting in Washington DC. That was a meeting held by IAIA and others under the leadership of the former IAIA Presidents, Richard Roberts and Robert Goodland.

Since then, SEA became a hot topic every year at the IAIA annual conferences, attracting many different types of papers from all over the world. A rough estimate by Maria Partidario suggested that from 1992 to 2000, there were altogether 8 conference SEA sessions, 2 SEA

workshops, 7 SEA special meetings, and 6 training course and research projects. All these greatly facilitated the development of practices and approaches, and raise the interest and awareness among many countries.

The IAIA collaborated with the Canadian Environmental Assessment Agency and other organisations in the International Study of the Effectiveness of Environmental Assessment completed in 1996. In the Final report (see Ref. 2) prepared by Barry Sadler and led by the Canadian Environmental Assessment Agency, strategic environmental assessment was promoted as a key instrument for sustainability assurance and for improved policy making. Since then, the interest among IAIA members was so great that a SEA section was formally set up in IAIA, and has been one of most active sections ever seen.

3. Road Maps towards Better Application of Strategic Environmental Assessment for Smart Growth and Prudent Development

To further promote the discussion and development of the SEA system and practices, a booklet on "IAIA Presidents' Vision for Impact Assessment", which contains many visionary statements on SEA, was published and distributed at the 20th IAIA Annual meeting held in Hong Kong in June 2000. Also, a set of vision statements and road maps, among others, were developed by the SEA Session Chairs, Rob Verheem and Maria Partidario at the 20th IAIA Annual Meeting in Hong Kong on the basis of the discussions and contributions by various IAIA members at that conference.

It became clear from these discussions that SEA processes and methods did exist, especially in developed countries. Developing countries were starting to build their own processes and instruments. However, SEA was most often used at lower levels of strategic planning. The use of SEA at the highest level of planning was still at its early stages. The key points in the road maps towards better use of SEA are presented in Box 1.

From July 2001 onwards, IAIA participated in the discussions at the Ad Hoc Working Group for the preparation of a Protocol on Strategic Environmental Assessment organised by the United Nation Economic Commission for Europe. The IAIA's perspective - which was developed by an IAIA SEA working group led by Barry Sadler and with members including Maria Partidario, Rob Verheem, Thomas Fischer and others - was based on the following principles and premises:

- SEA should be linked to overall goals and objectives, and give explicit consideration to those established by the Parties for environmental protection, health and sustainable development.
- SEA should be applied at the earliest stage of the hierarchy and process of decision-making at which significant environmental effects can be reasonably identified and when alternatives are still open.
- The scope of application of SEA should be comprehensive yet realistic; including all types and levels of strategic decisions that have environmental, health related, sustainability and trans-boundary consequences.
- SEA should be carried out with reference to the nature of the decision as well as its potential significance for the environment, taking into account the difference between broad policies on the one hand and more concrete plans and programmes on the other.

SEA is a tool for supporting good governance and meeting what the Brundtland Commission called the 'chief institutional challenge of the 1990s.

SEA should be integrated with strategic decision-making processes and reinforce the promotion of environmentally sustainable development.

SEA should be applied in accordance with widely agreed principles and standards of good practice, recognising these can be specified in the protocol only as discretionary guidance.

As SEA has become a "hot" issue, IAIA sought to provide a professional product on the subject to assist IAIA members. At its mid-term Board meeting in November 2001, the IAIA Board of Directors formally endorsed a set of SEA Performance Criteria as the first IAIA Special Publication, and disseminated to all members in January 2002. This set of criteria, which is presented in Box 2, aims to provide general guidance on how to build effective new SEA processes and evaluate the effectiveness of existing SEA processes. It was developed by Rob Verheem of the Netherlands EIA Commission in consultation with members of the IAIA SEA Section and through discussions at special workshops held in 1998, 1999, and 2000 during the IAIA annual conferences. This document was distributed via Internet to members of the IAIA SEA Section for comment and review at serveral annual conferences, revised several times, discussed at both the IAIA'00 and IAIA'00 annual conferences. The SEA performance criteria have been used and tested in practice by a number of IAIA members.

In conjunction with other partners, the IAIA participated in and made submissions to the Third Session of the Preparatory Committee meeting for the World Summit on Sustainable Development, held in New York from 25 March to 5 April 2002. IAIA and other partners have recommended, among other things, that actions are required by all nations by 2012 to apply strategic environmental assessment to policies, plans and programmes for all sectors likely to have significant environmental effects and to promote integrated assessment of social, environmental and economic impacts. The key position statements put forward by IAIA in 2002 to the World Summit are summarized below:

Impact assessment is an important tool for achieving sustainable development. A family of assessment tools has been developed in the past decade to facilitate the journey to sustainable development;

Strategic linkages are needed to meet the major challenges identified in the World Summit preparatory processes and meetings, and ensure that sustainability considerations are not just buzzwords or catchphrases, but become a reality in many proposed policies, plans, programmes and other actions or decisions. Five important links, which impact assessment can facilitate in the context of making sustainable development a reality, are:

1. linking sustainability considerations to policies, plans and programmes through Strategic Environmental Assessment;

2. integrating trade, environmental protection and sustainable development through impact assessment;

3. integrating ecological, ecosystem and biodiversity considerations into development decision-making through environmental impact assessment and strategic environmental assessment;

4. integrating health considerations into sustainable development through impact assessment;

5. integrating community involvement into sustainable development through impact assessment.

These five strategic linkages need to be dealt with in a systematic and integrated manner in order to achieve real sustainable development. A number of scientific and institutional challenges to achieving integrated assessment for sustainable development still need to be addressed.

Impact assessment policy and legislation should be strengthened to ensure that all countries have effective, operational systems to identify the major impacts of development proposals, mitigate adverse effects, consider major alternatives and evaluate them with reference to sustainability goals and targets;

Community involvement should be promoted in all stages and for all types of impact assessment, with readily accessible information, opportunities for all relevant sectors of the community and a decision-making process that explicitly addresses concerns raised by individuals and groups affected by the proposal;

Appropriate impact assessment training and capacity building programmes should be set up through international and regional partnership, with measurable results and specific targets and to devote sufficient resources to the area of training and capacity building.

4. Using Strategic Environmental Assessment for Smarter Growth and More Prudent Development in Asia

As with other parts of the world, strategic environmental assessment in Asia has been gaining greater attention over the past few years, because of the increasing challenges being posed by the cumulative or mega environmental implications arising from major strategies or policies. But there have not been many real examples of strategic environmental assessment. Many of the economies are still grappling with the institutional, technical and administrative difficulties in order to make the EIA system fully effective.

Box 1: A Road Map to the Future on Strategic Environmental Assessment (SEA)

Developed countries:

- There are a number of ways to sell the benefits of SEA in policy making, e.g.: by showing evidence that SEA (sometimes under another name) is already taken place in many situations and with positive results (also important for developing countries); and providing clear examples of SEA success stories. To be able to select the best case studies for this use, we need to develop criteria of what constitutes a 'good' case study, e.g. the existing draft SEA performance criteria;
- use as much as possible senior level persons to advocate the use of SEA, e.g. retired top level decision makers or former captains of industry;
- in the case of industry we need to find examples where the use of SEA ultimately has improved competitiveness of companies;
- Organize workshops with other organizations where business, government and assessment experts are brought together to discuss successful use of SEA; simple, straightforward actions should not be forgotten, such as carrying out demonstration projects and training.

- Furthermore, we need to develop a basic framework for those who design SEA processes, with enough flexibility to adapt SEA to specific situations, but with clear starting points and preconditions for a best quality process.
- In building, however, it is important to build as much as possible on already existing processes for the integration of impact assessment in planning, whether they are called SEA or not. This diminishes as much as possible the resistance of people against new ways of working.
- Assessment experts should analyse the way policies are developed and who decides what when, to find the most effective way to integrate SEA into that process;

Developing countries:

- The provision of clear SEA case studies, preferably in developing countries. On the basis of these capacity could be built.
- Another key necessity is to clarify what SEA is. Currently there are so many different opinions on what is or should be SEA that the situation is confusing for developing countries to build their own processes.
- Furthermore, in all countries sufficient SEA legislation and regulation should be put in place. These should especially focus on regional level planning.
- Aid agencies and banks should make the requirement for SEA part of all their projects. Not only doing it themselves, but also requiring it from the recipient countries.
- An apparent problem is that different donor countries or agencies have different views on what SEA is. An attempt should be made to structure this more. A second problem is the resistance that may exist against the use of SEA.

(Extract of IAIA"00 Proceedings)

In April 2006, the World Bank completed a review of the Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements in East and Southeast Asia. According to this World Bank's study, Hong Kong Special Administration Region (HKSAR), Korea, Japan, China and Vietnam are the most advanced stage of applying or introducing SEA and HKSAR established both EIA/SEA and its SEA, with its SEA being policy inclusive. Korea's "Prior Environmental Review System" is a plan-based SEA system. In Japan, some local governments have undertaken SEA while the central government is in the process of introducing SEA at the national level. Other countries such as Philippines, Indonesia and Thailand also show strong interest in SEA. This trend of the application of strategic environmental assessment is expected to continue and spread across more economies in Asia.

It is certainly not appropriate to consider the Asian region as a homogenous region. It is actually very diverse in terms of the level and type of economic development, the institutional capacity, and the political, cultural, social and environmental conditions. It is also very diverse with regard to the types and complexity of the policy making processes and the decision making processes for projects and developments. These varying conditions call for a much more flexible, diversified approach in applying strategic environmental conditions to suit different social and economic circumstances.

The practical application of strategic environmental assessment in Hong Kong has proved

to be worthwhile. Based on the experiences in Hong Kong, several key elements of strategic environmental assessment can be drawn that might have some general application:

- process design: based on practical application experiences, it reveals that the strategic environmental assessment, as compared to the conventional EIA process, has to be tailored made to suit different types of policies and strategies, and to allow for different types of decision making and political systems. Nonetheless, the most essential components that must be established are a process to critically assess the environmental implications of different policy or strategy alternatives, assumptions and response options; a process to scope the types and levels of decision inputs that are appropriate to the types and levels of decision of policy and strategy; and a process to involve relevant policy stakeholders and stakeholders in the community for some meaningful, structured and informed debate or discussion on critical strategic environmental issues;
- process management: as strategy and policy making, unlike projects, involve many policy bureau or ministries or departments, the process management must be such that there is suitable technical oversight arrangement in an objective and systematic fashion, and suitable interface and integration with the mainstream policy making process. Both are necessary: independent and interdependent, a parallel stand-alone process and an integrated process. This is to ensure the objectivity of the assessment process, without undue influence by other policy making parameters, but also ensure maximum possible integration;
- stakeholders' involvement and public participation: compared to project EIA, this is easier said than done, because many policies and strategies are highly sensitive, and by definition, are prone to be controversial, and have potential to arouse great concern. Too late a public consultation undermines the credibility of the process and results in a lack of focus. Too early a consultation would end up in a free flowing talking shop without too much meaningful information and options for discussions. Ideally, the involvement and participation process needs to be truncated into different meaningful stages, with different purposes and based on varying types and levels of assessment information and results.

Taking a wider view in Asia, growth and development are inevitable for various socio-economic reasons. Many specific issues and challenges facing the region, however, would need to be tackled through strategic environmental assessment if smarter growth and more prudent development are to be realised. For example, more and more mega cities will appear, the population growth trend is likely to continue and this will impose natural resource constraints. The issues of supporting the livelihood of the people, maintaining and improving public health standards, providing food, clean water and clean air as well as a healthy environment, are becoming more and more important, and, in some situations, harder to achieve. External factors such as global and regional economic downturn, transboundary environmental problems and global environmental issues further complicate the issue. To bridge the gap between EIA and environmental sustainability, due consideration would need to be given to the above key issues and challenges. Further efforts and cooperation should be made at all levels to

address and tackle them. There is an important need for conducting strategic environmental assessment at the policy or strategy formulation stage.

Asia in general is still at an initial stage of adapting strategic environmental assessment, and its future application would likely be governed by the type and pace of economic restructuring that is taking place in reviving the economy. The scale and pace of policy changes that are necessary for economic restructuring present both opportunities and challenges in applying strategic environmental assessment. To make strategic environmental assessment fit for its purpose in the Asian context, the process needs to be highly adaptive and the focus must be on achieving better environmental outcomes in the most efficient and effective manner, with suitable public involvement.

5. Conclusions

In today's world and for any country, growth and development are needed and inevitable. History has already shown that growth and development along the conventional patterns and using conventional approaches are not going to work for any country and are not going to be sustainable. The world needs smart growth and prudent development. In today's competitive environment in the world, a country needs smarter growth and more prudent development in order to be able to compete. Strategic environmental assessment, if properly and genuinely applied, provides an important tool and offers very good opportunities for creating and sustaining smarter growth and more prudent development, by (a) flagging up many issues or potential conflicts between different policies and between the environment and the development; (b) providing a platform for creative and constructive dialogues and problem-solving among different policy makers and professionals, and (c) creating some common pathways or journeys to achieve policy learning, stakeholders engagement, consensus and possible win-win solutions.

BOX 2: INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT

Special Publications Series No. 1, January 2002

STRATEGIC ENVIRONMENTAL ASSESSMENT - Performance Criteria

A good quality Strategic Environmental Assessment (SEA) process informs planners, decision makers and affected public on the sustainability of strategic decisions, facilitates the search for the best alternative and ensures a democratic decision making process. This enhances the credibility of decisions and leads to more cost and time effective EA at the project level. For this purpose, a good-quality SEA process:

I**ntegrated**

- Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development
- Addresses the interrelationships of biophysical, social and economic aspects
- Is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project EIA and decision making

Sustainability-led

- Facilitates identification of development options and alternative proposals that are more sustainable (i.e., that contributes to the overall sustainable development strategy as laid

down in Rio 1992 and defined in the specific policies or values of a country)

Focused

- Provides sufficient, reliable and usable information for development planning and decision making
- Concentrates on key issues of sustainable development
- Is customized to the characteristics of the decision making process
- Is cost- and time-effective

Accountable

- Is the responsibility of the leading agencies for the strategic decision to be taken
- Is carried out with professionalism, rigor fairness, impartiality and balance
- Is subject to independent checks and verification
- Documents and justifies how sustainability issues were taken into account in decision making

Participative

- Informs and involves interested and affected publics and government bodies throughout the decision making process
- Explicitly addresses their inputs and concerns in documentation and decision making
- Has clear, easily understood information, requirements and ensures sufficient access to all relevant information

Iterative

- Ensures availability of the assessment results early enough to influence the decision making process and inspire future planning
- Provides sufficient information on the actual impacts of implementing a strategic decision to judge whether this decision should be amended and to provide a basis for future decisions

Source: (*info@iaia.org, www.iaia.org)*

There is a need for a much more dedicated effort through international and regional cooperation to develop, disseminate and widely apply good practices on SEA with a view to achieving smarter growth and more prudent development. An international network of regional and local centres of SEA good practices is highly recommended and should be established to promote the innovation and sharing of good practices on SEA in different languages and across different continents. This network could take the form of a virtual network based on the web application, or an informal, professional network involving governments, professional bodies, universities and research organisations and the civil society. This international network would serve as an important catalyst for cooperation across the globe.

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SEA of Policy: A Note on Theory and Practice

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1. Introduction

A companion paper on international trends and developments in SEA process and practice, *inter alia*, indicates that application to plans and programmes is far more extensive than to policy and/ or legislation. However, it is no longer accurate to claim that they are few in number or do not apply at the highest levels of national policy-making. During the last decade, the number of policy-level SEA systems or near equivalent processes has increased markedly and the body of experience with their implementation is richer and more diverse than a reading of the literature of the field might suggest.

This note is intended to provide a brief introduction to the theory and practice of SEA at the policy level. It is organised into three parts:

- review of the SEA concepts and elements of approach as they relate to policy-making;
- summary of the status and scope of SEA practice at this level internationally; and
- case studies of policy level SEA illustrating Australian and Canadian experience that may be relevant or of interest to China.

2. Policy-Making in relation to SEA

Policy is generally understood to be the highest level of decision-making, exemplified by goal setting or the identification of a strategic aim, proposed direction, legislative or fiscal commitment or course of action that a government intends to pursue. These types of decisions typically guide or set a framework for subsequent, lower tier actions, including the preparation of plans and programmes for a particular sector or area. From a SEA perspective, policy is where the maximum opportunity occurs to gain environmental leverage on alternatives and options, and to initiate a tiered, systematic process of assessment (which is widely promoted in the literature and rarely achieved in practice).

In this context, three critical and interrelated issues need to be addressed. First, what types and aspects of policy should be subject to SEA? This concern reflects the fact that the form and content of policy comes in many guises, at least in western parliamentary systems. Second, how can SEA be applied or adjusted to the policy-making process? This concern reflects the multiple realities of public policy development within and across different countries, and is particularly evident with respect to less structured processes. Third, which SEA procedures and methods are most effective, recognising this variability?

1) The range of policies potentially subject to SEA is broad and diverse; it might include proposals that are general or detailed, government-wide or sector-specific, formal or informal, and transformational or incremental in character. Major policy reforms or legislative proposals

that are environmentally significant will be of evident and immediate interest. Generic and specific types of policy proposals potentially subject to SEA are listed in Box 1 and include government expenditure priorities, procurement strategies and 'standing' arrangements that can have unintended but perverse environmental effects (where policy audit is a more appropriate approach). In some cases, SEA law or guidance may define or identify policy actions as in NEPA Regulations (at Section 1508.18(b)).

Box 1: Types of policy potentially subject to SEA

Policy is understood as including the following areas and aspects:

- *Legislation* including draft bills, regulations, rules and agreements
- *International agreements and treaties* that a government is negotiating or proposes to enter into (e.g. trade agreements)
- *Government strategies, papers, memoranda or statements* of intent that outline new policies or proposed directions or options at the highest level, and
- *Budgeting*, financial appropriation and expenditures, including purchasing and procurement strategies
- *Embedded policies* that are contained in plans or programmes, including objectives, directives, guidelines, etc
- *Norms, guides, principles or arrangements* that are understood or acted upon as if they were policy or law, including long-standing arrangements that promote or are permissive with regard to development activities with potential cumulative effects (e.g. land clearance, habitat alteration, wetland loss)

2) The accommodation of SEA within different the policy-making process begins with an understanding of the 'political culture' – the roles, rules and relationships that determine what is feasible or practicable. In that context, the options in a socialist, centralized system of decision-making will differ from those elsewhere -- where aspects and issues that need to be taken into account include the following:

- *Dealing with variability* Policy-making often is non-uniform, fluid, issue-driven, reactive to events and likely to be accessed best through the application of simple, rapid appraisal tools and insights;
- *Focussing on realities* In less structured processes, policy making is not so much the exercise of a specific choice as a decision filter through which proposals and options are framed and selected incrementally; and
- *Addressing key inter-linkages* Policy initiatives in sectors such as energy, trade and transport are known to have important environmental effects, including cross-cutting issues for other sectors (aspects that are little discussed in the SEA literature);
- *Learning by doing* The 'variable geometry' of policy-making underscores the need for a flexible, trial and error, learn and adapt approach to SEA, drawing on a range of concepts and approaches that are oriented toward different realties (Table 1).

Table 1: SEA concepts and their policy orientation

Paradigm/ level	Scope and policy characteristics
Strategic environmental assessment (SEA)	As currently instituted in law or policy; primarily focuses on the impact of policy, plan and programme proposals on the environment (defined broadly to include risks to human health as in the SEA Protocol); assumes relatively structured process of policy-making
Strategic environmental appraisal (SEA)	Informal, flexible process of SEA for policy and plan-making. (Sadler and Brooke, 1998). Applied specifically to UK system for policy appraisal and the environment; now largely incorporated into integrated policy appraisal or regulatory impact assessment (see Chapter 10)
Policy environmental assessments (PEA)	Based on the premise that policies are different from plans and programmes. PEA uses both EIA-based and rapid appraisal to identify their environmental impacts. It "should cover as many policy levels as possible and include implicit as well as explicit policies" (Bailey and Dixon 1999)
Policy assessment (PA)	Focuses on fundamental policy options. PA combines the functions of 'policy vetting' to check consistency with 'highest-level societal goals' and impact analysis to address any potential adverse consequences. In vetting, the focus is on 'the big picture over details' and 'insights over rigour' (Boothroyd 1994)
Integrated assessment (IA) or sustainability appraisal (SA, also sustainability impact assessment)	Addresses environmental, economic and social effects, particularly valuable for weighing competing considerations of macro-policy initiatives. SA is an integrated assessment that is carried out within an explicit framework of sustainability objectives and criteria (Sadler 2002) or a structurally integrated assessment and planning system (UNEP 2004).

3) The above concepts represent different forms of SEA approach, characterised by their procedural and methodological particulars. For present purposes, these aspects can be summarised by the extent to which they vary from or modify the relatively standardised SEA process that is applied to plans and programmes and based on EIA steps and elements. In broad, comparative terms, there are evident procedural and by extension methodological differences associated with the main types of institutional architecture (outlined in Table 2). Using the typology developed in the companion paper on SEA trends and developments, the Table illustrates the anatomy of three SEA approaches that exemplify respectively the EIA-based, EIA-modified/appraisal and integrated assessment models. Each of these is associated with specific tool kits, which are overlapping rather than mutually exclusive in their application, particularly in relation to the early phases of assessment.

Table 2: Different forms of SEA procedure and methodology

EIA-mainframe (UNECE SEA Protocol)	EIA modified/appraisal (Canada)	Integrated assessment (RIA in the UK)
Screening: determine whether proposals are likely to have significant effects Scoping: determine the relevant information to be included in report Environmental report: describe the effects of proposal and reasonable alternatives Public participation: ensure timely, effective opportunities including comment on draft proposal and environmental report Consultation with designated environmental and health authorities: inform and consult on draft proposal and report Decision: take due account of report findings and comments received and provide reasons for decision Monitoring: of effects to identify and remedy unforeseen adverse impacts	A two phase process is outlined: Preliminary scan – determine whether important strategic, environmental considerations are likely. If so or if there is a high level of potential uncertainty or risk, conduct a more detailed SEA Analyzing environmental effects – undertake on an iterative basis to consider the following aspects: 1) Scope and nature of potential effects 2) Need for mitigation and measures 3) Scope and nature of residual effects 4) Follow up, including effects monitoring 5) Public and stakeholder concerns, identified for decision-makers	The RIA consists of three phases: Initial RIA – prepared for a policy idea to inform and ideally accompany a first submission to ministers Partial RIA – prepared prior to consultation exercise, includes refined cost and benefit estimates and options Final RIA – prepared with update information from analysis and consultation responses; indicates how they have influenced policy; and compares the benefits and costs for each option considered. When writing an RIA, consider all the impacts of a policy. It is required to accompany Cabinet correspondence for policy clearance and legislation when it is presented to Parliament
Source: UNECE (2003)	Source: CEAA (2004)	Source: Cabinet Office (2005)

3. The Status and Scope of Policy-Level SEA Practice

Currently, it is estimated that approximately 20 to 25 countries, states or international organizations have SEA or near-equivalent systems that apply at the policy level (see Annex 1). By comparison to plans and programmes, the current pattern of SEA take up for policy is more incremental and ad hoc and likely to remain so in the immediate future. At this level, there are no comparable drivers to the SEA Protocol and the SEA Directive, although some may interpret the provisions of Article 13 of the SEA Protocol as ‘soft law’ that promotes SEA of policy (see

Box 2). So far as the SEA Directive is concerned, the debate over the exclusion of policy is now on hold until 2009 when the Commission must report on the first five-years of application of this framework and, if appropriate, provide proposals for its amendment and possible extension to other areas.

Box 2: SEA Protocol as it applies to policies and legislation (Article 13)

1. Each party shall endeavour to ensure that environmental, including health, concerns are considered and integrated to the extent appropriate in the preparation of its proposals for policies and legislation that are likely to have significant effects on the environment, including health.
2. In applying paragraph 1, each party shall consider the appropriate principles and elements of this Protocol.
3. Each party shall determine, where appropriate, the practical arrangements for the consideration and integration of environmental, including health, concerns in accordance with paragraph 1, taking into account the need for transparency in decision-making.
4. Each party shall report to the Meeting of the Parties to the Convention serving as the Meeting of the Parties to this Protocol on its application of this article

Source: UNECE SEA Protocol to the Convention on Trans-boundary EIA

3.1 Types of Provision

Current provision for SEA of policy and legislation is made through a mix of legal and administrative instruments that impose different obligations on government agencies. In a few cases, SEA systems were initiated through stated policy and elaborated in guidance, for example, the Hong Kong and UK systems began in this way. However, there is a general trend toward greater formalization of non-statutory mandates and more consistent implementation of legally-based SEA frameworks. Despite such realignments, there remains a fundamental distinction between the use of legal and non-statutory instruments and continued debate about their respective efficacy as a foundation for SEA of policy or legislation.

Statutory provision for SEA at this level is made under EIA-specific legislation (e.g. Czech Republic, Finland, Slovakia) or an omnibus environmental protection act (e.g. USA, Australia, Poland, Western Australia). The Czech EIA of Concepts Act (1992 as amended in 2000) was unusual in comprising a single article that applied to listed development ‘concepts’ (which are understood to include policies and strategies) approved by the central government. Such concepts are retained in the Czech EIA Act (2004), which transposes the provisions of the SEA Directive beyond minimum requirements (as do the Slovak and Polish amendments). NEPA and the Western Australian Environment Protection Act apply generally to major federal actions and strategic proposals respectively, although, in practice, the referral of policy is limited in the former and optional in the latter.

Non-statutory provision for SEA of policy or legislation is made through administrative order, Cabinet directive or policy edict (e.g. Denmark, Canada and UK respectively). This basis has been chosen for all SEA processes that specifically apply to policy or legislative proposals submitted to Cabinet (Canada, Hong Kong, Netherlands) or to Parliament (e.g. Denmark, Finland, Norway). Although lacking force of law, such instruments establish a requirement to

implement the SEA process. Depending on the jurisdiction, this requirement may be interpreted as mandatory or discretionary for government agencies. For example, the circular from the Prime Minister's Office in Denmark is reported to be legally binding and executive instructions on SEA issued by the Cabinet in Canada and the Netherlands can be interpreted as establishing a duty to comply. In practice, however, administrative instruments lack powers to ensure agencies fulfil their responsibilities or to enforce consistency in SEA application, particularly the process is based only on guidance or communication (e.g. UK and Hong Kong SAR).

3.2 Scope of coverage and application

In approximately one-half of the SEA systems, both policy and legislation are covered, although not necessarily through the same process or with equal emphasis. Some jurisdictions have established different procedures for this purpose (e.g. Finland and the European Commission). Other countries do not subject legislation to SEA (e.g. Czech Republic, Poland) or may do so through a separate process of regulatory impact analysis or assessment (RIA). A common assumption is that RIA lies downstream from SEA, and Canadian guidance calls for RIA to have regard to the findings of SEA, where applicable. Yet in the UK, the RIA process now appears to have largely superseded and incorporated the previously separate process of policy appraisal and the environment and so far the Dutch E-test has applied only to 'executive regulations' and has not moved upstream to 'policy intentions' as originally envisaged.

So far, there are few examples of SEA systems that apply on a comprehensive, uniform and government-wide basis to all policy-level proposals with potentially significant effects on the environment. In principle, NEPA most closely approximates this standard but, as noted already, falls short in application to policy. Some SEA systems apply to all environmentally significant proposals within a designated process of Cabinet or Parliamentary decision-making, which represents the highest level of policy and law-making respectively but possibly leaves less important but cumulatively significant areas without an appropriate level of assessment. Other SEA cover only a limited range of policies from approximately ten sectors as listed in the EIA legislation of Czech Republic, Slovakia and Poland.

In these countries, proposals subject to mandatory assessment include energy, mining, industry, transport, agriculture, forestry, water, waste and tourism. Although limited in number, these sectors together cover much of the policy field that is environmentally significant. For the same reason, many of them are identified in SEA guidance as priority areas for coverage, for example in Danish, Dutch and UK materials. New areas and aspects, such as international assistance and trade policy, have become subject to SEA, typically with modification of the domestic process for overseas application. For example, in Canada, separate guidance for this purpose has been drafted and a generic framework issued for SEA in support of trade negotiations. The European Commission has instituted a separate process for the sustainability impact assessment of the Uruguay round of trade discussions (see George and Kirkpatrick 2003).

Some environmentally important areas of public policy are not usually subject to SEA. These notably include fiscal policy and budgetary allocations. Of the countries listed in Table 1,

only Denmark and Norway reportedly assess these aspects for their environmental impact.[1] Yet arguably the budget is the single most important statement of the real priorities of a government and thus represents the 'deepest' form of SEA (in the sense that Dover's (2002) uses this term). In principle, Goodland (1998) noted it should be relatively easy to identify pro- and anti-environmental expenditures, citing a pilot analysis of the US federal budget. Although not strictly comparable, SEA-type tools are now being used at the World Bank to integrate environmental considerations into budgetary measures in support of client countries as part of an emerging new area of policy-based lending and support for structural adjustment.

4. Case Studies of SEA Application at the Policy Level

This section describes two case studies that are considered to be innovative examples of SEA practice at the policy level. Both address quintessential questions of policy, namely whether or not (as well as where and how) development should occur in the Canadian case of the offshore oil and gas and what proportion of old growth forests should be protected as opposed to developed in the Australian case. In addition, the former describes an SEA process carried out under an institutionalised framework and the latter describes an integrative assessment that takes place outside formal framework.

SEA of the federal policy moratorium on offshore oil and gas development on the west coast of Canada (based on Sadler 2005a)

A federal policy moratorium on offshore oil and gas developments in Pacific coastal waters of Canada has been in place since 1972. It was reaffirmed in 1989 as a result of the Exxon Valdez oil spill off the Alaskan coast. Last year, this decision was referred to an 'extended SEA' undertaken as a public review by an independent panel. This process set an important precedent for the Canadian SEA process and possibly for SEA internationally.

Specifically, the SEA addressed policy moratorium that had been in place for more than a quarter century and been subject to a series of previous challenges and assessments of the risks and potential effects of western offshore oil and gas developments (no similar exclusions are in place for Arctic or Atlantic waters). This review was meant to definitively to reconcile long standing issues and uncertainties relating to the environmental justification of the moratorium. Other innovative features included the area-wide or regional scope of the review, including broad options relating to resource allocation and specifically the protection of environmentally sensitive areas (an earlier assessment had recommended a 20km coastal exclusion zone in which oil and gas exploration or production would not be permitted).

Equally important, the SEA was unusually comprehensive, comprising three parallel and independently administered review processes:

- A science review undertaken by an independent expert panel to evaluate information and knowledge gaps and their implications for offshore oil and gas activity in accordance with in accordance with the precautionary principle;
- Public hearings conducted by an independent review panel to canvass views and

[1] Interestingly, the Australian *Environmental Protection (Impact of Proposals) Act* (1974), inter alia, applied to 'incurring of expenditures', although it appears that an assessment was never triggered under this provision. The Act has been repealed and replaced by *Environment Protection and Biodiversity Conservation Act (1999)*, which makes specific but limited provision for SEA of policy.

concerns on environmental, protected area or socio-economic issues; and

- Dialogue with First Nations (indigenous peoples) conducted by a third party mediator to review the issues of unique interest to them, notably traditional use of marine resources and the potential infringement of any future decision to lift the federal moratorium

The main findings from each track were:

- The science panel enumerated the gaps that need to be filled prior to each phase of development if the moratorium was lifted and indicated these were not constraining 'providing an adequate regulatory regime is put in place';
- The public review panel reported only on participant inputs and opinion (which was predominantly against lifting the moratorium) and offered no comment on the substantive issues (thereby abrogating a traditional role of EA panels in Canada); and
- The First Nations mediator emphasized the resource use and access rights of indigenous peoples, the risk to their traditional livelihoods from offshore oil and gas development and the need for their consent and participation in any future activities.

At the time of writing, the Canadian government is still considering these reports and there is no indication that a major decision will be taken soon given it is in a minority position in Parliament. However, there is now debate about the provenance and extent of the policy moratorium with a proposal to develop a west coast terminal and connecting pipeline to the Alberta grid system (which will permit oil exports to China and other Asian markets but almost certainly involve tanker traffic in the so called inside passage waters from which many believed it to be excluded). Whatever decision is made about this proposal or offshore oil and gas exploration and production will almost certainly be controversial and contested. In this case, much as the SEA has been helpful in the clarifying the precautionary basis for development pre-clearance, uncertainties remain and underlying them are value-based disagreements about whether and how to proceed.

Comprehensive regional assessment for the Central Highlands Forest Agreement, Australia (based on Ashe 2002)

The Australian National Forest Policy Statement (NFPS) makes provision for the conduct of comprehensive regional assessment (CRA) as the basis for the conclusion of regional forest agreements (RFA) between the federal and state governments. These agreements are intended to find a lasting resolution of long standing jurisdictional and land use conflicts over the allocation and management of Australian forests between conservation and wood production. CRA has many of the characteristics of SEA but is a more integrative process undertaken through two parallel streams of analysis. One comprises an environmental and heritage assessment relating to the national estate and world heritage, indigenous heritage, endangered species, bio-diversity, old growth and wilderness values and to ecologically sustainable forest management. The other comprises economic and social assessment of resource use and development opportunities and consequences of exploiting them.

In this case, the process followed in the CRA for the Central Highlands RFA, state of Victoria, a region of 1.1 million hectares with public lands occupying 56 per cent of this area. With certain variation as to detail, this process comprised four main phases:

- First, an interim agreement was signed to provide for the protection for forests that

might be required for a ‘comprehensive, adequate and representative’ (CAR) reserve system pending completion of the process. A scoping agreement set out the arrangements for conduct of the RFA and, in broad terms, the matters to be assessed.

- Second, the CRA of the environmental, cultural, economic and social issues in the region took 17 months and the matters covered included biodiversity, old-growth forest, wilderness, national estate, world heritage and ecologically sustainable forest management (ESFM). The report may be compared in scope and scale to a conventional EIS and was open to public consultation.
- Third, the ‘integration’ phase of the process was initiated by the release of a ‘Directions Report’, which set out proposals for the CAR reserve system, ESFM in the region and forestry industry issues and provided the basis for negotiations between the federal and state governments.
- Fourth, the final agreement was signed and remains in force for 20 years, with provision for amendment by mutual agreement, for dispute resolution and for 5 yearly reviews.

Principal elements of the Agreement included the following:

- Confirmation by the federal government that its obligations under key pieces of Australian legislation (e.g. EIA Act and Endangered Species Act) have been met;
- Provisions regarding the nomination of world heritage areas in the region;
- Federal accreditation of the state ESFM system and processes, and industry development initiatives; and
- Establishment of a CAR reserve system for the region.

Under the Agreement, the conservation reserve system for the region increased by 116,000 ha (64 per cent) and nearly half the public land in the region is now in national parks or other reserves. The CAR reserve system meets the nationally agreed criteria for biodiversity, old growth and wilderness. Benefits for industry include certainty of access to forest resources and financial incentive for industry development. Social benefits include prospects for the creation of 300 new jobs.

This study was not only an innovative process; it also resulted in a successful policy outcome, resolving the land use and jurisdictional issues in dispute. Specifically it exemplified the use of integrative assessment in support of a forest management agreement between the federal and state governments, incorporating a balanced allocation of resources for conservation and development purposes. Bearing in mind the environmental, economic and social benefits realised, it can be plausibly argued that the RFA is an example of sustainable resource management. Certainly, this approach appears to have many features related to evidence-based analysis and dispute settlement that warrant attention by other jurisdictions faced with similar land use issues.

5. Conclusion

This paper has provided a brief introduction to concepts and practice of SEA of policy, described here as the highest level of decision-making which frames and guides the preparation of plans and programmes. Policy decisions afford a major (and still largely unrealized) opportunity to integrate environmental, economic and social considerations into the broad aims

and directions for national development. SEA use at this level is slower and more hesitant than for plans and programmes and without comparable international legal instruments to encourage take up. Modes of approach are also more diverse, reflecting the variability of policy-making processes. In this context, flexible appraisal models may be more appropriate than EIA-based procedures and methods. However, this analysis does not necessarily apply to countries that have centralized and structured policy processes. In terms of their relevance to Chinese SEA practice, the issues are whether policy level approaches should be introduced, how they may be best applied and what the experience of other countries might contribute to the debate.

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The information in this paper has been drawn largely from materials prepared by the author, particularly Sadler (2005b) at Chapter 1 (Initial perspectives on SEA at the policy level) and Chapter 2 (The status of SEA systems with application to policy and legislation), except for the case studies which are individually cited as Sadler (2005a) and Ashe (2002). These references along with other work cited are listed below.

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SEA of Government Bills: The Linkage between the Politicians and the Public

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1. Introduction

This article takes a point of departure in Strategic Environmental Assessment (SEA) of government bills in Denmark. This SEA system at a policy level is an example of an integrated system whereby SEA: a) is included as part of the legislative process, b) is included as an integral part of the overall assessment of bills alongside the assessment of the administrative, microeconomic and macroeconomic effect and c) is documented as part of the commentaries to the bills. The article focuses on the linkage between the politicians and the public in this integrated policy SEA system. The example investigated is SEA of a proposed bill on environmental zones to decrease particle pollution in Danish cities.

Firstly the article will present the Danish SEA system at the policy level. Secondly the background and content of the SEA of the bill on environmental zones in cities will be presented. Thereafter the political debate and public participation will be analysed and the linkages will be discussed. The linkages are the explicit types that are found trough a documentary study of the minutes of readings in Parliament and of the public comments. Finally the article comments on strengths and weaknesses of the SEA system, the linkages between the politicians, SEA and the public, and bring forward lessons learned regarding the importance of public participation.

2. SEA of national bills: An integrated system

In Denmark strategic environmental assessment is performed at different levels from the national to the local level covering assessment of policies, plans and programmes. Denmarks rules on SEA of plans and programmes are based upon EU Directive 2001/42, and the other EU countries therefore have similar rules. The EU Directive requires that all plans and programmes that establish a framework for further permits for specific projects undergo SEA. This includes local and municipal plans and national planning directives (Ministry of the Environment, 2007). Furthermore, Denmark undertakes SEA as part of the legislative process by requiring assessment of environmental impacts of bills and other governmental proposals. This highest level of decision-making and the inclusion of SEA is the case presented here in the paper.

In 1992 a proposal regarding environmental assessment of bills and other governmental proposal was presented in the Danish Parliament as an extension to the governmental circular from 1983 which demands that all bills of Parliament include comments on their economic and

administrative consequences (Kørnøv and Hvidtfeldt 2003). The proposal was approved, and the Office of the Prime Minister issued in 1993 a new administrative order made on bills and other governmental proposals. This order was revised latest in 1998 and covers now the effect categories: Macroeconomic effects, microeconomic effects, administrative effects for business and for the public, environmental effect and the relation to EU law (Prime Ministers Office 1998). Compared to the EU Directive on environmental assessment of plans and programmes, the requirement for documenting the Danish SEA of bills is different, and enforcement of the rules is in the end a Prime Minister Affair. Despite this optional-like nature of policy-SEA, the relationship between proposals with and proposals without commentaries on environmental effects has been relatively stable since 1994/95. In about 90 % of all proposals, the environmental effects are considered (The Government 2003). Furthermore an investigation performed of the first reading in Parliament of 40 proposals including SEA, from the financial year 2000/2001, showed that in most cases, the information was used by the politicians in the debate in Parliament (Ministry of Finance 2000:143). Complementary and comprehensive investigations have shown both strengths and weaknesses of the SEA system, and an overview of the investigations can be found in Elling 2005.

According to the order, commentaries to bills must include an environmental assessment if the bill, based upon the assessment of the individual sectoral ministry, is likely to have significant environmental effects. A rationale for keeping the responsibility for SEA in each ministry (and not in the Ministry of the Environment) is a general objective about integrating environmental considerations in the existing decision making processes in each ministry to break with the tradition of having environmental protection as a sector responsibility only (Kørnøv and Christensen 2007).

The SEA is an integral part of the overall assessment of the bill and included as part of the legislative process, covering the preparation of the SEA, the presentation in commentaries to the bill and the political use during readings in Parliament, see figure 1.

According to the newest guidance on assessment of bills, the SEA must include the assessment of the effects of a proposal on all environmental aspects and human health (The Ministry of Finance et al. 2005)1. The environmental assessment should be undertaken on basis of the requisite scientific quality and preferably done by the same officials that write up the proposal. The SEA must be related to the state of environment and environmental policy objectives and targets. To operationalise the assessment, the ministries use a checklist and significance criteria for the first assessment of whether the proposal is likely to have significant impacts on the environment and for scoping.

[1] The newest guidance on environmental assessment of bills and other government proposals was prepared in cooperation between different ministries – opposite the first guidance from 1995 written and published only by the Ministry of Environment.

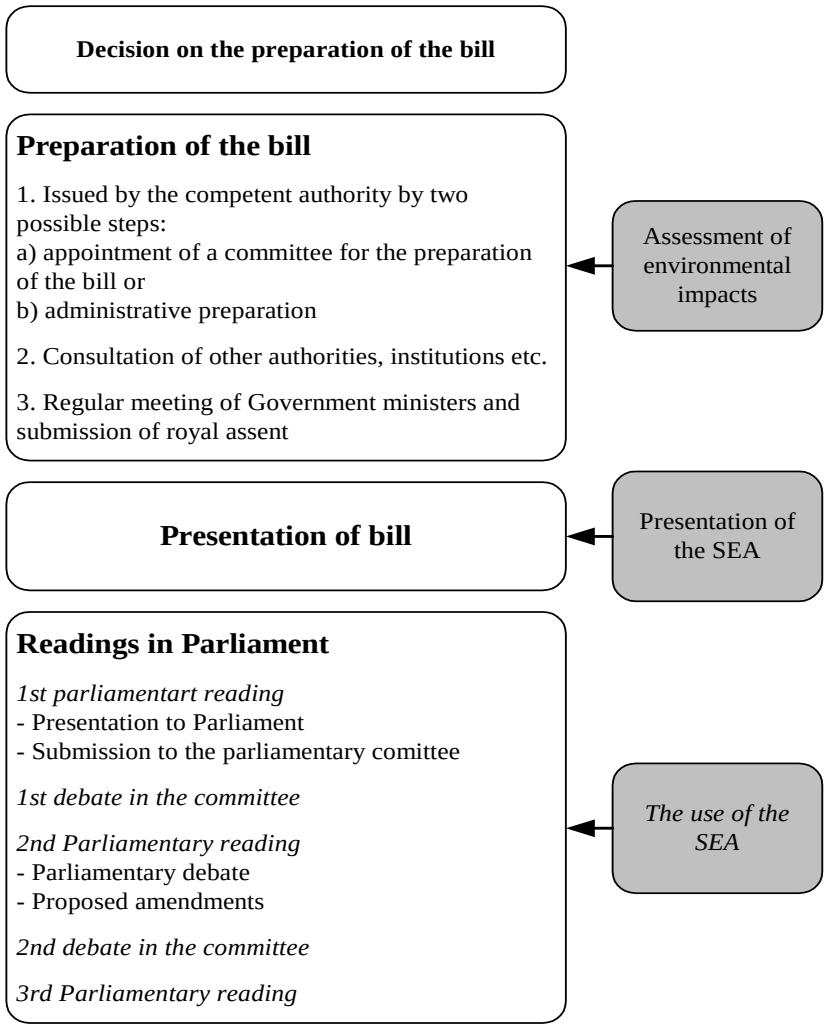

Figure 1: The Danish legislative process and the integration of SEA (Based upon: Elling 1997)

The assessment of environmental and health impacts are summarized and included as a section in the commentaries itself. Commentaries are an important part of the decision-making basis for both the Parliament and the public, and the ambition is that the effects should be described so they are easily understood by non-experts (The Ministry of Finance et al. 2005). Background assessment statements, relevant reports and scientific articles must be publicly accessible when a bill is submitted. In practice, all documents (including e.g. the bill, minutes of readings, comments from the public, background material etc.) are placed on the website of the Parliament.

The following presents the chosen example of an SEA: The bill on introduction of environmental zones in cities in Denmark. The analysis is based upon a documentary study of: The bill, hearing letters, minutes of 1st and 2nd reading in Parliament, the white Paper and hearing minute. All documents are obtained 09.2007 from the Parliament website. (http://www.folketinget.dk/doc.aspx?/samling/20061/MENU/00000002.htm).

3. The Example: SEA of a Proposal for Environmental Zones in Cities in Denmark

The purpose of the investigated bill is to decrease the negative health effects due to particles from diesel vehicles. Via the proposal it is possible to decrease particle emissions trough introduction of environmental zones in the five largest cities in Denmark. According the proposal, to enter environmental zones certain trucks and busses must install particle filters if they are registered before the 1st October 2001 and do not fulfil specific EU exhaustion norms. Furthermore they must have an environmental zone label. Environmental zones are expected to imply 15-20 less premature deaths per year *(The Minister of Environment 2007)*. Further comes saved days of sickness, fewer hospitalisations, fewer attacks of asthma, etc. The introduction of environmental zones is also expected to support the fulfilment of Directive 1999/30/EF on limit values for SO_2, NO_2, NO_x, particles and lead.

While the purpose of the bill is to improve the environment, and especially health, the SEA is integrated into the description of the purpose and the rest of the commentaries. This differs from other types of bills, where the likely environmental effects usually are described more briefly, in general terms and only in the special section on environmental effects. The SEA is summarized as follows in figure 2.

The bill went trough the stages: SEA performed along with assessments of the other effect categories; public hearing amongst authorities, organisations and companies; meetings with affected municipalities and invited organisations; meetings in the Environment and Planning Committee[2]; 1st and 2nd reading in Parliament with political debate; 3rd reading in Parliament with the proposal being unanimously decided with 110 votes.

4. Public participation in the decision-making process

As in other SEA systems public participation is recognised as being important for the policy level decision-making process. Public participation can be approached in different ways and with different levels of involvement. Regarding the formal participation approach the bill for environmental zones in cities encompassed a public hearing, in which a range of authorities, organisations and companies was mailed the bill and invited to comment. In addition the bill was discussed at two meetings in the Environmental Protection Agency with some of the affected municipalities and certain business organisations. A chosen methodological participation approach has implications for the level of promoted interaction covering the levels from informing the public, to consulting the public, to collaborate with the public, to finally empower and delegate power to the public (Kørnøv 2007). The levels of involvement in the example are ‘informing’ and ‘consulting the public’.

[2] The Environment and Planning Committee is one of 25 standing Committees in the Parliament. The main task of the committees is to deal with bills and proposals for parliamentary resolution. It is typical for a bill to be referred to a committee after the 1st reading

Figure 2: The summary of the SEA in the commentaries of the bill – own translation (The Minister of Environment 2007).

The bill is expected to have the below mentioned environmental and health consequences, if one or more of the five municipal councils establish environmental zones according to the bill.

The crucial point of the bill is the particle discharge from diesel vehicles, and thus the type of particles which implies the biggest health problems. If environmental zones are introduced in all five cities included in the bill, around 1/3 of the discharge of diesel particles of the road traffic in these cities will be removed when the resolutions have been fully implemented.

Introduction of environmental zones will only slightly reduce the particle content in the background air in the cities, as the traffic only contributes with around 5 % of the particles, and as particle filters alone on heavy vehicles only remove part of the particles from the total traffic. Calculations based on these improvements in the background air of the city show that introduction of environmental zones in all five municipalities is expected to imply 15-20 less premature deaths per year. Add to this the spared days of sickness, less hospitalizations, less asthma attacks, etc. The spared years of life are especially due to the fact that individuals with circulatory diseases live longer.

For the bill's environmental zone in Copenhagen/Frederiksberg from 2008 the health profit has been calculated to be approx. DKK 97 mill. per year, and the costs approx. DKK 51 mill. per year. For the other cities the calculations show a minor deficit. In 2010 an additional health profit will occur of DKK 40 to 60 mill. per year, depending on how many cities will introduce environmental zones. As a total a net profit can be expected if environmental zones are introduced in all the cities that are included in the bill. Apart from the small reduction of particles in the background air of the city, the introduction of environmental zones will mean a measurable reduction of the so-called ultra fine particles in the cities and particles in the street air. However, these reductions are not, due to uncertainty of the health effect, included in the financial calculations.

The Danish Environmental Protection Agency estimates that introduction of environmental zones in minor cities implies very small health consequences, and moreover it will involve significant business economic costs. In the light of these facts, it is suggested that environmental zones are only introduced in Copenhagen, Frederiksberg, Aarhus, Aalborg and Odense.

Kørnøv, 2007

Table 1 shows the number and type of hearing parts during public participation, how many parts have commented, and finally how many parts who in their response have written that they have no comments or just support the bill. The numbers in brackets are the numbers of parts who commented without being directly invited trough a hearing letter. This openness to further stakeholders than those specifically invited must be seen as a positive characteristic of the participation process.

Table 1: Type of hearing parts and their comments to the bill

Type of hearing parts	Parts heard	Parts with comments	Parts with no comments or just supporting bill
Ministries and national agencies	24	2	3
Regions and municipalities	10	6 (1)	0
Research institutions	5	0	0
NGO: Environment and health	22	5 (2)	1
NGO: Business and unions	67	17 (3)	8
Companies	25	2	1
	153	32 (6)	13

Kørnøv 2007

The analysis of the public participation shows that a range of parts have been heard. The most active types of hearing parts, measured by the number of comments, are 'regions and municipalities' and 'NGO: Business and unions'. These are also the directly affected parties. The 32 comments from the public touched especially upon the following points:

a) Timing of phase-in; either the phase-in should be postponed or expedited.
b) Timing of phase-in should be coordinated with the EU.
c) Scope; further environmental requirements needed.
d) Scope; possibility for further municipalities to introduce environmental zones in cities.
e) Scope; delimitation of environmental zones.
f) Scope; foreign vehicles should be ranked alongside Danish vehicles.
g) Opportunities for dispensation.
h) Decision authorisation.
i) Monitoring and enforcement.
j) Measurement of emissions.
k) Further funding for filter subsidies.

As shown, the comments primarily had to do with scope and timing of the requirements in the bill. This focus can be retrieved in the political debate presented in the next paragraph.

5. Political debate and the outcome

The formal political debate takes place through readings in Parliament. The bill was unanimously decided at the 3rd reading. The number of political contributions and the focus in the contributions are shown in table 2. The contributions as given by nine politicians represent eight different parties in Parliament. The main focus is, as in the public comments, on 'environmental scope and timing of bill', e.g. discussing which cities can introduce environmental zones, which vehicles should use particle filters, and when the requirements must be enforced. During 1st and 2nd reading the politicians had a focus on environmental issues in 68 %, respectively 78 % of all contributions. With the chosen methodological approach in this article, it is not possible to say whether the focus is based upon the SEA or information from elsewhere.

Table 2: Political contributions and focus in 1st and 2nd parliamentary reading – 12th October and 12th December 2006

Focus in political contributions	1st parliamentary reading	2nd parliamentary reading
Environment	5	0
Environmental scope & timing of bill	31	14
Economy	1	3
Law	11	1
Environmental knowledge	0	11
Other	5	3
Total comments	53	32
Total comments with environmental focus	36 (68 %)	25 (78 %)

Kørnøv 2007

The political debate shows that an agreement on the existence of an environmental and health problem was reached during the 1st reading. This also counts the clarification of legal matters. The political weighing, here understood in terms of the debate concerning scope and timing of bill, was an ongoing topic. For this political weighing the level and security of environmental knowledge was brought in at the 2nd reading – used as political argument in the weighing regarding scope and timing.

The public participation and the political debate lead to nine modifications to the proposal. Four modifications were suggested by the Minister of Environment and five by the Opposition. The modifications decided on were the following:

1. By Minister: Technical legal modification. (change in formulation)
2. By Opposition: Further municipalities can introduce environmental zones. (new paragraph)
3. By Opposition: Technical legal modification due to modification 2. (new paragraph)
4. By Minister: Also filters on Euro-2 vehicles registered after the 1 October 2001. (change in formulation)
5. By Minister: Also filters on Euro-3 vehicles registered after the 1 October 2006. (change in formulation)
6. By Minister: Correct term for 'veteran vehicles' is used. (change in formulation)
7. By Opposition: Minister must provide rules on environmental zones regarding commercial vehicles. (change in formulation from 'can provide' to 'must provide')
8. By Opposition: The requirements for commercial vehicles must be introduced 1st January 2010 at the latest. (new paragraph)
9. By Opposition: The Minister can provide rules for after-installation of filters reducing e.g. ultra-fine particles. (new paragraph)

The modifications decided express a more progressive environmental and health protection compared to the bill put forward in hearing. In the following the article will present the linkages between the political debate, public comments and decision-making.

6. Linkage between political decision-making, SEA and public participation

A basic principle of SEA is to involve the public in the decision-making process. Environmental assessments are based upon technical-scientific criteria, but at the same time public participation is an important mean to bring in knowledge, preferences and priorities in the assessment, therefore "…An environmental assessment can not meanfully be undertaken without involvement of the public…" (Elling 2003: 16).

SEA is a political process in which different environmental effects are described and assessed. In this process the politicians are presented to different decision-making bases, hereunder the input from the public. By providing the possibility for the public to comment and bring in knowledge and priorities, it becomes visible that the final decision is a political decision and not a technocratic decision, based upon scientific analyses and expert assessments. In the following the article will present the explicit links between the politicians and the public in the process. The explicit linkages are found through a documentary study of the minutes of readings, and each time a politician refers to the public comments, an explicit link is found.

Table 3: The explicit political reference to public comments during 1st and 2nd parliamentary reading

Focus in political contributions	Reference to public comments during 1st parliamentary reading	Reference to public comments during 2nd parliamentary reading
Environment	1	0
Environmental scope & timing of bill	11	3
Economy	0	0
Law	0	0
Environmental knowledge	0	3
Other	1	2
Total comments	13	8

Kørnøv 2007

Table 3 shows the number of political contributions in the Parliament in which a politician refers to public comments during both 1st and 2nd parliamentary reading. In both readings the politicians explicitly involve the public comments in 25 % of all political contributions (13 references / 53 political comments and 8 references / 32 political comments). The example shows that public comments are an important reference point for the politicians in the political debate.

The use of public comments can be assumed to be more extensive than what can be found through the explicit referencing in Parliament. The politicians might also more indirectly use the public comments to e.g. create a general knowledge-base and to get an insight into different preferences. These inexplicit linkages between the politicians and the public have not been investigated in the example.

7. Conclusion

The article has shown an example of an SEA system at the policy-level, in which both the SEA and public participation are integral parts of the decision-making process for government bills. Important characteristics of the system are that:

- SEA is undertaken by the sectoral ministry who writes up the proposal.
- SEA is undertaken alongside an assessment of macroeconomic effects, microeconomic effects, administrative effects for business and for the public, environmental effect and the relation to EU law.
- SEA, together with the assessment of other effect categories, is documented in the commentaries to the proposal, and is therefore not a separate document.
- Public participation is part of the overall policy-making process, and documented through a publicly hearing minute.

The example has focused on the linkage between the politicians, SEA and the public. The example shows a significant political focus on environmental issues and on the fact that participation influences the political debate and decision-making. The politicians explicitly used the public comments in 25 % of their contributions in Parliament. Considering the inexplicit use of public comments, the influence on decision-making might be much more extensive. The example also shows that the modifications decided tally the content of public comments. The example supports the assumption that the political legitimacy primarily comes from the public, and when there is a public attention towards the environment, the SEA will influence the political debate and decision-making. So what makes participation work? And which lessons can be of relevance for undertaking SEA and public participation at the national level in China? The example points to several characteristics of the public participation that gives a partial answer, which will be summarised in the following.

Actual participation in place

Decision situations differ in character and consequently also the level and extent of public participation. In some situations, extensive involvement is desirable and in others minimal involvement is preferable. However, the participation process needs to facilitate a two-way communication in order to make influence on decision-making possible. In the example the level reached was at least at a ‘level of participation’ due to the two-way communication and the possibility of commenting. Actual participation was possible while the decisions were not already made.

Targeted, balanced and flexible participation

The public is not a homogenous group, but rather a mix of different stakeholders with potentially different interests. Stakeholders can be individuals, groups and organisations. At the policy-level SEA, the NGO’s become a central representative stakeholder for different societal interests. In the example the public participation was targeted through the hearing invitation to stakeholders being directly and indirectly affected by the decision to be taken. Furthermore the process strived to get a balanced representation of different stakeholders affected positively and negatively by the bill. Finally the participation process was still flexible while parts not directly targeted and invited could comment on the bill, and all comments were discussed equally.

Open and transparent to stakeholders

A precondition for an active and constructive public participation is an openness and transparency regarding information and the process itself. The public needs to know where to find relevant information, understand the process and how and when to be involved. In the example all documents, such as the bill with commentaries including the SEA, the public comments, the response to public comments, minutes of readings in Parliament and relevant background material on environmental aspects, were placed on the Parliament website. The openness and transparency is also supported by responsiveness.

Responsive and credible participation

One important element to support credibility of public participation in SEA is the responsive demand concerning how the public comments will be considered, and what kind of feed-back will take place. In the example the comments are summarised by the Ministry and presented to the politicians in a hearing minute. The minute is also accessible on the Parliament website. The minute summarises the participation process, presents the number and names of hearing parts and summarises the public comments. The public suggestions are commented by the Environmental Protection Agency and arguments for why a suggestion is rejected or not, are put forward. This transparency and responsiveness supports credibility of the participation process but also the policy-making process in general.

8. Final remarks

The article has focused on the formal political phases in which the politicians interact with the public to reach a decision. The preceding phase with screening, scoping and environmental assessment, primarily undertaken by the administration, has not been analysed. The interaction between the administration, the public and the politicians can be characterised by different interaction degrees from static to dynamic. The example shows a case of a dynamic interaction, in which the politicians use the public comments. The role of SEA in decision-making can thereby be strengthened. It is important to recognise that politicians are not restricted by the SEA, but by the legitimacy their decisions will get in the public.

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[3] The newest guidance on environmental assessment of bills and other government proposals was prepared in cooperation between different ministries – opposite the first guidance from 1995 written and published only by the Ministry of Environment

Integrating the Environment into Economics in China – A Focus on Exports

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1. Problem

China's economic production is decoupled from the environmental costs of such production. In this paper, I focus on one particular portion of China's economy represented by its exports. A central claim of my paper is that actual economic gains from China's exports of natural resource-intensive goods may be far less than perceived once external environmental costs are taken into account. Producing goods incurs social costs in the process of reaping economic gains. When the goods in question require intensive inputs of natural resources or result in pollution which significantly degrade environmental quality, then the social gains can be partially or totally offset by the social costs.

2. Question

How can the external costs of China's exports be tracked using Strategic Environmental Assessment (SEA)?

3. Suggestion

In SEAs, one technique with the potential to track the external costs of export production is called *virtual transfers*. This technique quantifies the natural resource inputs used to produce goods domestically and maps the destination of the exports. Quantifying virtual transfers enables a nation to monitor its indirect export of environmental assets, and to identify the trading partners who are benefiting from imports of natural resource-intensive goods.

Combined with the ongoing green accounting effort currently being undertaken by China, China could tally the external costs of exports. Currently, the pollution burden is being borne by Chinese citizens, while foreigners are benefiting from consuming these goods. The foreigners are not compensating China for the pollution and natural resource depletion because these costs are rarely accounted for nor included in the cost of exports. As a result of its exports, China is actually subsidizing foreign nations' consumption of natural resource-intensive products. Further, China imports huge quantities of raw materials from abroad, thus it is similarly benefiting from uncompensated environmental depletion and degradation in foreign nations (especially Africa).

4. Why focus on China's trade

China is a global economic force. Its economy is the third largest on the globe as measured by its production, also known as Gross Domestic Product (GDP). It has one of the highest GDP

growth rates in the world, averaging 9% a year over the 1995-2005 period. Its growth in per capita GDP outpaces that of the world average by over three times.

China is a major producer of many global commodities. It is the world's largest producer of cement, steel, fish from aquaculture, and television sets, and the world's second largest producer of electricity and chemical textiles.[1]

China is also a major consumer, and as its income rises, it is increasingly consuming higher-end goods, such as high-quality animal proteins. According to the FAO, per capita consumption of calories from eggs and milk increased over three-and-a-half-fold between 1990 and 2005, while calories from meat increased two-and-a-half-fold (actual ratios are 3.5 for eggs, 2.5 for meat, and 3.4 for milk).[2] China has experienced a boom in consumption of "luxury" consumer goods, such as automobiles, due to its increasing affluence. Urbanization is also changing China's consumption and production patterns. Rapid urbanization in China is the result of growth of manufacturing and consumer-based industries, predominantly located in or near cities. According to the UN, China's urban population will reach nearly 50% by 2020, and car ownership is expected to increase 10-fold (between 1995-2020).

China's reliance on trade as an engine for economic growth makes trade a particularly interesting focus for an environmental analysis. China joined the WTO in 2001, and has since seen its trade volume increase. The portion of China's economy that results from its trade is enormous. The trade to GDP ratio is very high (64.5) – this means that the value of imports plus exports is 64.5 percent of GDP.[3] For comparison's sake, the US trade-to-GDP ratio is 24.4.

China's growth of exports and imports of goods and services has outpaced its rate of economic growth. Further, the growth of exports remains greater than the growth in imports. Exports have increased nearly 6-fold and imports nearly 4-fold in the period 1995-2005. Importantly, in China, the growth in exports still exceeds the growth in imports, even though its imports of fossil fuels have increased rapidly. The average annual increase in China's export volume was 19 percent and import volume 16 percent; for comparison, US exports and imports grew at 4 and 8 percent respectively, and thus the US trade deficit continues to grow while China continues to expand their trade surplus.[4,5]

The composition of China's exports is skewed towards manufactured goods. Production of manufactured goods has more environmental impacts than commercial services. China's commercial services exports were US$74 billion in 2005, while its merchandise exports were US$761 billion.[6] Merchandise includes machinery, office, and transport equipment (46% of total exports), clothing and textiles (15%), chemicals (5%), iron and steel (4%), agricultural (4%), and fuels and mining products (4%). China was projected to become the second largest merchandise trader in the world by 2007 (exports plus imports). Notably, electronics and electrical equipment constitute 23% of Chinese exports.[7] These industries are especially environmentally sensitive.

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[1] Liu and Diamond (2005) "China's environment in a globalizing world" *Natur*e 435, 1179-1186.
[2] FAOSTAT at http://faostat.fao.org
[3] http://stat.wto.org/CountryProfile/WSDBCountryPFReporter.aspx?Language=E
[4] http://stat.wto.org/CountryProfile/WSDBCountryPFReporter.aspx?Language=E
[5] http://www.wto.org/english/res_e/statis_e/its2006_e/its06_general_overview_e.pdf
[6] Commercial services include services related to computers and communication, construction, insurance, financial, computer, information, business, and culture and recreation.
[7] http://www.intracen.org/appli1/TradeCom/TP_EP_CI.aspx?RP=156&YR=2005

China imports less than its exports, but import volume is still very large and the composition of imports is an important consideration for environmental analysis. China's imports of merchandise are slightly less than their exports (US$660 billion), while imports of commercial services are slightly higher than exports (US$83 billion). China's imports are dominated by electrical and electronic equipment (26.5%), followed by machinery (14.6%), over a third of which is composed of parts from computer, data processing, and office machines.[1] Another 7.6% of imports come from optical equipment such as liquid crystal devices. Nearly 10% of Chinese imports are fuel.

5. China's trade is important globally

China's exports and imports are important to the global economy. Over 7% of world export value comes from China, and 6% of world import value goes to China.[2] Over one-eighth of global electronic equipment and a quarter of apparel come from China.[3] Nearly one-third of global imports or ore, slag, and ash go to China. In fact, if we examine China's trade balance (i.e. its exports minus its imports) by category, the deficit accruing from imports of ore, slag and ash (US$25 billion a year) is only topped by imbalance in fuel-related net trade (US$46 billion). Fuel-related imports are growing at 38% a year. China's demand for soy has driven it to consume one quarter of global oil seed imports. China's imports 15% of global trade in optical, photo, technical, and medical equipment.

6. Trade-environment linkage

Listing the aggregate figures describing impressive growth in economic production and trade exhibited by China hides many details, including the environmental factors underlying them. Efficiency in some industries rivals standards in developed nations (such as automobile production) in large part thanks to technology transfers from foreign investment.[4] Gains in energy intensity (energy consumed per dollar GDP), too, have been unprecedented amongst developing nations in recent years.[5] That said, many industries in the manufacturing sector rely upon outdated techniques, for example, cement, paper, and chemical production. The incentives to change practices to become more efficient are hampered by many factors, including central control of fuel prices, a practice which is unlikely to change anytime soon.[6] This implies that China's production processes will continue to have significant environmental impacts.

China is experiencing some of the most severe environmental problems in the world. One study lists over a dozen problems and notes that these issues are becoming worse, not better, including air pollution, groundwater overdraft, river flow interruptions, water shortages, cropland losses, wetland losses, depleted fisheries, grassland degradation, waste accumulation, invasive species, biodiversity losses, and increased human-induced natural disasters.[7]

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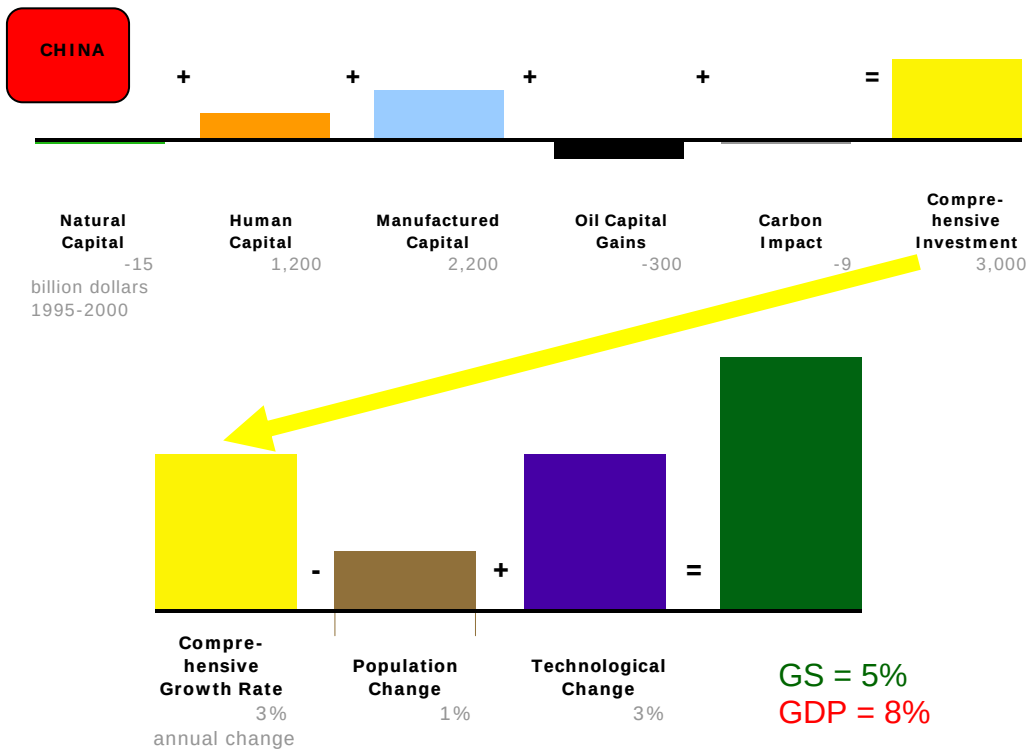
[1] http://www.intracen.org/appli1/TradeCom/TP_EP_CI.aspx?RP=156&YR=2005
[2] http://www.wto.org/english/res_e/statis_e/its2006_e/its06_general_overview_e.
[3] http://www.intracen.org/appli1/TradeCom/TP_EP_CI.aspx?RP=156&YR=2005
[4] Liu and Diamond 2005
[5] World Development Indicators
[6] Andrew Batson (2007) "China's Inflation Problems Could Delay Energy Reform". Wall Street Journal Online. September 20, 2007.
[7] Liu and Diamond (2005)

Production of goods for export is undeniably exacerbating these environmental impacts. If the costs of environmental depletion and degradation were adequately incorporated into the price of the goods that China exports, there would be no point to my paper. But this is not the case. Environmental costs of production are rarely captured in the prices of produced goods, so China does not get fully reimbursed for its loss of environmental quality or its depletion of its raw materials. Trade results in separation of consumers from the environmental impacts of their consumption decisions. This would seem less of a problem if Chinese citizens were the ones to benefit from consuming the goods whose production had high environmental costs, but with exports, this is clearly not the case. Global consumers of Chinese goods benefits while the burden is placed on Chinese citizens.

It may seem from macroeconomic figures that China is fueling growth by ramping up its production and exports, but once the true costs of production are figured in, this picture is far less clear. The figure below shows a preliminary result of green accounting for China[1] – it only captures a few of the environmental "draw downs" but the case is clear: the traditional macroeconomic numbers (represented by Manufactured Capital) are only a partial picture. Using traditional measures, China's GDP growth (1995-2000) was 8%, but once other factors were taken into account, the Genuine Savings rate drops to 5%.[2]



Further, by underpricing the natural resource inputs, China is using its scarce natural

[1] Oleson (2007) "Sustainability of comprehensive wealth: A practical and normative assessment." PhD Dissertation, Stanford University; Arrow et al (2007) *forthcoming*

[2] This figure shows China's Comprehensive Growth Rate. Comprehensive wealth is a broad definition of economic wealth that captures the value of all assets which contribute to human welfare.

resources and degrading its environmental quality to produce goods that are not returning the highest social gains. This is a double loss to China – it is forgoing benefits from productive activities that would provide more social benefit *and* it is exporting the goods that it is producing at a price that, once the environmental costs are factored in, might actually be *decreasing* China's overall wealth.

7. China's trade has environmental impacts globally, regionally, and locally

China's role as the global factory has environmental impacts globally, regionally, and locally. A certain portion of China's greenhouse gas emissions can be attributed to production of goods for export. China produced 44% of the world's cement in 2006, a sector which constituted 9% of China's total CO_2 emissions that year.[1] According to one study, China is now (2006) the largest emitter of GHG from fossil fuel consumption and cement manufacturing – 8% higher than the US, driven by a 9% increase in CO_2 emissions from coal consumption.[2] By its nature this snapshot of current emissions does not take historical emissions or population into account. But the point of this paper is not to argue for an allocation of pollution rights; rather, the point I want to make here is that the costs of global climate change must be incorporated into the price of goods. China's greenhouse gas emissions will contribute to damages suffered by other nations; and it will suffer damages from global climate change itself. One study estimates that annual damages from global climate change will lead to a reduction of 0.2% of China's GDP;[3] which is likely an underestimate in light of the study's optimistic assumptions about increased future Chinese agricultural production. It seems obvious to say that if the producers of greenhouse gas-emitting goods were all required to pay for the pollution, they would then be able to pass on that cost to the consumers of the goods. China, in particular, might have a lot to gain from this strategy, as much of their greenhouse gases are emitted to produce exports (and thus the cost of emissions would be paid by their trading partners).

At the regional scale, China is the largest global contributor of sulfur oxides and chlorofluorocarbons, which have been linked to air pollution and ozone depletion. Similarly, China's dust and aerial pollutants are affecting neighbors near and far. The costs of these environmental harms are similarly rarely incorporated into the price of the goods being produced.

China's imports have environmental consequences for nations across the globe. A portion of China's imports are transformed into products that are then re-exported[4], nonetheless, China is an important global consumer. China is the leading importer of tropical rainforest timber and the fifth largest consumer of tropical logs,[5] so while it is gaining forest cover domestically,[6] it is responsible for tropical deforestation in Malaysia, Indonesia, Thailand, and Africa. Indeed, China has replaced Europe as the major consumer of logs from Gabon (and other African

[1] http://www.mnp.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html
[2] http://www.mnp.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html
[3] Nordhaus and Boyer (2000) Warming the World: Economic Models of Global Warming; MIT Press, Cambridge
[4] Many of China's imports are used in manufactured products that get re-exported. For example, China is the world's leading exporter of secondary processed wood products (US$11.4 billion of exports in 2005).
[5] http://www.ittis.org/Imports2004.htm
[6] Food and Agriculture Organization, Forest Resources Assessment 2005

nations).[1] China received 10% of Sub-Saharan Africa's export volume, and recent discussions between China and Africa seek to increase the trade volume to US$100 billion a year by 2010.[2] China's foreign direct investment in Sub-Saharan Africa has grown to US$1.2 billion a year in 2006.[3] Africa's exports to China are largely going to meet domestic demand for petroleum, ores and metals; plus agricultural raw materials (cotton, timber). All together, these make up 85% of Africa's exports to China.[4]

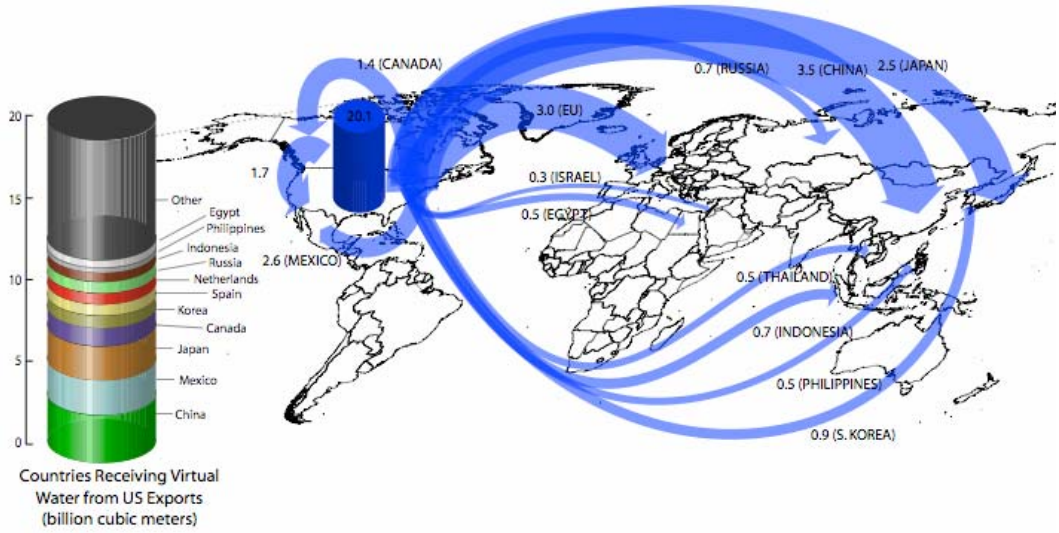
Because of its role as the global factory, China is an important user of inputs – for instance, pesticides, fertilizer, wood – that have serious consequences for its domestic environment. China is responsible for one-seventh of total world pesticide use. Application of these pesticides has impacts on China's natural environments and human health. In addition, China does not apply all the pesticides it produces to domestic crops – it is a net exporter. Pesticide production is an environmentally harmful process, but because these costs are often long-term and wide-spread, they are rarely incorporated into the calculus of individual pesticide manufacturers. Waterways and air quality have been compromised from nutrient pollution due to over-fertilization of agricultural areas. China is the largest consumer of fertilizer in the world, incurring a net trade deficit in fertilizer of US$15.9 billion in 2005. The fertilizer is used to grow crops for domestic consumption, but also for export. Finally, while on net China is adding forest cover due to plantations, its natural forests continue to be cut down. China produced 1.5 million cubic meters of tropical wood in 2005.[5]

China also imports a lot of waste from abroad, which has domestic environmental consequences. In 2005, it bought US$15.5 billion more plastic than it exported – US$2 billion of which were categorized as waste. Data on China's imports of optical devices do not define the portion categorized as waste, but over 60% of the value of these imports is LCD and optical equipment; without a doubt much of this could be waste. The environmental costs of waste disposal are rarely considered.

8. How can tracking virtual transfers help?

Tracking virtual transfers is a technique that can link decoupled production supply chains. It quantifies the inputs into production throughout all stages of a good's production and separates out the portion of inputs that is not traded, in other words the inputs that do not become part of the good itself. This portion is "left behind" in the producing/exporting nation, and is called the virtual transfer.

[1] http://www.itto.or.jp/live/Live_Server/377/E-AR06-Text.pdf
[2] http://www.thestatesmanonline.com/pages/news_detail.php?newsid=1218&section=1
[3] http://siteresources.worldbank.org/AFRICAEXT/Resources/ASR_Overview.pdf
[4] http://siteresources.worldbank.org/AFRICAEXT/Resources/ASR_Overview.pdf
[5] http://www.itto.or.jp/live/Live_Server/377/E-AR06-Text.pdf



A good example is provided in a recent analysis of livestock production and trade.[1] Soy grown in Brazil is shipped to the EU for pig feed. The fattened pigs are then shipped to Germany for slaughter. The meat is then consumed in China. The virtual transfers of this supply chain tracks the water, nitrogen, and land inputs of feed production, animal production, and slaughter. The figure below shows the results of my model.[2] The arrows represent the virtual water transfers from the US. This water is used to grow feed for pigs and chickens that are consumed abroad. All data is reported in billion cubic meters.

Virtual transfer is a useful technique given the transnational era in which we live. The environmental impacts of a consumption decision in any given country can be traced across the globe by quantifying the virtual transfers associated with any given good's supply chain. A Chinese consumer's decision to eat a pork chop converts Brazilian rainforest and leaves nitrogen waste behind in Europe. For China, this technique could be used to track its exports' environmental impacts on the domestic environment. This would be especially relevant for production of a resource-intensive product.

While virtual transfers are in and of themselves an interesting concept, the policy-relevant application comes from the fact that environmental impacts are rarely correctly priced. This implies that exporting nations do not incorporate the environmental costs in the prices they charge for the natural resource-intensive goods they export. As such, they are not compensated by their trading partners. Exporting nations, like China, suffer environmental damages while importing countries benefit from not having to use their own natural resources as raw materials and not degrading their natural environment in production processes. Trade at below social cost ensures that consuming nations transfer the costs of their consumption decisions to other nations.

A major claim of my work is that China's domestic production policies are based on the accounted "economic" gains; but once social costs are factored in, China might rethink its export promotion policies. It's one thing if Chinese consumers are benefiting from the products as well as suffering the environmental costs, it is quite another if China is supporting foreign nations'

[1] Galloway et al (2007) *Ambio* forthcoming
[2] Burke et al (2007**)** submitted

consumption of resource-intensive goods and not being compensated for their use of natural resources and associated environmental degradation.

Who are the main beneficiaries? The primary importers of Chinese manufactured goods are the US (21%), EU (19%), Hong Kong (16%), Japan (11%), and South Korea (5%).[1] It is important to point out that China's imports of raw natural resources at below social value is leading to environmental devastation in their trading partners as well. Some nations, like Indonesia, Malaysia, Thailand, and Africa are seeing their environmental quality and natural resource base threatened by Chinese consumption (whether for domestic consumption or re-export).

9. Next steps

China needs to highlight the sectors that are particularly resource intensive. When undertaking Strategic Environmental Assessment for these sectors, the SEAs should include quantification of the inputs and effluents. These quantifications should be incorporated into China's on-going green accounting efforts. These accounting efforts are instrumental in highlighting the true economic health of a nation because they factor in costs of environmental depletion and degradation. Genuine Savings, for instance, incorporates environmental components into the traditional national savings accounting. It is savings and wealth that ensures the welfare and sustainability of a nation.

[1] http://stat.wto.org/CountryProfiles/CN_e.htm

SEA for Flood Protection in the Netherlands

– A Case Study

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for Environmental Assessment

1. Introduction

1.1 Nature of the plan

The plan 'Room for Rivers' aims to define the necessary measures to protect The Netherlands against flooding of the river Rhine, now and in the future. During the 90s on two occasions flooding took place nearly and it is expected that the risk of flooding will only be bigger in the future, when more intense rain fall is predicted up stream.

More specifically the plan sets a package of measures for the three main branches of the Rhine: the river IJssel, river Neder-Rijn/Lek and the river Waal[1]. Packages are a combination of two kinds of measures:

⑴dike improvement or heightening (the traditional approach)

⑵creating more space for water discharge or retention in the river foreland or river bed (new approach; hence the title 'room for rivers'), e.g. through removal of obstacles, deepening of the riverbed, creation of retention ponds, relocation of dikes.

1.2 Role of the SEA

SEA has been implemented in Netherlands for over a decade. Details of the process and system can be found in the Appendix Box 1.

With regard to this project, some of the possible measures may be combined with achieving environmental benefits such as the creation of new nature or improvement of landscape. However, these measures can be more expensive or less safe. The SEA was meant to enable planners and decision makers to find the best possible compromise of safety, environmental benefits and costs. Also, the SEA should take an integral view of the entire river system, since the three branches are interconnected and because upstream and downstream measures may affect each other. (Reference: Project Organisation Room for Rivers, 2005).

1.3 Integration of SEA into planning

The plan was subject to a legal procedure provided by Dutch physical planning legislation, the so-called 'physical planning key decision' procedure. This procedure provides for decision making in four phases:

[1] The plan also looks at a small part of the River Merwede; this, however, is not discussed in this case.

- step 1: publication of the ‘preliminary key decision’ by the Cabinet
- step 2: public consultation and publication of its results
- step 3: Cabinet Decision
- step 4: approval by Parliament.

The SEA was integrated into this process. Effectively this meant that before step 1 some extra procedural steps were included:

- In May 2002 a starting note was published as a kick off of the assessment, followed by a round of public participation, including an advice of the independent Commission on environmental assessment, on the required content of the assessment.
- Following this, the TOR for the assessment was formalized by government and the assessment was prepared, as an integral part of the preparation of the preliminary key decision.
- In June 2005 both documents were published, being step 1 of the above mentioned ‘physical planning key decision’ procedure, again followed by a round of public participation, including an advice of the independent Commission on environmental assessment. In this round comments and advice were given, both on the quality of the assessment and the proposed decisions by government.
- Cabinet and Parliament decided end of 2006.

In the final plan approximately 40 individual projects are proposed. For approximately 30 of these EIAs have been started – or will be started – for the more detailed design and implementation.

1.4 Focus of the case study

This case study aim to give a brief overview of methodology applied in this SEA and its final influence on decision making.

2. Background: context and issues

Due to its character (potential high impact on lives and goods of people) this plan has a high profile in Dutch society and politics. Also, it is controversial, since – although everybody agrees on the safety issue – the potential measures may have significant negative impacts on different groups of stakeholders. E.g. farmers may lose land, landscape and nature may be affected, large budgets are needed, storage facilities for polluted sludge should be created. On the other hand, when designed thoughtfully, the necessary measures may also mean high potential for creating new nature or recreational facilities.

Box 1: Issues & indicators in the SEA

Issue	Indicator
Safety	impacts of measures on lowering of expected high water levels
Management & maintenance	need for dredging operations
Spatial quality	utility value of the area
	Perceived quality of the area (on the basis of objective criteria)
	robustness to change/flexibility
Relation with long term vision	in/not in line with long term vision
	Timing (how easy is it to delay measure?)

	no-regret (how easy is it to 'undo' the measure later?)
Soil (polluted)	Feasibility to carry out operation within planning term
	Transport
	Hindrance
	capacity needed in existing storage facilities
	new storage facilities needed
	production of usable raw materials: clay and sand
	improved soil quality: vulnerability to pollution and cleaning of existing polluted spots
Nature	impact on protected areas under European regulation
	impact on other protected areas and species
	contribution to realization of the Dutch 'ecological main structure'
	increase of nature areas
	use of ecological potential
Landscape	spatial appearance
	Landscape quality
cultural history	damage to valuable cultural or historical elements or areas
	damage to the coherence of the cultural/historical structure of an area
Functions	Housing
	Industry
	size of agricultural areas
	influence on agriculture potential, opportunities and risks
	Recreation
	maritime functions (depth of the river)
Ground- & surface water	production of drinking water from ground water
	impact on ground water management
	production of drinking water from river water
Perception (on the basis of perceptions of people)	perception of nature and (cultural) landscape beauty
	perception of river dynamics
	perception of opportunities for recreation

Starting point for this plan was an earlier decision by Dutch government that new measures for flood prevention should as much as possible be based on creating more space in the river foreland, rather than dike strengthening or heightening. Improving the storage and drainage capacity of rivers was considered a more sustainable and more flexible option for the longer future. A side-benefit is that it opens possibilities for combining safety and enhancing spatial quality.

3. Approach and methods used in the SEA

3.1 Information assembly

Aiming to improve the integration of plan and SEA, a dedicated project agency was set up, responsible for both. The SEA was written by the agency itself, although private consultancies were contracted to compile back ground documents or sections of the assessment.

Overall, the SEA is based on existing information tools, although for the design of

alternatives and assessment of impact a dedicated computer model was developed.

3.2 Development of alternatives

In a first approach it was decided to start with formulating a number of overarching 'strategies' for improving flood security, such as focus on measures within the dikes versus focus on measures outside the dikes. In a second step then alternatives for a whole river branch should be developed, trying to implement as much as possible the chosed focus. However, this approach proved not to be constructive. In practice, each segment of a river branch turned out to have its own characteristics and limitations, e.g. because of preferences of local population or local physical parameters. For this reason, it was decided to split each river branch in a number of homogenous sections, and then look at alternatives for each of these sections: the 'building blocks'. An alternative for a whole river branch was then created by a logical combination of building blocks.

A number of preconditions were set for each of the alternatives. The most important were:

* each alternative should fulfill legal requirements, both safety and others
* the current distribution of water between the three branches should not change
* there should be no effect on the current maritime functions of the river.

In addition to the preconditions, a number of starting points were defined, such as:

- sufficient support by local government and other stakeholders
- in line with current government policy
- in line with international agreements of flood prevention
- in line with existing or already planned projects in the river basins
- production of polluted soil to be stored should be minimized
- highest possible cost effectiveness of measures.

The above process led to the final development of 4 alternatives:

⑴reference: creating safety, solely through dike strengthening and improvement

⑵alternative 1: creating safety, without trying to combine safety with better spatial and environmental quality[1]

⑶alternative 2: creating safety, combined as much as possible with achieving spatial and environmental quality[2]

⑷on the basis of a first assessment of alternatives 1 and 2, a so-called 'preferred alternative' was constructed by selecting the best scoring elements of both alternatives. In the SEA this alternative turned out to be (for each of the three branches):

- for river IJssel: preferred alternative is almost identical to alternative 2
- for river Neder-Rijn/Lek: preferred alternative is combination of alternative 2 with dike improvements
- for river Waal: preferred alternative is combination of alternative 2 with removal of obstacles such as groynes

[1] This included measures such as removal of obstacles in the river foreland , deepening of the river bed and dike improvement.
[2] This included measures such as broadening river forelands by relocating dikes, creation of extra river beds, creation of retention ponds of deepening of river forelands.

3.3 Selection of issues and indicators

Both for the development of the alternatives and for the assessment of the impacts of these alternatives, the following issues were selected. For each of these issues a number of indicators were defined (see Box 1).

3.4 Methods for impact analysis

⑴Assessment of high water levels and climate change

As a basis for the development of alternatives, first the high water levels to be expected in the near future (2020) were calculated. This calculation included possible developments in the upstream sections of the river in other countries, e.g. in Germany.

Then, for the longer term (2100) the expected future high water levels in the river were calculated on the basis of the 'medium' scenario of the Intergovernmental Panel on Climate Change. In this scenario it is expected that in the year 2100 average temperature will rise with 2 degrees Celsius and sea level will rise with 60 cm.

⑵Assessment of alternatives

Assessment of the impacts of alternatives took place as follows. For each indicator an appropriate methodology was chosen. Within the context of this case study it is not possible for each of the indicators to fully describe the methodology used. Therefore, below only the main contours of the methodology used are described.

First, as a reference, the existing situation is described, including the flood prevention projects that have already been decided or planned (the so called 'autonomous development'; in other SEAs often called '0-alternative'). Impacts of alternatives are compared to the impacts of this reference.

Impacts have been predicted per segment of the river, i.e. the combined impact of all the measures proposed for that segment. As much as possible, impacts were described quantitatively. The impact analysis focused on permanent impacts, with the exception of soil operations, where also the hindrance during operation was described.

Also, the impact analysis focused on the direct impacts of alternatives, and less on the 'opportunities' that the newly created situation in the river area created. E.g. the potential for nature to develop autonomously in the years to come. For this reason, the impact description, especially as to nature issues, should be regarded as 'worst case'.

After estimating the quantitative impact, for each indicator a tailor made methodology was established to 'value' the impact, on the basis of expert judgment. Should it be regarded negative or positive? Should it be regarded substantial or insignificant? Basic criteria in this were:

- is the expected development (in the 0-alternative) positive or negative, and how will the impact influence this?
- will the impact of an alternative be positive or negative, and what is its magnitude?
- how sensitive is the area to this impact?

The impact prediction is given on a 5-point scale: very negative, negative, neutral, positive or very positive. This with the exception of maritime and perception impacts, where a 3-point scale was used. For each indicator it is explicitly explained and substantiated how an impact is valued within the 5-point scale. For example, as to safety (the first indicator in the above box):

- if measures will result in lowering or fixing high water levels in 80% of the river branch or more: very positive
- the same in 60-80% of the river branch: positive
- the same in 40-60%: neutral
- the same in 20-40%: negative
- the same in less than 20%: very negative.

⑷Cost benefit analysis

For this plan, also a cost benefit analysis was done, although not in the traditional way (Reference: Central Planning Agency, 2005). Traditionally, a cost benefit analysis for main infrastructure in the Netherlands gives a full overview of all costs and benefits (both monetarized and non- monetarized, quantitative and qualitative, economic, social and environmental costs and benefits). However, due to the scale of this plan, this was judged impossible nor strictly necessary.

For this reason the following cost benefit analysis was made:

①For each segment of the river it was estimated:

- what the costs would be of flooding
- what the costs were of the expected measures to prevent this.

If costs of flood prevention were less than flood damage, the cost-benefit ratio was judged as positive.

②For each measure in a segment of a river the 'cost effectiveness' was estimated, i.e.

- what is the cost of the measure
- what is the increase in safety, nature (in hectares), spatial quality and options for recreation.

3.5 Methods to compare alternatives

In the SEA the alternatives are compared, using a number of methods:

⑴Per indicator: for each segment of the river, the SEA compares per indicator the scores of the alternatives, using the 5-scale

⑵Overall, qualitatively: each alternative is qualitatively described as to its main strong and weak points, compared to the reference and the other alternatives

⑶Overall, quantitatively: for each alternative the main quantitative figures as to measures realized and resulting impacts are given in separate boxes.

⑷In order to decide which of the alternatives is best from an environmental viewpoint, the alternatives are compared to each other in a separate table, using their scores on the 5-point scale, on the issues that were regarded most important from an environmental perspective:

- contribution to improving spatial quality (qualitative)
- nature: impacts on protected area and increase in ha of nature area
- landscape improvement (qualitative)
- impact on cultural history (qualitative)
- soil: necessary excavation, improvement of soil quality (qualitatively), number of necessary new deposits
- in/not in line with long term vision government.

Sensitivity analysis: for each of the alternatives it is judged separately, which measures would be possible to further improve the environmental performance of alternatives, and whether these could change the ranking of alternatives on environmental aspects.

3.6 Public participation

Public participation took place during both the early stage of planning and a later stage. A first round of participation focused on the information the SEA should contain, e.g. what alternatives to exame and what impacts to assess. A second round of participation took place after the SEA and the draft plan were ready and focused on the quality of the SEA and the proposals in the draft plan.

The organization of each of the two rounds of participation was as follows:

- At 15 locations along the river branches full day meetings were organized, where everybody willing so could participate.
- The first part of the meeting was a so-called ‘information market’, where each citizen could ask questions, get explanations, information, etc.
- The second part of the meeting was then the formal ‘hearing session’, during which everybody willing so could make formal comments, to be recorded and responded to in the SEA or the final decision.

In addition to this, continuous participation took place during plan and SEA preparation. The most involved (local) governments, agencies and organized NGOs (e.g. agriculture, environment) were continuously consulted during the development of alternatives. For this, two regional ‘steering groups’ were established. As much as possible the design and selection of measures was done jointly. In this, local stakeholders appeared to be concerned most of all with the selection and construction of sites for deposit of polluted soil.

3.7 Monitoring and follow up

According to the SEA, a monitoring and evaluation program would be an annex to the final decision. This program would indicate the kind of research to be executed, and how these would be integrated in a monitoring plan. So far, this program has not been published.

3.8 Quality review

Part of the Dutch SEA process is a legally mandatory quality review of the SEA by the independent Commission for Environmental Assessment. This Commission is a private foundation, with no ties to government or any of the other stakeholders in plan or project decision making, subsidized by government. In its review of the SEA the Commission concluded that overall the SEA was clear and of good quality. However, on one aspect the SEA contained an omission that was regarded by the Commission as an essential one.

Looking at the alternatives, the Commission concluded that all alternatives focused very strongly on measures that tried to combine flood prevention and improvement of spatial quality. Although this was only logical in line of the previous government decision that combination was the preferred option, in practice this had a significant down side. Combination measures are relatively expensive: the overall budget for each of the alternatives was around 2.2 billion Euros. Both the Commission and the cost benefit analysis concluded that for this money a better

alternative existed. If 1 billion would be spend on dike strengthening, this would leave 1.2 billion for measures specifically aiming at improving spatial quality. Overall, this alternative would be equally safe, with a bigger contribution to for example nature, landscape and recreation in the river area. This alternative, however, was not examined in the SEA (References: Netherlands Commission for Environmental Assessment, 2005; Central Planning Agency, 2005).

4. Results and lessons

4.1 Contribution to decision making

The conclusion of the comparison of alternatives 1 and 2 was that, overall, alternative 2 proved to be the best combination of providing security and improving spatial quality. However, the cost-effectiveness of alternative 2 could be further improved by incorporating certain elements of alternative 1 into alternative 2, particularly dike strengthening and removal of obstacles in certain segments of the river.

The cost benefit analysis showed that for most segments of the river the costs of measures were reasonable, when compared to the flood damage that was prevented. However, for a number of segments improvement of cost effectiveness was possible, though choosing a different package of measures. In particular, in these segments it could be economically more wise not to select measures that combined safety and spatial quality, but formulate a package of measures aimed specifically at safety (such as dike strengthening) and spatial quality (e.g. nature and landscape development and recreation facilities).

On the basis of both comparison of alternatives 1 and 2, the results of the cost benefit analysis and the comments of regional and local stakeholders, a ‘preferred alternative’ was developed and assessed. During decision making a formal decision was taken to implement almost 100% of this alternative.

All in all, this decision was accepted by all parties, without much controversy. This with the exception of the siting of some deposits for contaminated soil raised much resistance, especially where these were not combined with nature and landscape improvement.

4.2 Outcome: influence of the SEA

The influence of the SEA is uncertain. On the one hand, the fact that the alternative developed in the SEA was finally almost 100% formally adopted indicates that the SEA had a big influence on decision making. On the other hand, the ministries responsible for the plan took a very open, transparent and participative approach to the development of the plan from the start. It’s hard to judge whether such approach in the absence of SEA would have been chosen, and if so, whether this approach alone would then have had the same environmental results (reference: Runhaar & Driessen, IAPA, 2007).

The recommendations of the Netherlands Commission for Environmental Assessment and the Central Planning Agency (who conducted the cost benefit analysis) to take a closer look at an alternative with a potentially bigger contribution to spatial quality, was not taken up by government. One of the main arguments for this was the fact that this alternative was not in line with the approach formally established earlier by government that measures should aim at the

creation of space rather than dike improvement. To develop an alternative approach in a relatively late stage of planning might hamper the credibility of government to stick to its decisions. A second argument was that government was not convinced such alternative overall would have a bigger contribution to spatial quality, because of the negative impacts of dike improvements to, in particular, landscape quality.

4.3 Relevance for China

The Netherlands is, as large parts of China are, very densely populated. Each major policy or plan will affect the lives of many and, therefore, create controversy. SEA is a powerful tool to deal with controversy, by creating transparency, dialogue and knowledge in policy or plan development. The described case is an excellent example of this, in which environmental and social assessment is combined with economic cost benefit analysis.

But the case goes beyond this. While many SEAs focus on avoiding negative environmental impacts, the main purpose of this SEA is to find out where safety and environmental quality may strengthen each other. Especially at strategic level, one of SEA's main added values is to point out where such win-win-options may be found.

4.4 Conclusion: lessons for SEA good practice

This SEA shows that it is possible to organize an open and participative integrated SEA/planning process to successfully develop a highly controversial plan that takes environmental issues fully into consideration. Also, it is clear that this SEA has influenced significantly the finally adopted plan. One of the main reasons for this was the fact that SEA and plan were developed interactively and in parallel with the negotiations between stakeholders. Another reason was the creation of a so-called 'project-directorate' within the ministries, responsible for both SEA and plan development, and in which the main responsible ministries worked together.

It's hard, however, to identify exactly how influential the SEA was. The 'open' and positive attitude towards participation and environmental integration of the main responsible ministries clearly also contributed significantly to the final outcome.

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The Experience of the Environment Agency (England and Wales) in Implementing SEA for Flood Risk Management Plans

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1. Strategic Environmental Assessment in the United Kingdom

European Directive 2001/42/EC, known as the "strategic environmental assessment" or "SEA" Directive requires a formal environmental assessment of certain plans and programmes which are likely to have significant effects on the environment. The Directive applies to plans and programmes whose preparation began on or after 21 July 2004. Authorities which prepare and/or adopt a plan or programme that is subject to the Directive must prepare a report on its likely significant environmental effects, consult environmental authorities and the public, and take the report and the results of the consultation into account during the preparation process and before the plan or programme is adopted. They must also make information available on the plan or programme as adopted and how the environmental assessment was taken into account. Basic procedural and technical requirements are set out in the Directive, which Member States can choose to implement within their existing systems. Environmental assessment is mandatory for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning, or land use.

Outside these sectors, environmental assessment is required for any plans and programmes which set the framework for development consent of projects (not limited to those listed in the EIA Directive) and which are determined to have significant environmental effects. Specific plans and programmes including for national defence, civil emergencies, finance and budgets are excluded from the Directive, and policies are not covered.

The Environment Agency (EA) is responsible for environmental protection, industry regulation and natural resources management in England and Wales. The SEA Directive (2001/42/EC) indicates that European member states must 'designate authorities to be consulted, by reason of their specific environmental responsibilities'. The EA has been designated as a statutory Consultation Body in both the English and Welsh Regulations. This means the Environment Agency must be consulted at a number of stages throughout the development of the plan and its accompanying SEA. Through these contacts it seeks to influence the strategic environmental outcomes of the plans or programmes of other sectors. If the plan or programme crosses a national boundary or falls partially within England, they are subject to the English SEA Regulations, and consequently the Environment Agency will act as a designated statutory

consultation body for such plans.

The EA has identified that it is interested in, and will examine for adverse impact, the following environmental issues in plans and programmes submitted to it as a designated authority:

- Water (water quality and resources)
- Climatic Factors (including strategic flood risk and climate change)
- Air
- Soil (including waste and contaminated land issues)
- Biodiversity (including flora and fauna)
- Cultural Heritage
- Landscape
- Human Health
- Material Assets (including geological interest and infrastructure

In addition, the EA as a Governmental body and as the controlling authority for water management, water abstraction, flood and coastal risk management, fisheries and inland navigation must submit its own plans to SEA assessment.

2. The Application of SEA for Water & Flood Risk Management

Water Management for flood control and land drainage in England and Wales has historically been driven by the demands of agriculture, with records of drainage of the fenlands of eastern England dating back to the seventeenth century. A Royal Commission in 1928 concluded: "in order to provide sufficient food for the growing population, those areas of potentially good land, but which suffered from flooding and bad drainage, must be brought into production" (Purseglove, 1988). The concept of land drainage was consequently ingrained into both the English landscape and the attitudes of the industry (Murphy & Slater, 2005). However, since the mid-1990s there has been a fundamental shift in attitudes to water management: from flood defence, to flood risk management; with the promotion of land drainage to reclamation of traditional floodplains and the river modified watercourses. The emphasis is now within the confines of the UK to transform the negative aspects of floodwater to more positive sustainable benefits for society and the environment.

An increasing general environmental awareness and an increasing number of significantly damaging floods, against a growing public awareness of the implications of climate change, have in the last five years initiated a more rational and consistent approach to flood risk management (FRM). The EA has been at the forefront of this development, developing flood risk management plans and strategies, and promoting more sustainable FRM solutions. The 2004 strategic environmental assessment (SEA) regulations for England and Wales currently, do not legally apply to these plans and strategies (although this is under review). However, the EA have taken the policy decision that as such plans require such a broad degree of strategic appraisal that it would apply the framework of SEA to its plans. Our experience to date, focusing here on the Thames, Severn and Humber, demonstrates that a SEA approach is intrinsic to our planning processes, operating at its best when the SEA is integrated closely within the strategic planning process itself.

After a brief historical context, this paper outlines the framework for FRM planning within England and Wales and the application of SEA, by the Environment Agency, to this process.

3. Historical Context of Flood Risk Management Planning in the UK

3.1 Responsibility for Flood Risk Management in England and Wales

Historically, the different causes of flood risk (such as fluvial, coastal, urban drainage, localised drains) and different category of rivers (based on flood risk) have been managed by different organisations. Purseglove provides a comprehensive analysis of the historical developments in land drainage and flood control in England and Wales (Purseglove, 1988). Scrase and Sheate outline the development of land drainage and flood control policy (Scrase and Sheate, 2005). Prior to the Water Act in 1973, there were approximately 1600 different authorities responsible for water management, however developments are underway to rationalise this system. Currently, the Department for Food and Rural Affairs (Defra) retains responsibility for overall flood defence policy and monitoring the four main operating authorities described in Table 1. Defra has overall policy responsibility for flood and coastal erosion risk in England, funding most of the EA's FRM activities in England and provides grant aid on a project by project basis to the other flood and coastal defence operating authorities (see Table 1) to support their investment in capital flood and coastal erosion risk improvement projects. Defra does not build defences, nor direct the authorities on which specific projects to undertake (Defra, 2007).

Table 1: Responsibilities for Flood Risk Management in the UK

Organisation	Remit
The Environment Agency	Fluvial, tidal and coastal flooding (main rivers / transfer of 'Critical Ordinary Watercourses')
Local Municipal Authorities	Approximately 400 in the UK, powers to carry out flood defence works on watercourses not designated as main rivers or COWs and which are not within IDB areas.
Internal Drainage Boards (IDBs)	Approximately 200 in England, regulate activities in and alongside the drainage system including the operation of pumping stations.
Privatised water / sewerage companies	26 companies in the UK, responsible for flooding from the water supply and sewerage network.

The Environment Agency was formed on 1 April 1996 by bringing together the National Rivers Authority, Her Majesty's Inspectorate of Pollution and Waste Regulation Authorities. Established by the Environment Act 1995, the EA has powers and duties under the Land Drainage Act 1991 and the Water Resources Act 1991, regarding the management of flood risk arising from designated main rivers and the sea. In December 2007 Defra will delegate to the EA the responsibilities for the approval and payment of grants for coastal erosion studies and FRM projects undertaken by Maritime Local Authorities. The Environment Agency is also responsible for flood warning and forecasting and has a general supervisory duty over matters relating to flood defence. The Environment Act 1995 states that in discharging their functions,

the Environment Agency's aim is 'to protect or enhance the environment, taken as a whole, as to make the contribution towards attaining the objective of achieving sustainable development'. The EA is also required, under the Environment Act 1995, to assess the impacts of all its works and activities. This is a far stronger commitment than the 1973 Water Act required of the water authorities, who 'should have regard to the desirability of preserving natural beauty, flora and fauna…', recognising the growing need for the protection and improvement of the environment as an integrated function.

3.2 Flood Risk Management Planning in England and Wales

Flooding and erosion are natural phenomena and cannot be entirely prevented. Defra's National Appraisal of Assets at Risk report estimated that 1.8 million residences and 140,000 commercial properties equating to 4-5 million people could be affected (Defra 2001a). The recent National Assessment of Defence Needs and Costs estimated the capital value of assets at risk to be approximately £250 billion (at 2004 prices). Average annual damages from flooding were estimated at some £1bn per year (Defra 2001b).

Flood risk management within the UK has been historically reactive, installing defences following major incidents at specific locations. Beginning in 2000, the former Ministry of Agriculture, Fisheries and food (MAFF, now Defra) published a series of guidance documents for all aspects of project appraisal, introducing a strategic element to flood risk assessment. The second in the series, Flood and Coastal Defence Strategic Planning and Appraisal (FCDPAG2) 'sets out a framework for the strategic consideration of flood risk areas related to river catchments, which should lead to appropriate problem definition and identification of broad options for solutions'. The PAG2 guidance has strengthened flood risk by providing: a more proactive approach, predicting future flood risk; a more integrated approach, placing a stronger emphasis on the environment; a more long term approach, introducing a 50-100 year study timeframe; and a more comparable approach, ranking the schemes nationally in order of their priority. A new framework for FRM was established by the PAG series and is depicted in Figure 1. The framework comprises essentially a three tiered approach culminating in FRM projects or management activities. This paper focuses on those plans relating to fluvial flood risk, Catchment Flood Management Plans, (CFMPs) and Flood Risk Management Strategies (known as PAG2 Strategies).

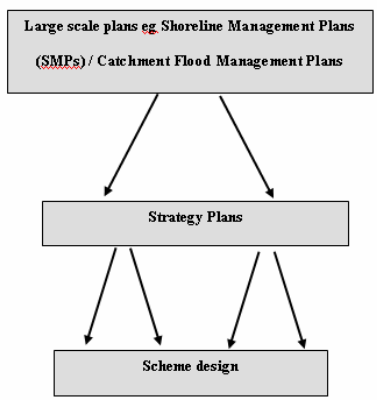

Figure 1: Hierarchy of plans

One of the most significant developments within the last decade within flood risk management has been the introduction of Catchment Flood Management Plans. Covering a wider geographical area and being the first plan in the hierarchy, these strategies seek to establish more sustainable approaches to managing flood risk (Table 2))

Table 2: Aims of a Catchment Flood Management Plan

To reduce the risk of flooding and harm caused by floods to people, the natural, historic and built environment.
To maximise opportunities to work with natural processes and to deliver multiple benefits from flood risk management, and make an effective contribution to sustainable development.
to support the implementation of EU directives, the delivery of Government and other policies and targets, and the Environment Agency's Environmental Vision.
To promote sustainable flood risk management
To inform and support planning policies, statutory land use plans and implementation of the Water Framework Directive.

CFMPs are not designed to provide detailed solutions to flooding problems, but provide wider policy options that are used to steer longer term solutions to flood risk management and set out the first significant consideration of the likely implications of climate change within that river system. The CFMP planning process also aims to engage with key stakeholders and other decision-makers within a river catchment area. CFMPs therefore place greater emphasis on gaining an understanding of flood risk than a detailed consideration of future infrastructure requirements. Thus in principle, the key elements to be defined are: catchment processes that contribute to the flooding mechanisms, the types and locations of sensitive receptors and the relationship between the two. Future risk is considered through the use of scenarios, within which the likely effects of major changes, such as climate change or tidal storm surge, can be simulated.

3.3 Factors influencing the Environment Agency's approach to SEA

The establishment of the EA in 1996 was an important development towards an integrated approach to FRM planning. With hindsight, the establishment of the Environment Agency marked a shift from traditional economic and technically based decision-making, to more inclusive environmentally and socially based catchment management solutions. The forthcoming introduction of the Water Framework Directive (European Commission, 2000) will place more emphasis on the management of flood risk through more natural management processes. The Water Framework Directive (WFD) is the most substantial piece of European Community water legislation to date. It requires all inland and coastal waters to reach "good status" by 2015. It will do this by establishing a river basin district structure within which baseline target environmental objectives will be set, including ecological targets for surface waters. Part 2 of this paper describes those factors that have influenced the Environment Agency's approach to FRM plans and explains how these factors have fundamentally influenced the policy and practice of SEA in the Environment Agency.

3.4 Development of strategic approaches

Some of the earliest attempts at a strategic approach to flood risk management were based on recommendations contained in guidance published by MAFF (1992) and later the FCDPAG series from 2000. The latter guidance recognised the need to fundamentally change national policy from flood defence to flood risk management, most recently reflected in Making Space for Water (Defra, 2004) and the Environment Agency's Strategy (Environment Agency, 2003). The reasons for this policy change are complex and numerous (see Scrase and Sheate, 2005), but can be summarised as:

- the requirements of national and European environmental legislation, such as the Habitats Directive and Water Framework Directive;
- decline in agriculture with a shift from production subsidies to environmental stewardship and diversification of land use;
- climate change and a succession of serious UK flood events in 1998, 2000 and 2002;
- change in emphasis of conservation organisations from protection to large scale habitat restoration and enhancement;
- increasing costs of maintaining and building traditional flood defences forcing a re-prioritisation of resources away from protecting agricultural land to people and property;
- development of strategic planning in other sectors, e.g. transport and land use planning, promoting a cross fertilisation of ideas into flood risk management planning; and
- ultimately changes in the culture of FRM organisations from post-war land drainage and flood defence to FRM planning.

In England and Wales there are numerous private and public sector organisations that played a role in influencing this policy change, for example English Nature, the Countryside Council for Wales, the Royal Society for the Protection of Birds and local Wildlife Trusts. During the 1990s the polices and focus of these organisations changed fundamentally from protection of species or individual sites to a wider emphasis on fundamental ecological processes sustaining biodiversity. Management of catchments for flood risk and protecting and enhancing biodiversity were a key priority of these organisations and many others such as the National Trust or the River Restoration Centre. In recent years, organisations such as English Nature or the RSPB have become significant landowners in their own right, protecting and recreating wetland habitats and have published widely in this area. A key document was the UK Biodiversity Action Plan (1995) which placed an emphasis on water management for biodiversity and river and wetland restoration. There is little evidence in these publications to conclude that these organisations fundamentally promoted Strategic Environmental Assessment (SEA) approaches to flood risk management, however they did support and lobby relevant organisations to consider taking a more strategic approach to flood risk management planning.

4. The Strategic Environmental Assessment Directive

The EU's Strategic Environmental Assessment Directive (EC, 2001) was formally notified to member states on the 21 July 2001. Each member state then had a period of three years within which to implement the requirements of the Directive into their national law. The long-term effects of the Directive on planning process and decision making are yet to be analysed in depth.

However, within the Environment Agency, the early influence of the Directive can be seen to be in sustaining and promoting a more strategic and rational approach to FRM planning.

In 2004 the EA published its policy and technical guidance for conducting internal SEA:

'The assessment and management of environmental consequences of its own plans and programmes is seen as integral to the work of the Environment Agency and key to delivering the Environment Agency's organisational objectives, including those of sustainable development' (Environment Agency, 2004).

The emphasis of the policy was to undertake SEA only where it was legally required and where there are strong practical and policy drivers for doing so. This latter approach was strongly influenced by the requirements of Defra. A position statement from Defra determined that there is no legal requirement to apply the Directive to PAG2 strategies or CFMPs. However, they noted that strategies clearly set the framework for future planning, have significant environmental implications and require extensive consultation. Defra believe that adopting a SEA approach is appropriate and strongly encouraged their production (Defra website, 2004).

The two fundamental influences on the Environment Agency's approach were the need to comply with the SEA Directive and the need for flexibility to adapt SEA to rapidly evolving FRM planning frameworks. The EA's procedural guidance therefore takes the SEA Directive as its starting point, particularly the need for legal compliance relating to scoping requirements, public consultation, contents of the environmental report and monitoring.

In addition, there is an emphasis on the assessment of environmental effects through the use of objectives; the management of environmental risks at the appropriate level in the flood risk management planning hierarchy (tiering); and integrating SEA into the planning making process. The flood risk management hierarchy illustrated in Figure 2 seeks to illustrate this approach.

In a revision of the UK's formal position as to what plans and programmes are formally obligated to undertake SEA, it is likely that in future the UK Government will declare that PAG2 strategies will from that time point require formal SEA.

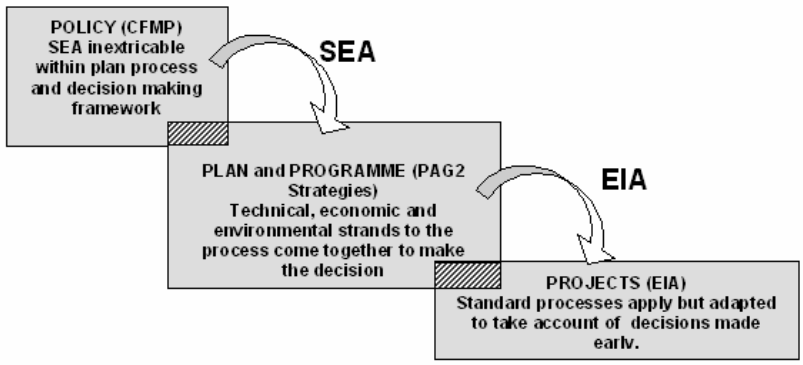

Figure 2: Hierarchy of FRM and Environmental Assessment

5. Relevance of the UK's Application of SEA to Flood Risk Management to China

The UK Government, influenced by a growing body of scientific evidence, has started to plan its national responses to the risks and challenges of future climate change impacts on the

UK. In particular, the UK Government own research linked with the Intergovernmental Panel on Climate Change's (IPCC) reports warn that sea levels could rise by tens of centimetres this century. ,

The UK is particularly vulnerable to changes in sea level rise on its eastern coastlines and severe flood events along its extensive river networks making its coastal populations and major cities increasingly vulnerable to flood events and storm surges. In addition UK industrial development is now concentrated within its coastal zones exposing such assets to seaward hazards such as storms, flooding and tidal surges. Such events can also damage sensitive ecosystems including those such as protective sand dune or beach systems that protect the UK coastline.

Principal amongst future climate change adaption strategies has been the question of how the UK sets out to protect its principal economic, residential and industrial centres from the adverse consequences of increased rainstorm events, fluvial flooding and rising sea and tidal levels. As these risks have to be met from within existing tax and budgetary systems, the UK has sought to adopt a risk based approach to ensure that resources are allocated where they have the greatest return to the nation. In the evaluation of economic risks and the technical challenges in meeting such risk, SEA has provided a valuable assessment tool of wider social and environmental consequences to assist the decision-making process. It has also enabled a wider understanding by local populations and strategic decision-makers of the issues faced and how the UK Government policy now seeks to address the risks arising out of climate change. Whilst it is hoped that greenhouse gas emission reduction, both at the national and global level, will seek to mitigate climate change, adaption and modification of the UK's existing flood risk management defences is a necessary precautionary step.

At a wider national level SEA, assists the UK Government in ensuring that a significant number of national and regional plans and programmes take full account of climate change issues, as European Directive 2001/42/EC requires plan – makers to identify and evaluate their plans' impacts on a number of environmental issues, including climatic factors; and, where appropriate, to put measures in place to minimise and respond to significant impacts identified. This is proving beneficial in directing such plan-makers to take note of national government policies and action plans in these areas, and the preferred adaption strategies set out by the UK Government.

6. Conclusion

In brief, this paper has sought to outline the following components that may be of consideration to the state of flood risk management and climate change adaptation in China:

- The paradigm shift in approach to flood risk management has facilitated the implementation of the SEA process; the introduction of SEA and the legislative frameworks behind it did not cause this change, but will sustain it.
- Against the complex background of established flood risk management practices and precedents, the UK's Environment Agency has sought to integrate the procedural and technical requirements of the SEA into both new and existing flood risk planning framework, rather than adopt a stand-alone concept.

- The hierarchy of flood risk management planning demands a flexible approach to SEA and the tiering concept within SEA, as an integrated process, can fulfil these requirements.
- The theoretical concept of tiering can be implemented in practice by consideration of the needs of the flood risk management programme under examination and the requirements of the UK's regulations concerning SEA.

In conclusion, it is suggested that the benefits of SEA are maximised when the SEA process is integrated as a separate but interlinked component within the plan making process, centred on the social and environmental risks associated with flood risk management. With flood risk management, technical problems and solutions overlap with environmental issues to such an extent that a separate environmental assessment framework or audit trail is an artificial distinction. Although operational lessons in implementing this approach have identified that it is in the plan- makers best interests to maintain the visibility of this process especially regarding the identification, consideration and objective assessment of environmental and social risk considerations, particularly in the reporting stages.

The concept of tiering is easily applied within the UK's framework for flood risk management. However, this is a four-tier process (policy-plan-programme-project) within which a two-tier process (SEA-EIA) must fit. Therefore, a flexible approach to SEA is required to complement the first three tiers, to ensure that issues are considered at the appropriate stage and in an appropriate level of detail. This issue may be difficult to manage in practice, as many consultees wish to see the full range of environmental topics fully assessed at every stage. However, it is the experience of the Environment Agency that an open and transparent objective flood risk management process, undertaken with the inclusion of clear SEA-environmental and social impact considerations, is a valid assessment tool. A tool through which the Environment Agency can proceed in addressing many of the critical water and flood management issues that face our major river, estuarine and coastal systems. Management changes that have to be addressed in the face of the challenge and uncertainty associated with future climate change.

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Strategic Environmental Assessment of the Fife Supplementary Planning Guidance for Renewable Energies

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1. Introduction

This paper introduces the strategic environmental assessment (SEA) of two Supplementary Planning Guidance (SPG) documents on Renewable Energy for Fife Council (a local authority in the East of Scotland, UK) for (1) wind energy, and (2) renewable energy technologies other than wind energy. First, an introduction to the planning system and to SEA in Scotland is provided. Then the case study is described. Finally, an evaluation of the case study is presented.

2. Introduction to the Scottish planning system

The planning system in Scotland is established by statute (principally in the Town and Country Planning (Scotland) Act 1997). Scotland is one of the four constituent parts of the United Kingdom (besides England, Wales and Northern Ireland). The Scottish Executive considers planning to have a key role in achieving policy objectives. This is particularly evidenced by the fact that planning is the responsibility of the Social Justice Minister.

One area that causes particular problems for Scottish planning (and the Scottish Executive) is the diversity of needs within Scotland. Thus, pressures in the sparsely populated areas of the country are very different from the central belt around Glasgow and Edinburgh (where the case study is located).

Until 1996, Scotland had a “two-tier” system of local government with regional and district councils. Then, the regions were responsible for strategic policy by the preparation of structure plans, while district councils were responsible for (more project oriented) local plans and development control issues. Now, there is a unitary system in place, with local authorities having a wide range of responsibilities and a range of tasks to fulfill. They are, for example, obliged to prepare both, structure plans and local plans (ie development plans). Together, these plans contain policies for the future development and use of land in an area. In addition, district councils also prepare the policy oriented supplementary planning guidance for specific planning aspects. Plans and guidance can cover a wide range of issues such as housing, transport, employment, shopping, recreation and conserving and protecting the countryside.

2.1 SEA in Scotland

The Environmental Assessment (Scotland) Act 2005 (EAA 2005) came into force on

February 20, 2006. The Act repealed the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 (EAPP, 2004), which was in force prior to the Act. Opposite to most other EU member states, Scottish legislation does not only aim at plans and programmes, but also at strategies (i.e. policies – including planning guidance). Guidance on the form and content of the Environmental Report is set out in SEA Toolkit published by the Scottish Executive in September 2006. The Scottish Executive is also producing an annual SEA report which outlines the progress made with SEA. Table 1 indicates the plans, programmes and strategies that have been subject to SEA in 2005 and 2006:

Table 1 - Plans, programmes and strategies (policies) entering into the SEA process

Sector	Number of PPS carried Over from 2005	Number of PPS started in 2006	Total number of PPS in 2006	Percentage
Agriculture	0	3	3	2.5%
Forestry	1	2	3	1%
Fisheries	1	0	1	1%
Energy	1	5	6	5%
Industry	0	3	3	2.5%
Transport	3	18	21	17%
Waste management	1	2	3	2.5%
Water management	0	1	1	1%
Telecommun-ications	-	-	-	-
Tourism	0	1	1	1%
Town and country planning& land use	13	51	64	53|%
Miscellaneous	0	14	14	12%
TOTAL	20	100	120	100

Source: Scottish Executive (2007)

As indicated in Table 1 'Town and Country planning & land use' plans, at 53%, made up the largest proportion of plans, programmes and strategies entering the SEA process in 2006, followed by 'Transport' at 17%. Together, these sectors accounted for over 70% of SEA activity in 2006. Telecommunications was the only sector in which no SEAs were submitted in 2006. For energy, the subject of this paper, only 5% of SEAs (i.e. six in total) were undertaken.

2.2 Energy planning and SEA in Scotland - the context

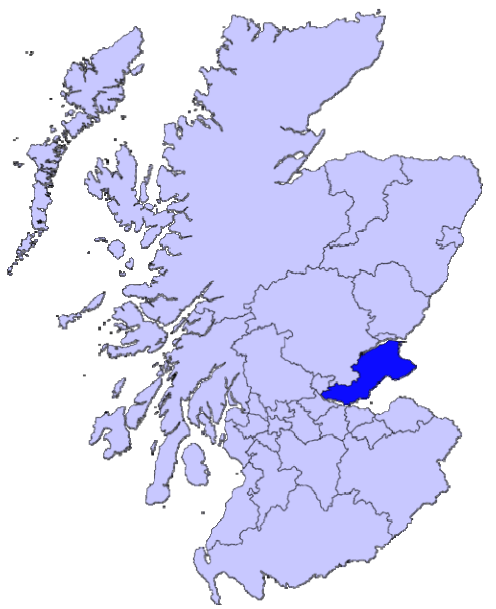
The Scottish Executive has set some ambitious renewable energy targets for Scotland.

Thus, by 2020, 40% of the country's electricity supply should be from renewable energy sources. Scotland has an interim target of achieving 18% electricity from renewables by 2010 and a recent report by the Executive indicates that this target is well on course to be met. Attaining this target is thanks in part to the wealth of natural resources which Scotland possesses, including wind, both onshore and offshore, wave and tidal energy potential.

3. Introduction to the case study

Fife is a council area of Scotland, situated between the Firth of Tay and the Firth of Forth. Fife is a peninsula in eastern Scotland bordered on the north by the Firth of Tay, on the east by the North Sea and the Forth of Firth to the south. Fife is Scotland's thirteenth largest local authority area with a resident population of just over 350,000 (see Map 1). Almost a third of the population live in the three principle towns of Dunfermline, Kirkcaldy and Glenrothes.

Two SPGs were prepared and subjected to SEA. One was an SPG on wind energy (windfarms, both onshore and offshore) and the other was an SPG for renewable energy technologies other than wind.



Source: Scottish Executive (2007)

Map 1: The Fife area

3.1 The SEA for the Fife SPGs for renewable energy

The SEA conducted was based on a rigorous framework for assessing the nature of the impact and likely time scale of any impact consistent with the requirements of the legislation. The various policy elements were assessed against evaluation criteria specified in Schedule 2 (6.a-e) of the SEA Regulations (see Box 1).

The aim of the SEA was to demonstrate that the various policy elements for renewable energy uptake in the Fife area contribute positively to securing a sustainable energy supply.

Box 1 List of evaluation Criteria according to the Scottish SEA Regulations

1. Biodiversity/Flora/Fauna,
2. Population,
3. Risk to Human Health,
4. Soil,
5. Water,
6. Air,
7. Climatic Factors,
8. Material Assets,
9. Cultural Heritage (including archaeological and architectural),
10. 10 Landscape,
11. Secondary, cumulative and/or synergistic effects of criteria 1-10; and,
12. Natura 2000 sites

3.2 The SEA process

The SEA was conducted as follows:

Screening: SPGs in Scotland formally require SEA (according to EAA 2005, EAPP 2004)

Scoping: a scoping document was submitted to the Scottish Executive on 31.01.2007, and formally commented on by three statutory consultees (consultation): Scottish Environmental Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Historic Scotland (HS).

An environmental (SEA) report was prepared, which was subject topublic consultation (8 weeks; 26 March – 21 May 2007)

Furthermore, in the future, compliance with the terms and conditions of the SPG/SEA will need to bemonitored

This will be happening based on the incorporation of the SPGs into the area's local planning (2007-2010).

3.3 SEA aims

The main aim of the SEA was to ensure that no adverse environmental impacts would arise when the Supplementary Planning Guidance is implemented in conjunction with other Development Plan proposals. Furthermore, SEA for the SPG on Wind Energy aimed at identifying suitable sites for wind farms.

Figure 1: Framework for Assessment

Policy Element	Assessment Criteria (See Box 1)											
	1	2	3	4	5	6	7	8	9	10	11	12
SS1: Settlement Strategy	+/-- LT	+/-- LT	+ LT	+/-- LT	+/-- LT	--	--	+ LT	+/--	+/-- LT	+/-- LT	--

Box 2: Symbols for assessment matrix

+	Significant positive environmental effects
-	Significant negative environmental effects
--	No significant environmental effects
?	Don't know
+/--	In the positive spectrum if any effect
-/--	In the negative spectrum if any effect
+/-/--	Range of possible scores
LT	Long Term
MT	Medium Term
ST	Short Term
P	Permanent
T	Temporary

Finally, SEA for the SPG on Renewable Energy Technologies other than Wind aimed at providing advice to potential developers on the range of technologies which could be developed in Fife, including:

1. hydro power
2. heat pumps (air/water)
3. geothermal
4. combustion plants (biomass based)
5. shoreline and offshore technologies (wave and tidal power)
6. solar technologies (heat and photovoltaic)

3.4 Assessment Methodology

Fife Council used a simple matrix method for evaluating the significance of impacts that each of the policy elements of the SPGs may have on the environment. This matrix method and scoring mechanism are demonstrated below in Figure 1. Box 2 shows the list of assessment criteria.

Finally, Figure 2 shows how the scoring was done, using a qualitative approach of justifying each score assigned to an individual policy element.

Figure 2 Specimen Policy/Proposal Scoring

Component of Plan	Impact Duration Biodiversity/ Flora/Fauna	Justification
Policy element SS1: Settlement Strategy	+/-- LT	Policy element requires that allocation of land for new development must avoid damage to natural environment features. Long term over life of Plan.

The potential impact of each policy element (ie windfarm sites for the SPG on Wind Energy and the six renewable energy technologies for the other SPG) on each of the factors listed in Box 1 was considered and a score was allocated. The method provided scope to indicate

situations where it may not be possible to predict effects (ie taking into account uncertainty). Not only significant negative effects were identified, but also those that were deemed positive. Where appropriate, the duration of effects was considered with the option to value it as long-term, medium term or short term. In addition, it was indicated whether effects would be temporary or permanent. The assessment was on the basis that any later development plan proposals would need to be in line with what was set out in the SPG.

4. Strategic Environmental Assessment Results – Main Findings

The main aim of the SEA was to ensure that any renewable energy developments consistent with the Supplementary Planning Guidance should not have an adverse impact on the environment. Figure 3 shows the assessment results for the various policy elements. It can be seen that none of the policy elements have a significant negative effect on 1 (biodiversity, flora, fauna), 8 (material assets), 9 (cultural heritage), 10 (landscape) and 12 (Natura 2000 sites). Furthermore, all policy elements score positive on 7 (climatic factors).

Whilst it was found that the main significant negative environmental effects of the SPG policy elements related to soil disturbance and soil removal for placing the foundations of the wind farms, overall, no major significant negative effects were identified. Rather, positive effects were predicted as a result of SPG implementation on the local population in terms of job creation, reducing greenhouse gas emissions and improving local air quality. Therefore, overall, the SEA found that the SPGs should be leading to improvements to environmental quality. This is not to say that the SEA is not therefore required for such SPGs in the future as the SEA process did flag up some very important environmental issues which will need to be mitigated against when the SPGs are implemented and integrated into the Fife Local Plan.

Figure 3 SEA of SPG policy elements – Summary

Policy element of SPG	Criteria											
	1	2	3	4	5	6	7	8	9	10	11	12
SG1:Wind Farms (also policy element R1: Wind Turbines)	--	+/-- LT	+ LT	-/-- LT/T	-/--	+	+	--	--	--	+/--	--
SG2:Shoreline Technologies and Landfall Installations	--	--	--	-/-- LT/T	-/--	+	+	--	--	--	--	--
SG3:Renewable Energy – All Technologies	--	--	--	-/-- LT/T	--	--	+	--	--	--	--	--
SG4:Renewable Energy Technologies	--	--	--	-/-- LT/T	--	--	+	--	--	--	--	--
SG5 : Combined Heat and Power Plant	--	--	--	--	--	--	+	--	--	--	--	--
PSG1:Offshore Activities	--	--	--	--	--	--	+	--	--	--	--	--

Figure 4 summarises the justifications given within the assessment of the SPG policy elements, taking the evaluation criterion ‘soil’ as an example.

Figure 4 Justifications of scores given for the evaluation criterion soil

Policy element	Impact Duration Soil	Justification
SG1: Wind Farms(also Policy element R1: Wind Turbines)	-/-- LT T	Development of turbines would have small effect on soils as area required per turbine and associated works is limited. Sites probably restored after use. Long term use but temporary.
SG2:Shoreline Technologies and Landfall Installations	-/-- LT T	Development of shoreline technologies and landfall installations likely to have limited impact on soil which can be addressed through conditional planning permission. Policy seeks to prevent shoreline technologies and landfall installations causing coastal erosion and any associated loss of soil. Long term use but temporary.
SG3: Renewable Energy – All Technologies	-/-- LT T	Development of renewable technologies would have small effect on soils as area required for most technologies and associated works is limited. Sites probably restored after use. Long term use but temporary.
SG4: Renewable Energy Technologies	-/-- LT T	Development of renewable technologies would have small effect on soils as area required for most technologies and associated works is limited. Sites probably restored after use. Long term use but temporary.
SG5 Combined Heat and Power Plant	--	Policy promotes more efficient use of energy which would reduce greenhouse gas emissions with associated environmental benefits from a reduction in waste combustion materials.
PSG1: Offshore activities	Not applicable	Not applicable

4.1 Main issues raised by consultees of the SEA scoping report

The main concerns that the statutory consultees had, are related to the fact that the scoping process (and thus the SEA process in general) started late into the preparation of the draft SPGs. Both, SEPA and HS picked up on this point and stated that:

"It is noted that the draft Supplementary Planning Guidance on "Wind Energy" and on "Renewable Energy Technologies other than Wind Energy" are in an advanced stage of preparation while the SEA is still at the early stage of scoping. Please note that the purpose of the SEA is to inform decision making as the plan is prepared as well as before its adoption and that SEA should be undertaken during the plan preparation and not after substantial decisions about the plan direction and content have already been taken". (SEPA, 2006).

It was suggested that the scoping report should have included more information on the types of renewable energy technologies covered (ie not just wind). Furthermore, it was felt that

more detailed baseline environmental data should have been produced than those that were available and which were rather limited. It was also proposed that the scoping report should have asked for the SEA to assess the evolution of the local environment in the absence of any renewable energy development, i.e. the no action alternative should have been included.

Furthermore, it was also suggested that the baseline data on existing "brownfield sites" could have been linked to the percentage of renewable energy facilities located on brownfield land. As the SPGs set out policy elements and advice for planning for renewable energy developments in Fife's coastal waters, it would have been appropriate to include baseline data on the Fife marine environment and consider potential impacts on the marine environment, marine infrastructure and particular areas of importance for fisheries or recreation and tourism.

Finally, the consultees stressed that "Economic Development" should not be an SEA topic and is not relevant to the environmental assessment. It was stated that the consultees supported the matrix based approach. However, it would have also been helpful to demonstrate how the SPGs will be monitored to ensure that any wind energy developments conform to the SPGs policies and that any mitigation is effective. The latter was seen by the consultees as an integral and important part of the SEA process.

4.2 Evaluation

The SEA was conducted for a policy level activity, focusing on evaluating the policy elements set out within the two SPG documents prepared by Fife Council. The policy elements within the SPG were scrutinized and impact significance valuations were assigned to each policy area in a qualitative manner. It was found that the policy elements advocated in the SPGs would be have no significant adverse long term effects on the local or regional environment. Furthermore, it was found that there would be long term positive impacts in the reduction of carbon dioxide emissions in the area.

The matrix method adopted was simple but effective in the evaluation of significance. Following on from the consultees' responses on the SEA scoping document, the final environmental statement was greatly improved, taking into consideration the no-action alternative, ie the evolution of Fife without a renewable energy policy. The SEA was considered very useful in outlining the main areas of concern with regard to the uptake of renewables in the Fife area and the subsequent integration of the SPG into the local area plan will ensure that the local plan is more sensitive to the needs of environmental protection, whilst balancing the global need for increased renewable energy uptake in light of the global warming dilemma the world faces.

4.3 Success factors, problems, shortcomings and outlook and Conclusions

Producing an initial scoping report which three statutory consultees had a chance to comment on served to greatly improve the overall SEA quality. Without the scoping stage and the comments by the consultees, the quality of the SEA process would have decreased. The consultees pointed out some highly relevant points, most importantly that the scoping stage may have been carried out to late in relation to the preparation of the draft SPG, stating that the purpose of SEA was to work in tandem with the policy (guidance) making process in order to pro-actively influence its content. Also, the scoping stage ensured that additional and crucial

baseline data was collected and inserted into the environmental statement.

Consultees stated that Fife Council had handled the input of the consultees very well and included all of the additional information that was requested. Overall, the SEA process most definitely ensured that the SPG became more environmentally sensitive and the process of integrating the SPGs into the local plan will now be undertaken in Fife between 2007 and 2010. The only criticism of the SEA procedure was that it started too late in relation to the initial preparation of the draft SPGs, which may have potentially reduced the level of influence that the SEA exerted on the final SPG version. Nevertheless, this study illustrated that policy level SEA for renewable energy policies and strategies is beneficial and results in more environmentally considerate guidance.

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中 文 版

前　言

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1 引言

当获知中国国家环境保护总局（以下简称环保总局 SEPA）与环保总局环境工程评估中心（以下简称评估中心 ACEE）及中国国家发展改革委员会国际合作中心(NDRC) 将在北京联合举办战略环境评价国际论坛的时候，笔者就设想写这本专著。该会议的召开时机成熟，并且意义重大。

到 2007 年末该会议召开的时候，正值包含战略环境评价内容的《中华人民共和国环境影响评价法》实施五周年之际，也正是分析原因、总结教训，并继续探索战略环境评价应如何成为保证可持续发展的更有效的工具的时候。

鉴于中国经济的快速发展与对有限资源的需求之间已经出现的紧张形势，相关研讨尤其重要。中国现行的十一五规划（2006-2010）强调提高能源效率、环境保护、加强基础设施建设以及提高广大农村地区人民的经济水平和生活水平。近期的所有发展都强调环境评价与战略规划及国家政策制定之间相结合的必要性。为了确保区域规划、行业规划和市政规划在环境、经济和社会方面的可持续性，战略环境评价已经获得了政府方面的强有力支持 。

战略环境评价在中国刚刚起步。为保证未来社会经济的科学、协调发展，中国战略环境评价的范围不应局限于项目和规划层次，还应包括政策层次和发展战略层次的战略环评。

由于重大战略决策带来的环境累计后果造成的挑战日益加剧，正如世界其他地区一样，近年来战略环境评价在亚洲地区也一直受到较多的关注。2006 年 4 月，世界银行完成了东亚及东南亚地区环境影响评价条例和战略环境评价需求的研究报告。世行的研究表明，香港特别行政区、韩国、日本、中国和越南在战略环境评价推广和应用方面发展较快。其他国家，如菲律宾、印尼和泰国也表示了对战略环境评价的浓厚兴趣。战略环境评价这种发展趋势在亚洲还会持续下去并推广到更多的经济体。

撰写本专著的目的是分析战略环境评价在世界不同地区的发展应用状况，并探讨这些国际经验在中国的适用性。从专著中收录的文章可以看出，从相对简单的想法到项目环境影响评价的局限性分析，战略环境评价已经包含了不同的观点，并已经应用到发展规划的许多方面。

2 国际观点和经验

为了统一概念，战略环境评价经历了极富挑战性的演进过程。几年来的文献都显示了战略环境评价的多面性，通过不同国家、组织、专家和学者希望战略环评达到的目的来说明这点。

欧盟 2001/42/EC 指令被广泛的引用为战略环境评价制度的基石，至今许多作者包括负责实施该指令的欧盟官员在内，仍时常提醒该指令是关于环境评价的，与项目环境影响评价的确密切相关，目标是适用于那些作为项目环境影响评价背景的规划和计划。该指令并没有强调战略性，甚至根本没有提到战略环境评价。在此背景下，专门把战略环境评价与欧盟指令的目的及局限性相联系的所有讨论，削弱了战略环境评价的潜力。

欧盟和世界其他国家战略环境评价发展的经验与中国息息相关，因为自 2003 年生效的中华人民共和国环评法中对规划环评的规定，与欧盟指令中有关战略环境评价的规定有诸多类似之处。

国际影响评估协会（IAIA）年会已经成为重要的辩论舞台，在这里新旧观点相互碰撞。2005 年在布拉格举行的 IAIA 战略环境评价特别会议上，明显表明了战略环境评价概念的不同发展方向，从面向 EIA 的讨论，到以增强影响战略决策能力为目的、面向战略性的 SEA 概念。本专论收集的战略环境评价的一些经验案例，是上述讨论的延伸，目前也正受到中国高层政府官员和战略环境评价专家的关注。

本专论的章节分两大部分。一是阐明战略环境评价的发展和其在国际、区域和国家层面的实施方法(Au, Ghanimé and Risse, Sadler, Partidário, Au and Lam, Bina)。另一部分是战略环境评价的案例，阐述目前正如何实施政策、规划或计划层次上（PPPs）的 SEA，或者怎样才能实施，有的采用面向广义环境的评价范围，有的则严格局限于自然环境的评价范围(Oleson, Kornov, Marshall et al, Verheem and Laeven, Fischer and Phylip-Jones)。

在第一部分，Linda Ghanimé 提到 OECD/DAC 手册以及亚洲国家尤其是中国如何实现千年发展目标，OECD/DAC 手册是当前的 SEA 发展援助手册。她接下来以贝宁湾为例，说明贝宁如何才能通过战略环境评价实现千年发展目标，即减少贫穷。

Barry Sadler 有两篇文章，第一篇概述了战略环评方法和实践的国际发展趋势以及进展。他提到战略环境评价在各国的进展，指出欧盟指令为战略环境评价的世界典范，并强调努力发展可持续性评估议程的必要性。说明 SEA 的发展和促进可持续性评价的不断努力完全一致，使空泛的 SEA 理论成为面向战略决策的工具。他的第二篇文章是第一篇文章的补充，总结了战略环境评价如何应用于政策制定。他解释了战略环境评价应用于政策层次最初犹豫不决的原因，以及后来为什么政策层面战略环境评价明显增加。Sadler 指出，政策层面战略环境评价的开展提供了综合考虑环境、经济和社会因素的良机。

Maria Partidario 批判地分析了战略环境评价在欧洲的进展，以及欧盟指令如何强制许多欧盟成员国重新调整其战略环境评价的作法，这些成员国一旦涉及到战略性进展就往往退缩不前。欧洲存在的多种战略环境评价形式恰恰证明，战略环境评价距达到统一相差甚远，不仅因为战略环境评价模式与决策制定的背景联系密切，而且目前围绕战略决策实践正呈现出一种发展趋势，需要探索战略环境评价强大的战略能力。

Au 和 Lam 总结了战略环境评价在香港实施背景和进展。特别指出不同专家参与的各部门间的相互交流；各自单独的探索及如何影响战略环境评价的实践；如何体现可持续性问题和现存决策过程的联系；以及寻求实用方法的必要性，以保证在缺少数据和数据收集手段的情况下仍可以满足严格的可持续性分析要求。Au 和 Lam 提出，当前有一种错误的观点，即认为单一的战略环境评价概念和方法可以解决所有复杂的可持续性问题；另外，该谬论还认为，除非有同样严格的战略环境执行和审核机制，否则战略环境评价将注定是纸上谈兵。

Olivia Bina 围绕经济增长、环境和战略环境评价之间的关系探讨中国的战略环境评价问题。她从战略环境评价理论开始，根据最近她在中国开展的研究工作，深刻分析了中国规划环境影响评价制度。探讨了技术方法、替代方案以及战略环境评价介入决策过程的时机等问题。最后她提出适合中国国情的战略环境评价发展方向。

Elvis Au 讨论了为实现可持续未来需要智慧的经济增长和谨慎的发展，强调在环境评价中采纳战略方法从而达到影响战略决策目的的紧迫性。他认为，亚洲的经济增长和发展是多种社会经济因素的必然结果，然而，该地区面临着许多特殊问题和挑战，需要通过战略环境评价来解决，需要从战略层次上协调环境、社会问题与经济优先发展的关系，才能实现更智慧、更审慎的经济增长和发展。

第二部分是案例分析，Kirsten Oleson 设计了一个宏观经济层面的案例，意图说明战略环境评价如何在中国正在进行的绿色核算中发挥作用，分析中国如何计算出口商品的外部成本，以平衡经济增长与自然资源密集消耗。Oleson 提出利用战略环境评价追踪“虚拟转移”，这个概念是将自然资源投入和污染负担作为国内生产商品的外部成本，与商品出口的目的地相联系。

Lone Kornov 提供了政策层面战略环境评价应用的例子，主要分析了丹麦有关城市环境区划议案的战略环境评价，该环境区划主要根据大气污染物的排放来分区。她讨论了有关公众参与问题以及从政者是如何参与公众讨论的。有趣地的是，她认为，引起政治家们关注的，更多源于公众的反应而不是战略环境评价本身！

Verheem 和 Laeven 提供了荷兰防洪规划的案例研究。它在某种程度上接近中国的规划环境影响评价，详细分析了替代方案和战略环评中使用的方法，说明了公众参与、将战略环境评价与规划相结合考虑环境问题的重要性，这些都是使战略环境评价对规划产生影响的关键条件。他们进一步提出在不同政府部门间建立跨部门的综合协调机制，相互促进、共同参与战略环境评价。

Marshall 等的文章也是关于防洪，但是更多是从适应气候变化和缓解气候变化的影响方面来考虑。它分别讨论了洪水风险管理和战略环境评价两个问题，在这个案例中，关注的是环境机构的制度建设，而不是国家或区域实施战略环境评价方法。

Fischer 和 Phylip-Jones 讨论了战略环境评价在可再生能源发展中应用的重要性，提供了苏格兰可再生能源规划指南在地方层次应用的案例，即（Fife 规划指南的战略环境评价）。案例研究了风力发电厂对欧盟指令提到的每个环境因素的影响，总结了本案例的被动性（环评开展的太晚，规划指南环境敏感性更高了，其他技术应该被考虑等等）。

3 结语

本专著中的部分章节除了分析 SEA 为何需要符合中国的国情(e.g. Bina)以外，还讨论了战略环境评价应满足国际议程(e.g. Ghanimé and Risse, Sadler) 和不同区域背景(e.g. Partidario, Au, Au and Lam)的意义和作用 。多个作者介绍了战略环境评价如何在政策和宏观经济层面上应用(e.g. Kornov, Oleson)，以及在全球层面(e.g. Ghanimé 和 Risse 的千年发展目标和贫穷问题)和国家层面(e.g. 英国 Marshall 等的气候变化调节与减缓，以及 Verheem 与 Laeven 的国家层次的防洪规划)处理主要全球问题。还有作者例证了目前仍然存在的规划和计划层次上欧盟指令的被动应用 (例，苏格兰 Fischer 和 Phylip-Jones 地区的风力发电厂)。SEA 在多个层次上的成功实施满足了战略决策制定的需要，这充分证明了战略环境评价的发展潜力。笔者希望专著中描述的这些经验将有助于建立有效的战略环境评价机制，并帮助中国走上可持续发展的征程。

环境的可持续性、战略环境评价及减少贫困策略

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1 发展合作中的战略环评

2005 通过的《巴黎有效援助宣言》（The Paris Declaration on Aid. Effectiveness ）指出了战略环评在发展合作中的作用，其中不论是援助国还是伙伴国均要致力于“在部门和国家水平上发展和应用共同的战略环评方法”（OECD，2005）。中国作为当事国既是重要伙伴国又是援助国。

根据上述协约，经济合作暨发展组织（OECD）发展援助委员会（DAC）及其环境与发展合作网络系统，设立了“战略环评任务团队”，由英国政府国际发展部(DFID)和联合国开发计划署(UNDP)共同主持工作。

战略环评任务团队发行了战略环评指导手册，即《应用战略环评：发展与合作实践指导》（以下称 OECD DAC 的战略环评手册）。基于以往的 SEA 实践经验，OECD DAC 的战略环评手册提供了一个公认的、可供共享的模型，从而在不同区域、针对不同目的进行适当的战略环评。战略环评被定义为：“旨在确保政策、计划和规划制定中充分考虑环境因素，并试图评估环境要素与社会及经济要素之间联系的一种分析、参与方法”（OECD，2006）。战略环评并不是一种单一的、一成不变的标准化方法，而是采用一系列分析和参与手段，其特点有：

- ✓ 以大量原理为基础的；
- ✓ 是一个连续的、交互的、灵活的过程；
- ✓ 应用并贯穿于整个决策制定过程中；
- ✓ 注重制度与管理的强化；
- ✓ 对于特定的过程，选择适当的方法

为评估特定政策、规划和计划的环境影响，战略环境评价可以更好的协调政策、规划制定与可持续发展之间的关系，因此要优于传统的评价方法和普遍的执行过程。

OECD DAC 指导指出了在政策、计划和规划中应用战略环评的十二个切入点，更是未来发展合作的目标，分别是：

- ✓ *发展中国家的战略规划过程*：包括国家支配性战略、计划和规划；国家政策改革及预算资助计划；部门政策、规划和计划；基础设施投资规划和计划；国家及成员国空间

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发展规划和计划及跨国规划和计划。

✓ *发展机构特有的程序*：包括援助国的援助策略和规划；与其他机构达成的合作协议；援助国的部门特定政策；援助国资助的公共-私有基础设施的辅助设备和计划。

✓ *其他相关情形：*包括独立的审查委员会，和主要由私营部门的项目和规划。

为了深化战略环境评价的应用，提高 OECD DAC 指导的效力，任务团队成员机构着力加强组织内部实施 SEA 的制度化。例如，联合国发展计划署（UNDP）制定了一项战略环境评价实施规划，包括一系列在机构内部系统实施 SEA 的干预方法。该规划也包括如何通过 SEA 来支持基于千年发展目标的国家发展战略的制定和实施，减贫战略草案是其中的部分内容。

2 千年宣言和千年发展目标（MDGs）

2000 年 9 月，189 个国家一致通过了千年宣言，强调在新千年中全球应优先考虑的问题，并指出发展、减少贫困、健康与环境可持续性之间的相互依赖关系，以及发达国家和发展中国家共同承担的责任。

八大发展目标，即千年发展目标（MDGs），作为一个全球性的成果框架，支持千年宣言的实施。MDGs 确定了 2015 年的时限目标和验证指标，用来衡量在国家和世界范围内为实现总体目标所取得的进步，即减少“极端贫困”的总目标。

联合国千年发展目标 7（以下称 MDG7），即确保环境的可持续能力。减少森林资源、生物多样性和臭氧层等环境资源损失，以及向世界贫困地区提供安全供水、适当的卫生设施和经济适用住房，是 MDG7 的几项重要任务。

其中，任务 9 强调 “把可持续发展原则纳入国家政策和计划中，减少环境资源损失”的必要性，要求在主要发展过程中综合考虑环境要素。

距时限 2015 年已经不到一半的时间，但目前我们取得的进步却很有限，前景黯淡。大多数国家都致力于可持续发展的原则，并把它们纳入其国家政策和战略以及实施国际环境协定的过程中。然而，却没有从根本上减少环境资本的损失。尽管有些地区在达到其它千年发展目标方面进步显著，但它们在环境问题方面做的却远远不够，诸如亚洲地区，尤其是中国。森林采伐仍在继续，尤其是一些生物多样性丰富的地区；尽管不断加强土地和海洋资源的保护，生物多样性仍在持续减少，原始森林生态系统仍持续丧失。不断增加的温室气体排放，超过了可持续能源技术的发展速度。受国际协约的影响，全球正努力淘汰消耗臭氧物质（UN, 2005）(UN, 2006)。

联合国开发计划署通过对 150 千年目标（MDGs）成员国进行评估，发现大多数国家在实现第七个目标（UNDP 2006）上仍面临严峻挑战。报告表明，这些国家缺乏政治意愿 ，过度开发和自然灾害导致环境资源压力不断增加，政府管理和规划政策不足，社会动荡不安以及缺乏财政支持。

对许多国家而言，尤其是非洲国家，“减少贫穷战略草案（PRSPs）”是政策性文件，用于管理“发展援助”和“社会公正议程”。而“发展援助”和“社会公正议程”属于国家发展框架，是实现 MDGs 的主要执行手段。2003 年关于 PRSPs 的评估显示，只有不到一半的指定目标与环境可持续性目标（MDG7）一致，而且特别关注水和卫生设施，因

此，在减贫战略草案执行过程中，应更多地关注环境可持续性目标（MDG7）。Bojö 和 Reddy（2003a）早些时候的评估也已表明，大多数减贫战略草案（PRSPs）对环境可持续性都缺乏足够的考虑。虽然此后一些国家在这方面取得了一些进展和成功，但是总体说来，环境因素与 PRSPs 结合的程度仍然很低。 (Bojö and Reddy, 2003b and Bojo et al 2004)。

根据对 150 个千年目标（MDGs）成员国的评估，联合国发展计划署（2006）认为，大多数国家提出环境报告的时候，其中逾半国家还包含千年目标框架，用以反映各国具体的环境目标，并通过国家核心发展规划和预算流程，逐步实现这些目标。此次评估重点分析总结了一些经验教训以及下列实现环境可持续性的必备条件，即：

- ✓ 符合特定背景的反应
- ✓ 实现部门间协调
- ✓ 不同学科及参与者之间的融合
- ✓ 特定国家制度
- ✓ 国际合作

3 战略环评推动 MDGs 的进步

战略环评可以成为推动千年目标（MDGs）的有效政策手段，尤其是实现环境可持续性目标（MDG7）。战略环评有助于判断是否已对贫穷和环境要素进行了充分的考虑、监测和评估。战略环评不仅有助于分析发展带来的负面生态影响，还有助于改进发展规划。另外，在选择和制定政策、规划和计划时，通过有效利用自然资源和环境友好技术，确定人类的发展契机。

迄今为止，在减贫战略草案（PRSPs）实施过程中，战略环评的充分应用仍受到限制。贝宁湾、加纳、卢旺达和坦桑尼亚等国已经将 SEA 应用到减贫战略政策中。通过对上述战略环评过程的分析(Ghanime *et al*. 2007)表明，下列要素是实现环境主流化和 MGDs 目标的关键。

- ✓ *识别关键切入点，确定时机并有效把握*：在减贫战略草案（PRSP）的开始阶段就引进战略环评，使战略环评伴随减贫战略草案（PRSP）的全过程，并把环境因素直接与其他部门结合，从而有助于产生良好的主流环境。
- ✓ *以便于参与的方式阐述问题：*传统上担心战略环评只注重“环境”，不能处理更为广泛的社会问题，而根据“生计”“健康”“脆弱性”来定义问题的做法有助于克服这种不安。
- ✓ *停止孤立环境评价：*避免仅把战略环评看作一份文件；明确SEA作为一个过程，需要与更广泛的国家战略发展规划过程相结合发挥作用。
- ✓ *实践过程制度化：*使战略环评适应于各国政府的特点，确保能力需要评估、能力建设以及支持体系成为环境评估过程的一部分。
- ✓ *鼓励广泛而有效的参与，确保战略环评过程的地方所有权和创新性：*使国家、部门和地区层次上的利益相关方广泛参与，提高他们对环境问题、机遇和限制的意识，增强他们解决环评过程中出现矛盾的决心。

✓ *使战略环评可靠贴切*：保证分析工作的质量以及清晰地表达发展与环境的联系，确保决策者能够理解。

✓ *开展对话：*对于关键环境要素达成共识，使利益相关方就政策和战略中应优先解决的问题达成一致，同时促进战略环评实施过程中资源的合理配置。

✓ *确保对经济和财务分析成为战略环境评价的一部分：鼓励*对政策实施带来的成本和效益以及“干预”的成本进行经济和财政估算。

✓ *为战略环评和贫困及社会影响评估人员创造合作空间：* 在进行贫困影响评价过程中加强对环境因素的考虑，充分利用战略环评过程和社会影响评估过程实现人类发展的共同目标。

尽管将SEA应用于“减少贫困和发展战略”的案例与中国的实际情况似乎相去甚远，然而这些案例却可以提供一些普遍的经验教训。在SEA的应用过程中，将SEA用于减少贫困和发展战略的案例增多，用来制定基于千年目标（MDGs）的重要发展战略及相关政策、规划和计划。同时，这些案例还指出要发展实现千年目标所必需的制度能力。此外，这一主流过程要求明确阐述环境可持续能力、减少贫困以及经济增长三者之间的相互联系和相互依赖关系。

4 案例：经济发展与减少贫困战略 (2007-2009)

贝宁湾经济发展与减少贫困战略(2007-2009)，成功地将SEA用于环境问题主流化及千年目标的进展。（来源：UNDP,2007 Ghanime，2007；Guedegbe, 2007 ; ABE 2007)

在贝宁湾，颁布的第二个减贫战略草案 PRS，即 *Stratégie de Croissance et de Réduction de la Pauvreté* 或者称为 *SCRP (*经济发展与减少贫困战略*–EDPRS 2007-2009)*，是实现千年发展目标的框架。其中一个明确目的就是确保 PRSP 实施的“绿色”，实施过程中考虑到环境方面的因素，通过 SEA 的综合方法来改善环境和贫困之间的关系。

一系列的因素推动了绿色化的进程，包括：环境退化的高成本；刀耕火种的低等农业体系；农业、林业、交通运输等部门温室气体排放率高。另外，法律要求减贫战略草案（PRSP）实施的绿色化。宪法第二十七条（1990 年 12 月 11 日）规定环境为公民基本权利，国家应当对其实施保护措施。纲领法（Loi Cadre）第 3c 条要求在实施经济、社会规划的同时，应与环境保护相结合。

SCRP 是由国家发展与脱贫委员会常任秘书处筹备的 (*Secrétariat Permanent de la Commission Nationale pour le Développement et la Lutte contre la Pauvreté*)。绿色化进程由贝宁湾环保局负责并得到了各援助方的支持，如，荷兰环境影响评价委员会、德国技术合作机构及联合国发展计划署等。

4.1 战略环评的目标及主要作用

此次战略环评过程主要实现以下四个目标

✓ 部门本身及减贫战略草案（SCPR）其他组成部份内，综合运用多种措施，实现环境可持续性；

- ✓ 建立有效机制，提高 SCRP 环境措施的执行和监管力度；
- ✓ 提高决策者和利益相关方的环保意识
- ✓ 增加地方政府管理自然资源及环境的权力

4.2 战略环评过程及评价结果

此次战略环评的实施是综合的、普遍参与的过程。九个主题小组负责制定各种政策，作为减贫战略的基本要素（如，社会部门和基础设施；适当管理、地方分权和能力建设 ；私营经济及就业等）。其中， “环境与生活质量”主题小组派代表参与了其它八个小组的活动，以确保其他小组在政策制定中考虑环境因素。在 SCRP 的不同阶段都征询了公众的意见。例如，为了诠释减贫战略草案（SCRP）实施的基本原则，举办了解读减贫战略（SCRP）的国民论坛，来自各行政部门、技术服务行业、民间团体以及私营部门的 100 多名人员参加了该论坛。另外，为了更好的理解减贫战略草案（SCRP）的相关问题，从中央到地方还组织了不同层次的磋商会议。地方政府与国家通过资讯交流和培训的形式参与减贫草案；而媒体代表的参与则有利于地方民意代表和选民之间的沟通。

公共权力机构、负责规划与计划制定的国家决策者和国家行政部门组织各种研讨会，确保了能力的发展。例如，来自重要相关机构的代表参加了为期一周的阿拉克研讨会，学习加纳、坦桑尼亚、乌干达等国实施减贫战略草案（PRSPs）中实现环境主流化的相关经验。通过示范性试验项目帮助地方机构贯彻战略环评建议，并适当实施长期的改善措施（例如，在各部门、各辖区，保证环境保护部门的优先权，并公开相关预算经费）。

贝宁湾环保局与财政部经过磋商，决定把战略环评纳入全球减贫战略（SCRP）规划过程中。从而通过战略环评估算财政需要，并将实现千年目标（MDGs，包括 MDG7，即环境可持续能力）采取的政策、建议和干预措施计入减贫战略（SCRP）管理成本中。

为了避免重复性的援助，贝宁湾环保局建立了有效管理机制，协调各种援助活动。致力于环境方面的援助方每月举行一次会谈，而支持减贫战略草案（SCRP）中实施战略环评的参与方（例如，UNDP， GTZ）则负责团队内部的信息建设与共享。这一过程有助于就一些核心理念达成共识，如环境成本和环境评价；其次，提高了援助方的环境意识，使其认识到政策和战略实施过程中环境问题主流化的重要性。

最后，还启动了监测与评价体系，用于数据收集和管理，以便在将来的战略环评过程中更好地开发与应用。为了监测和评价的需要，已对环境指标进行了详细说明。这些指标将被纳入整个减贫战略草案（SCRP）的监测系统内，并用来追踪环境可持续目标（MDG7）的进展。

这次战略环评直接参与了减贫战略草案（SCRP）的制定过程，有助于组织和说明减贫战略草案（SCRP）中的环境行为，这是此次战略环评的主要成果。减贫战略（SCRP）下面四条战略轴线都适合相应的环境措施：

- ✓ *加速增长（轴线 1）*：政府将确保所有投资与社会、环境评价及风险管理规划、环境因素的系统综合以及持续监测系统一致。
- ✓ *能力建设，增加人力资本投资与促进就业（轴线 2）：*政府将在“能力发展计划”中考虑环境问题、清洁技术和可再生能源。

✓ *适当管理（轴线3）*：各级政府将加强对环境事务的干预能力，包括更加系统的实施环境评价。

✓ *和谐的国家空间发展（轴线4）*：政府将通过战略环境评价诠释政策、部门规划及计划，同时，建立水质与其它环境要素的监测系统。

其次，战略环境评价有利于调动资源，资助实现环境的可持续性。环境因素已经纳入了世界银行预算资助方案，并就公共海岸及海洋生态系统管理计划与能源部援助计划签定了协议。战略环评通过“绿色”减贫战略草案（SCRP）的项目推介，为检测政策和策略提供了开放的政治空间。

再者，战略环评进一步提高了人们在环境方面的意识，加强了不同部门之间的合作，如贝宁湾环保局、国家发展与脱贫委员会常任秘书处、以及财政部。

4.3 主要挑战

贝宁湾减贫战略草案（SCRP）的战略环评经验表明，战略环评的进展常常举步维艰，这不仅是由于缺少政策上的支持，还在于人力资源和制度方面的欠缺。另外，战略环境评价过程还呈现出如下特征，时间紧迫、优先发展的能力不足以及社会性别主流化意识不强。

因此，将采取一系列的措施来应对这些挑战，包括将能力发展资源并入国家预算规划以及配给足够的时间用于推动环境主流化过程。

另外，建立先进的环境监测体系也是战略环评面临的一个严重挑战。为此，确定要对环境数据搜集与指标体系建立（如时间序列，总计等）、环境经济分析、影响分析及建模工具进行资助，还安排了援助方协助该系统的实施。

5 总结

贝宁湾及其它地区减贫战略草案的战略环评经验表明，在宏观发展政策及部门发展政策与规划的制订、实施过程中，通过战略环境评价实现环境主流化及减少贫困，可能会有所成效。在减少贫困战略等宏观发展战略的筹备及实施过程中，有效实施战略环评必须做到以下几点：

✓ 除了分析发展带来的负面环境影响，还要进一步明确环境可持续性对人类发展的贡献；

✓ 要扩展到政策制定的全过程，并确定规划成果中是否已经妥善处理了贫穷与环境的关系，确定规划实施过程中是否对这一关系进行了监管和评估；

✓ 积极加强贫困与环境之间的联系和平衡，关注发展成果。

✓ 在政策、规划和计划设计过程中，确定缩减贫困的良机，可持续性的利用环境资源。而要充分发挥这一潜力，需要处理好以下诸多方面：

✧ 缩小贫困概念、分析框架及其测度指标与环境可持续性之间的隔阂；

✧ 确保战略环评过程中包含对经济及财政的分析；

✧ 评价工作与千年目标（MDG）等国家政策的制定过程相结合；

✧ 为政策制定提供健全的环境监测系统

✧ 继续做好量化分析、标准确定和估算工作

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战略环评方法及实践的国际动态与进展

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1 导言

本文旨在概述 SEA 方法及实践的国际动态与进展，重点论述了 SEA 目前已经采用的各种形式和一些国家法定的 SEA 制度及其 SEA 的实施经验。通过对 SEA 的回顾表明， SEA 是一个迅速发展的分支学科，短期内已经发生了很大变化，应用范围及着重区域始终在增加，而且越来越多的国家开始采用 SEA 方法。

其中，中国备受关注。由于经济与环境的巨大变化，中国将着重实施规划与计划的战略环境评价，目前中国的规划与计划环评刚刚起步。对于中国国家环保局及其它相关单位的工作人员而言，其他地区的 SEA 实践及运作经验也很重要，可以从中学习相关政策和制度能力建设经验。鉴于此，本文还分析了一些经过长期的发展而建立起来的 SEA 体系，指出其优缺点，目的是为了确定未来的战略途径和改善举措。

本文由四个主要部分构成：

- 简要回顾 SEA 演化过程，并着重阐述最近十年来发生的事件和问题；
- 比较领先国家确定的 SEA 框架的性质及范围；
- 回顾 SEA 在几个领先国家的执行经验；
- 描述 SEA 的发展前景，包括 SEA 向可持续性评价（sustainability appraisal ，SA）转变的可能性。

2 研究背景

本文中，把 SEA 理解为一般过程或方法，包含一系列手段，它们可能具有不同的名称和特征，但功能却是相关的，都是为了将环境因素纳入高层决策过程中。可以用不同的方式确定这些手段是否属于 SEA 范畴，狭隘的 SEA 仅包括正式规定的 SEA 体系，广义的 SEA 还包括非正式的、近似的或类似 SEA（para-SEA）过程 (见 Box 1)。虽然更多的关注计划和规划过程中标准 SEA 程序的应用经验（即，对当前中国从事 SEA 的专业人员来讲极为重要的方面），但根据前验观点和国际视域，广泛的分析则能更好的理解 SEA 的实施范围和多样性。

框 1: SEA 作为一系列普通的应用手段

- 由国家立法或行政制度明确规定或者在超国家（如 EC 指示）及国际性文件中（如 SEA 议定书）规定的 SEA 程序；
- 广义上符合 SEA 应用目的和原理的近似程序，可以正规应用（例如：监管影响评估）或非正规、灵活的应用于实践中（例如：政策评估）
- 类似 SEA（Para-SEA）的方法和原理，与正规或非正规 SEA 的功能及部分特征相同，但却将其随意地或主观地应用与政策、规划的制定过程中。

援引自 Dalal-Clayton and Sadler (2005), Sadler (2005)

3 SEA 的主要趋势及发展状况

SEA 已经通过两种途径的逐步融而发展起来。首先，由于早期 EIA 应用的局限性以及基于项目的适用范围，缺乏在高层决策方面的应用 ，因此，迫切需要实施战略环境评价；其次，21 世纪议程及 2002 年世界可持续发展峰会上通过的实施规划倡导可持续发展。而实现可持续发展需要采取战略方法，由此推动了 SEA 的发展。尽管 21 世纪议程及 2002 年实施规划都没有明确论及战略环评，但联合国国际规划署等国际机构认为战略环评过程是实行上述战略方法的的关键手段（Abaza et al 2004）。

从 EIA 的角度看，SEA 可以看作是通过三个主要阶段演化而成的第二代过程(Sadler 2001)：

1) 成型阶段 (1970–1989) ：那时，根据美国国家环境政策法案（NEPA），制订了立法与政策判例，主要应用于项目层面，但在其它国家的应用受到限制，除了早先的典型案例或大型公众调查等附属方法或大型项目的 EIA 评论 (例如：加拿大 Mackenzie 河谷管道调查)；

2) 规范化阶段 (1990–2001)： 许多国家或地区制定了各种形式的 SEA 条款，最初是独立的非法定程序，与法定 EIA 并行（例如加拿大、丹麦、香港），之后逐渐从属于其它立法或制度框架；

3) 发展阶段 (2001 之后)：为实现发展合作，产生了一系列国际立法手段和政策框架，从而为 SEA 的广泛应用奠定了制度基础。因此，目前实施 SEA 的案例迅速增多。许多发展中国家或转型国家已经根据国内、国际形势建立了本国的 SEA 制度（如中国、越南）或计划开展 SEA（如泰国）。

这些趋向表明，SEA 正沿着项目 EIA 早期的发展途径，逐步步入世界范围的制度化阶段。鉴于此，SEA 的发展阶段可以追溯到欧盟 2001/42/EC 指令的颁布之日，该指令对欧盟各成员国具有约束力，从 2004 年中期开始生效。随着欧洲指令向国内法律法规的转换，具备 SEA 正式条款的国家数目大约增长了一倍。作为一个超国家的法律框架， SEA 程序方面的规定较少，但同样会促进规划和计划 SEA 实现更高程度的标准化。与此相类似，根据《越境环境影响评估公约》拟定的《战略环境评估议定书》，在某些方面沿袭了 SEA 指令的条款，在其它方面则更加全面。此外，SEA 议定书还允许非 UNECE 成员国的加入，这样可能会推动 SEA 在其他地区的应用。Therival R.在 2004 年发表的专著《战略环境评价的实践》（Strategic Environment Assessment in Action）中对 EC 指令和 SEA 议定书进行了比较分析。

然而，其它方面的发展既推动了 SEA 的广泛应用，又使其变得多样化而非标准化，在有关政策和立法建议的评估过程中表现得尤为明显（如下一段落中描述的实例）。此外，欧盟（EC）和一些国家（如英国）广泛实施监管影响评估（RIA），从而促进政策一体化，提高管理质量，实现可持续发展 (引自 George and Kirkpatrick 2007)。2002 年欧盟发布的统一监管“影响评估指引”框架性文件及其附录 COM (2002) 276 中引入 EC 体制，以使欧盟委员会的立法与政策计划符合‘影响分析方法的一致性’(欧盟颁发的‘简化与改善监管

环境’，即 COM (2001) 726 中倡导的方针) 。最近，为了加强一体化进程，欧盟又提出了新的指导性方针（欧盟报告：为欧盟的增长和就业机会实施更好的监管，COM (2005) 97）。另外，英国已经将 SEA 与可持续性评估相结合的综合方法纳入土地利用规划，该方法在香港特别行政区以及其他许多国家的 SEA 过程中，也有明显体现 (Jones et al 2005a ； Au and Lam 2005)。

在国际发展援助和借贷政策中，SEA及其它战略性手段的作用也日益突出。近来年，为了更好的实现“千年发展目标”和减少贫困，援助机构已经开始将基金优先权从项目层面转向战略实施。SEA作为一般方法，已经广泛的用于直接预算支持等借贷与援助手段、政策和制度改革、部门计划和越境规划，从而将环境要素纳入其中。尤其是世界银行，已经通过技术援助和能力建设，推动并提高了SEA在世界银行及许多借贷国家的应用 (Mercier and Ahmed 2005)。2005 年签署了《提升援助效率巴黎宣言》（2005 Paris Declaration on Aid Effectiveness），正式启动整体改革。作为改革的一部分，目前相关部门正努力协调与调整援助机构SEA的要求与步骤。世界经济合作与发展组织于 2006 年发表了发展与合作领域有效实施SEA指南，最初也是为了供发展中国家使用 (摘自OECD DAC 2006，www.seataskteam.net)。

尽管已经取得了上述进展，但 SEA 的发展状况、实践质量及日益显现的向可持续性评价过渡的情形等方面，仍然存在许多顾虑和争议。虽然上述问题的性质和程度因管辖权限的不同而存在差异，但是许多问题的范围和争议内容对许多国家和机构而言具有普遍性和一般性，对此类论题诸多 SEA 文献有专门讨论 。就现在而言，战略环境评价的实践主要存在以下六个不足(Sadler 2004)：

- SEA 理论与实践之间，即‘应该做什么’（如 IAIA 规定的有效实施原则）与‘做了什么’存在差距——预期的不足
- 无法全面、系统的执行 SEA 程序，或程序的要求和实际操作有差距——这比上述不足更令人头痛；
- 许多 SEA 报告的质量不高，降低了其在政策和规划制定过程中的价值（因此削弱了 SEA 过程的理论基础）；
- SEA 处理立项策略累积影响的潜力与实际实施之间存在分歧（充其量发挥了部分潜力）；
- 为了集中组织评估与决策，战略环境评价成果与后期阶段（例如项目环境影响评价）的联系受到限制（这在 SEA 相关文献中被多次提及）；而且
- SEA 过程及决策制定与成果之间缺乏联系，表明普遍缺乏监管与导致监督机制及追查程序。

4 某些国家及制度中 SEA 设置的比较性回顾

表 1: 国际上广泛使用的 SEA 框架

组织	法律条款	应用范围及与决策的关系	方法和程序的要素
欧盟	欧盟计划与规划评价的政策性指令（2001/42/EC），于 2004 年 7 月 21 日起生效 《影响评价交流》(COM (2002) 276 终稿)	在某些部门和区域，根据《环境影响评价指令》（85/337/EEC），对影响项目批准的框架性规划和计划强制实施 SEA，或根据《栖息地指令》（92/43/EEC），对需要实施评估的规划和计划强制实施 SEA。 欧盟的立法及工作计划	基于 EIA 指令的框架性法律，明确成员国必须共同采用的一般性程序 以监管影响评估为基础的一体化程序
联合国欧洲经济委员会	《越境环境影响评估公约》（1991 年）的补充规定：SEA 草案（2003 年）	强制执行规划与计划 SEA，自由裁量、酌情决定是否实施政策和法律 SEA	以欧盟指令为基础，用于规划和计划 SEA；未涉及针对政策和立法的 SEA 程序
世界银行	《EA 世行环境评价业务政策及评价程序》OP/BP 4.01 （1999 年） 有关发展政策性贷款（DPL）的 OP/BP 8.60 (2004 年) 环境战略(2001 年)	应用于立项规划与计划，明确对借贷方的要求 应用于所有形式的发展政策性贷款（例如：结构性调整） 用于确保把对环境问题纳入发展规划过程中。	针对部门和区域评价的 EA 程序 对政策扶持效果和国家能力的综合性分析 用于银行活动（例如：技术援助）
世界经合组织发展顾问委员会	根据《巴黎有效援助宣言》发布的 《应用战略环评：发展与合作实践指导》（2006 年）	无约束力的咨询框架，供发展顾问委员会及其发展中国家伙伴自行裁量、酌情采用	一般分为四个阶段，每一阶段又包含许多步骤和实施 SEA 的特定目标

了解 SEA 的制度安排和相关规定，可能有助于探讨如何推进中国的 SEA 实践过程。鉴于此，该部分着重讲述 SEA 的设置情况，其主要内容包括：

- 国际上采用的 SEA 体制，即确定相关立法或政策要求的 SEA 体制，或影响大批国家实践的体制(表 1)；
- 适合某些国家或区域的 SEA 制度，共同阐明各种 SEA 方法的进展和应用情况（表 2），并分别描述具有创新性或引领趋势的重要制度（表 3）。许多案例表明， 在这些 SEA 制度指导下获得的经验对有效实施 SEA 起着重要作用。

4.1 在国际范围内适用的 SEA 体制：

EC 指令、SEA 草案、世界银行业务政策和发展援助委员会指导意见是 SEA 方法的基

础，在国际上被各国广泛应用于许多领域。表一对上述四种制度的概况进行了简单比较，结果显示主要分歧存在以下两个方面之间：

- EC 指令和 SEA 协议中明文昭示的规定，目前分别用来约束欧盟成员国和签署国的程序性标准很少（尚未正式批准）；与
- 世界银行的 SEA 框架及 OECD 有效实施 SEA 指南中的多形式方法。

4.2 案例国家中 SEA 的典型特征

目前，拥有正式 SEA 制度的国家大约有 40 个，如果将联盟辖区内的各成员国也计算在内数量会更多三。尽管由于上述的发展趋势情况正在改变，但目前其中大部分是欧盟成员国。为了说明实施 SEA 的不同制度设置及相关规定，在表 2 中对 7 个国家的 SEA 框架进行了分析和评论。另外，还提到英国的 SEA 制度。英国通过权力下放，并提出 SEA-可持续性综合评价方法，用于空间规划（不是部门规划），使其 SEA 方法的数量和种类较多，别具特色。

尽管 SEA 的相关规定较少，但总起来数量多样。与处于同样发展阶段的 EIA 相比，SEA 的制度设置及规定更为多样化。在授权、程序要求、实施范围和层次以及与决策制定的关系等方面，他们都各不相同。一些 SEA 制度以 EIA 立法和程序为基础制定，并沿袭部分条款；另外一些 SEA 制度则灵活地将实施过程改进，或是将过程简化。基于 EIA 的相关规定普遍用于计划和规划环评；而 EC 指令和 SEA 草案将会进一步推动 SEA 的标准化。

SEA 的应用范围包括政策、立法、规划、计划和其它战略，牵涉到一系列不同的部门。尽管如此，但目前全面综合性的 SEA 制度并不多，很少可以单独用于具有潜在重大环境后果的所有战略提案。一些 SEA 程序涵盖了各种主要形式的战略决策（即：政策、立法、规划和计划），但却局限于决策制定的特定过程 (例如：在加拿大联邦制度中提交给内阁的政策、规划和计划构想；在丹麦制度中提交给国会的战略构想)。另外一些 SEA 程序则仅对某些战略提案进行战略环境评价(例如： Directive 2001/42/EC 中列出的规划和计划)，或者侧重于某一特定部门的启动计划(例如：受《澳大利亚环境保护与生态多样性保护法》约束的海洋渔业)。如表 2 所示，一些国家建立了多个 SEA 制度，表明出现一种新的方法用于政策 SEA，与规划及计划 SEA 采用的方法有所不同。在政策层面上，有更多的立法、行政手段与程序化模式介入，而且对它们各自的效力争论不休。相比而言，规划与计划的步骤更加结构化，而政策的制定过程则更具灵活性。因此，多数情况下，非法定途径更加适用于政策制定。另一方面，立法框架更能确保 SEA 实施的灵活性和连贯性（参见下文中对北美经验的评论）。更多内容可见另文。

值得一提的是，政策 SEA 的模式要比规划和计划 SEA 有更多变化，而且更容易变通，在不久的将来仍会如此。对联合国欧洲经济委员会和欧盟成员国而言，尽管 SEA 草案生效时，参与方有义务按照其相关条款制定政策和立法，但对于联合国欧洲经济委员会和欧盟成员国而言，SEA 议定书和 SEA 指令都没有在政策制定中发挥相应的驱动作用。SEA 指令是否排除政策的争论至少将持续到 2009 年，届时

欧盟将汇报该指令第一个五年的应用情况，提供修改建议，并有可能扩展到其他领域

(Preamble citation (20))。而在过渡时期，应该监督 SEA 指令的实施情况，了解实际运作中是否注意了计划和规划中的政策，即使法律上对其没有明文规定。

表 2: 案例国家的 SEA 框架

国家	法律条款	应用范围及与决策的关系	方法和程序的要素
澳大利亚	环境保护和生态多样性保护法(1999 年)	S146 规定了内阁的行政裁量权，判断是否对有关政策、规划或计划进行影响评估 s 147- 154 渔业管理部门实施 SEA 的具体规定	通过与政策、规划和计划的倡导者达成协议启动 SEA，s 146(2)对其内容和基本步骤进行了说明
加拿大	1990 年内阁指令(1999 年修订)	提交内阁或由行政机构签署的政策、规划和计划等提案	实施过程包含非正规的两个阶段，可以灵活应用
丹麦	规划、计划环评法案：316 号统一法案（2004 年） 首相令(1993 年，于 1995 和 1998 年进行过两次修订)	按照 EC 指令列出的计划和规划 提交国会或必须经过国会审议的议案及其他政府提案	SEA 的程序严格按照 EC 指令执行 程序简洁，可以灵活应用
芬兰	环境影响评价程序法案（1994 年） 立法提案之环境影响评估准则(1998 年)	政策、规划、计划（拟按照 SEA 指令修订） 法律、法令和决议	SEA 的程序严格按照 2001/42/EC 指令执行 程序简单，可以灵活应用
荷兰	SEA 法令(2005 年) 内阁令 (1995 年)	按照 EC 指令列出的计划和规划 提交内阁的规章草案和政策意向（环境检测）	双重程序：基本方法参照欧盟指令；以此为基础扩展到影响保护区域的提案 程序简单（商业与管理检测）
新西兰	资源管理法案 (1991 年，有许多修订版)	s32 提到对目标和政策进行评估，以达到《资源管理法案》的要求；除此之外，没有明确规定政策和规划 SEA	没有明确的步骤，但在政策和计划制定过程中包含 SEA 部分
美国	国家环境政策法案 (1969 年) 和国家环境政策规章(1978 年)	可以根据地理特征、属类或技术分组的立法、规划及法案	应用 NEPA 方法，明确指导如何准备普通 EIS 或规划 EIS

来源: Dalal-Clayton and Sadler (2005)

框 2: 一个国家存在多种形式的 SEA 评价：以英国为例

2000 年以来，英国的决策及规划方式和结构发生了很大变化，重新制定了 SEA 的综合方法。当前的 SEA 制度主要以下三个方面为基础：

- 非法定的政策评估过程：评价过程独立运作，不受相关制度的影响，例如在英国实施 SEA 指令的规章制度。
- 2004 年 7 月 20 日生效的制度中明文规定的规划及计划 SEA：替代了某些形式的 SEA，并考虑到与其它 SEA 方法结合使用；
- 2004 年通过的《规划和强制性收购法》要求进行区域及地方空间规划的可持续性评价。

另外，区域管理的权力下放制度中也实施了 SEA。例如，为贯彻 SEA 指令，中央政府通过了《规划和计划的环境评价规章》(SI 2004, No. 1668)，仅在英格兰（或在英格兰及英国其它地区）执行。北爱尔兰、苏格兰及威尔士分别执行不同的规划与计划制度，在各自的行政区域内实施。除苏格兰以外，英国的所有地区都依照 EC 指令颁布了相应的规定，其根本目的在于融合 SEA 和 SA 过程，协助实施空间规划。苏格兰政府将 SEA 作为一个独立的程序执行，但其应用范围较广，包括规划、政策及战略等的制定过程。

来源： Sadler 2005

5 SEA 应用类型

根据国际经验，存在多种不同的 SEA 方法或制度模式，分类方法也有所差别。如表 3 所示，不同国家和国际组织所采用的 SEA 方法，可以分为四种主要类型：

⑴EIA 主体型 SEA：严格按照 EIA 立法的要求设计 SEA，或者将 SEA 作为 EIA 立法的一部分。该类 SEA 可以追溯到《美国国家环境政策法案》，要求实施计划的环境评价。近来则体现在 SEA 指令和 SEA 草案中。

⑵EIA 改进型 SEA/EIA 评价型 SEA：该类型 SEA 具有政策评估的特征， 对 EIA 方法进行了改进，并独立于 EIA 体制之外。这种类型的 SEA 主要出现在一些议会（例如丹麦）和内阁（例如加拿大）的决策过程中。在某些情况下，SEA 与其他的政策审查同时进行（例如荷兰），或作为全面评价的一部分被执行（例如挪威、英国）。

⑶SEA 作为土地利用管理或资源管理的重要部分：即将 SEA 纳入土地利用和资源规划的分层体系，实施 SEA。例如，新西兰为确立资源管理许可制度的适当环境，开展了基于效果的政策与规划的制定过程。另外，有些国家或机构则明确将其作为特定资源战略筹备过程的一部分。其中，澳大利亚政府要求必须对所有出口渔业或政府经营渔业进行战略评价。

⑷综合评价/可持续性评价（SA）：部分国家或机构实施政策或立法提案的环境、经济及社会影响综合评价与评估，取代 SEA，或者将 SEA 作为综合评估的部分。目前这种模式仍在涌现，而这种实施模式在欧盟、英国和香港等机构和国家已经准备就绪、开始实施。此外，有些国家将其专门用于特定领域，特别是澳大利亚，将其用于区域森林政策协

议中。

表 3: SEA 体系: 制度模式和实例

制度模式	实例
EIA 主体型	SEA 指令、SEA 草案、 美国、 捷克、芬兰、 斯洛伐克、波兰、澳大利亚、 西澳大利亚、世界银行 (OP/BP 4.01 applications)
EIA 改进型	加拿大、丹麦、 芬兰 (仅限立法提案)、荷兰、 挪威、英国 (非正式应用)、 世界银行 (OP 8.60 applications)
综合土地利用/资源管理	新西兰 (综合方法)、澳大利亚 (明文规定为渔业)、英国 (SEA/SA 与土地利用规划综合运用)
综合评价/可持续性评价	欧盟、英国 (RIA process, SEA/SA)、澳大利亚 (专门应用)、香港特别行政区

来源 : Sadler (2005)

5.1 北美的 SEA 经验

相当大一部分 SEA 运作经验集中在北美，其他任何地区没有以往相对应的纪录可供比较。早在 70 年代，美国联邦政府部门和机构就已经实施《美国国家环境政策法案》（NEPA），进行“计划环境影响评估（PEIS）”，加利福尼亚也有类似的记录。如前所述，SEA 规范化阶段的早期，加拿大等国家也实施了 SEA，有时候结合政策或规划构想或项目优先权等实施大型项目的 EIA。但美国 70 年代进行的“计划环境影响评估（PEIS）”是 SEA 实施的首例。加拿大最早将 SEA 制度独立于 EIA 之外，并与之并列。另外，美加两国的 SEA 方法不同，具有不同的经验，主要是因为他们分别例证了 EIA 主体型和 EIA 改进型两种 SEA 模式。（表 3）。

美国的 SEA 经验

美国将《国家环境政策法案》（NEPA ，1969 年）用于“立法提案及其他对环境产生重大影响的政府行为”。环境质量委员会（CEQ，1986 年）已经对此作了说明，指出将其用于政策、规划和计划中。针对国家环境政策法案的执行，CEQ 制定的《环境政策法执行规则》对适用于所有提案的 SEA 程序进行了说明;该规章还对“计划环境影响评估(PEIS)”的筹备过程给予了专门指导，需要实施环境影响评估的联邦政府行为包括新的土地利用规划或部门计划等（例如，Section 1052.4(b)），尤其要包括以下行为：可以按照区域分组的行为、可以根据技术发展阶段分类的行为、以及通过潜在累计影响等相互关联的行为。

尽管“计划环境影响评估”（PEIS）的应用时间已经很久了，但相比《环境政策法案》的其它应用类型而言，目前 PEIS 的应用仍然有限。美国每年完成的 EISs 草案、终稿和附稿约 500 件，而 PEIS 仅占其中很小一部分（Clark and Richards 1999）。部分评论员认为，如果普遍认为 PEIS 有助于选择替代方案和解决累积影响问题，则目前 PEIS 的作用尚未充分发挥。PEIS 为单个项目的 EIA 提供了框架，而随后的分析要求可以作为 PEIS 的结果，这样可以节约时间和资源，尤其是存在许多活动阶段的时候。

PEIS 实施的战略重点以及各机构实施 PEIS 的方式发生了明显的变化。在《美国环境

政策法案》（NEPA）颁布实施 25 年后，对其实施效用进行了研究。结果表明，PEIS 很少用来制定具体政策，并在制定计划时尽量避开 PEIS (CEQ 1997)。2003 年通过的“NEPA 特别工作组”报告提出五个重要论题， “计划分析和分级”的应用就是其中之一。报告指出，PEIS 应很广，并在许多决策背景下使用。报告总结了 PEIS 所提到的政策行为或相关文件，主要归纳为 3 类，如表 4 所示。报告还强调，各类行为之间并不存在明显的界限，有些活动可能更适合某一类别。（注意：这种分类也提到政策层面类似 SEA 的应用，不属于计划环境评价，这对于 NEPA 的传统观念而言可能是一种挑战）。

表 4: 国家环境政策法案（NEPA）计划分析中提到的行为类型

行为类型	说明	例子
政策或决策	进行全国性的分析或区域分析，确定计划目标	田纳西河流域管理局“将《美国国家环境政策法案》纳入综合环境管理体系”； 巴那威利电力管理局(BPA)的“商业规划”，属于“能源发展远景规划”。
土地利用	对地理区域或景观区域进行综合规划分析，可能会为项目实施制定大体标准和步骤。	美国白河国家森林规划和 EIS 美国动植物检验署 （APHIS） —— 蒙大纳和黄石国家公园的美洲野牛管理规划
计划	资源计划分析或资源计划分析——用以决定未来优先发展权，确定时序安排，调节特定场所的实施行为	动植物卫生监督署的“摩门蟋蟀和草地蝗虫的灭杀计划” 巴那威利电力管理局（BPA）的 “鱼类和野生动植物资源改善规划”

来源: Clark (pers comm), cited in Dalal-Clayton and Sadler (2005)

NEPA 特别工作组报告（2003 年）进一步指出，PEIS 在政府层面上的应用在不断地增加，协调性得到了提高，而且大部分机构对这些过程持肯定态度。大部分机构明确认为，PEIS 在景观、生态系统或区域层次上的应用尤其重要，指引相关机构遵循环境法律或者政策规范（例如：濒危物种保护法等）。然而，对于计划分析还存在很多异议以及许多公众关心的问题。一些机构断定“分级”概念没有任何效用，据说已经将其摒弃（这一结论对 SEA 的传统理念提出了质疑，因为
分级概念在 SEA 中具有象征性的地位）。

加拿大的 SEA 经验

在加拿大，SEA 作为一个正式的程序，主要是在联邦政府层面上进行（尽管这一方法的要素在某些省域或区域的 EIA 制度中可以看到）。1990 年签发的内阁指令确定了 SEA 过程，成为继美国《国家环境政策法案》（NEPA）之后第一批 SEA 制度之一。该 SEA

制度独立于 EIA 立法之外，属非法定程序，旨在使 SEA 得到灵活应用，切实的将环境因素纳入政策和计划提案。实施 SEA 的范围包括提交到联邦内阁的提案或由国务部长按各自相应的权限单独认定的提案。

因此，SEA 被应用在加拿大高层政治决策中，而且在推行阶段就进行了重大创新。然而在实践中，由于负责提案接受 SEA 过程的部门和机构认识不足，实际应用的不平衡，使得 SEA 的执行过去和现在都具有随机性和不平衡性。早期的灵活性和自主选择性原则旨在鼓励采用与客观情况相适应的方法和程序。随着时间的流逝，大量报告显示，事实并非如此。确切的说，这些报告是指加拿大环境与可持续发展委员会 (CESD，2004)的一系列审查报告，它们比加拿大环境评估局早期的方法评论关注更高层次的政治策略。

为了回应加拿大环境与可持续发展委员会最初的评论，加拿大对 SEA 内阁指令进行了修订，阐明在 SEA 执行过程中各联邦政府部门和机构的职责，同时加强各部门机构执行 SEA 的法律义务与可持续发展战略的筹备、执行之间的关系（1997 年起开始实行可持续发展战略）。加拿大环境评估局从 2000 年开始筹备对实施 SEA 的指导方针进行改进，并于 2004 年对该指导方针进行次要修订。修订后的指导方针仍旧鼓励灵活（适用于多种各种政策背景）、实用（不需要专业技术）和系统（以合理的、清晰的分析以及联邦政府部门机构内部最近证实的有效实践经验作为基础）的方法。该指导方针进一步强调，SEA 应该“与正在进行的有关提案的经济、社会分析结合进行”；同时申明并不存在惟一的最佳方案，可以用来引导政策或计划提案的 SEA 实施过程。相反，而是鼓励各部门和机构采用最适当的方案和技术，发展适合各自特定需要和特殊情况的方法 (一般包括两个阶段)。

加拿大环境与可持续发展委员会(CESD)最近的的审查报告，清楚地展示了 SEA 执行的情况(Box 3)。据报导，许多部门在执行有关 SEA 的内阁指令时，进展缓慢，难以令人满意；充其量也只是达到了褒贬不一的多重结果。早期有关 SEA 实践的评论提到“即兴合规”的方式，自此以后，这样的趋势并无发生根本变化。根据 CESD 的最新评论，得出以下三个主要结论：

- 大多数部门和机构不知道他们所做的评价如何影响了制定的决策，也不知道这些评价最终会对环境哪些影响；
- 由于不能保证对环境问题进行系统评价，因此部长和内阁能否获得充分的信息、能否就提案做出明智的决策令人质疑。
- 在 SEA 制度确立 14 年后，SEA 监管和跟踪机制仍然没有到位，无法提供足够的决策信息。

同时，该审查报告还注意到，整个联邦政府内部的 SEA 实践与执行情况发生了重要变化。值得注意的是，与那些有重大环境责任的部门相比，拥有发展权的某些部门在 SEA 执行和实践方面取得的进展更大。虽然整个政府 SEA 的执行情况普遍不合格，但是上述评论指出，至少最近的一些评估证明存在一些有效实施 SEA 的成分(CESD, 2004)。虽然不能把这些案例逐一列出，但这其中肯定包括加拿大西部海岸带及近海海域油气开发延缓政

策的 SEA(见另文)。

框 3: 加拿大 SEA 执行情况审查

根据 2004 年进行的一次审查，加拿大的 SEA 体制在结构和运作上都存在显著缺陷，无法确保是否能实现程序目标和环境目标，从而使其有效性遭到了质疑。主要由以下三种“缺口”导致以上不足：

- 制度缺口：主要在于程序上要求的水平较低，依赖执行机构的诚信。对 SEA 程序的质量控制措施过于分散和不足，不能确保完全按照标准执行或尽力而为。
- 执行缺口：低水平遵守内阁指令和 SEA 指导方针。方法上的弹性旨在促进 SEA 适应政策和规划制定的环境，但在责任约束力不足的情况下，这种弹性就成了允许对环境问题做表面文章的特权。
- 信息缺口 ：SEA 对决策制定和环境保护的作用有限，无法保证 SEA 制度能为明智的决策提供足够的信息。

来源: CESD ,2004

6 未来的方向: 从 SEA 到可持续性评估

目前，SEA 主要用来减少战略建议实施可能造成的负面环境影响。这样看来，SEA 可以当作推动可持续发展的一个必要非充分机制。近来，SEA 在实现可持续性方面的作用已经引起广泛的关注，部分专家认为这是 EIA 发展史上的第三代方法。这种新兴的 SEA 框架可以归纳为两条主要发展途径，目前两条途径平行发展，但最终会趋向一致。

第一条途径主要是加强 SEA 在环境可持续性方面的作用(ESA, Sadler 1999)。相应的指导方针利用已经确定的可持续发展目标、原则和评价标准，通过对照政策终结达到的环境影响“上线”和政策入门避免的环境影响“下线”，评价环境影响的重要性。作为一种环境可持续性保障，这样的评价标准可能只是非常近似的，最多只能指出发展方案和提议是否或者多大程度上在沿着正确的方向前进。环境可持续性的运作可以利用很多资源，例如，21 世纪议程或国家战略概括的可持续发展基本原理；运用需求端经济学与供应端经济学原理，实现“强可持续性” ，保护必不可少的生态廊道源-汇功能；选择相关的评价标准和指标，并纳入环境可持续性检测过程中。

第二条途径致力于综合评估发展方案和建议的经济、环境和社会影响，及其与实现可持续性的关系。如前所述，一些国家已经确定了这种 SEA 方法。另外，有分析人士认为，SEA 向 SA 的转变将是该领域未来的发展方向。然而，有些学者则担心，如果将 SEA 归入 SA，并成为其中的一个有限的、不明显的过程，那么环境要素就可能被忽略或边缘化 (例如：Sheate 2003)。英国的可持续性评价系统，反映了欧盟指令的要求，并不存在上述问题。然而，目前还不清楚如何处理可持续性评估中的经济影响和社会影响。一般而言，综合评估的框架和方法体系等诸多相关问题仍待解决。尤其需要关注的是，如何联系战略提案的

经济、环境和社会三个部分，并协调三者关系。为此，亟待寻求有效的方法和手段，比如平衡三部分目标的规则以及底线问题 (Gibson et al 2005)。

7 结论

SEA 的快速发展是近十年来影响评价领域最为显著的特征。这既是在法律、方法和制度方面发展创新的结果，也是促进其发展创新的原因。十年前，将 SEA 实践作为影响评价国际协会（IAIA）效力研究的一部分，对其进行了分析评论；总的说来，现在的 SEA 实践比十年前有了更加牢固的基础 (Sadler 1996, Sadler and Verheem 1996)。虽然已经实现了很多目标，但是仍有很多工作要做，尤其是以下几个方面：改善分析和信息质量以及 SEA 用于决策的价值；提高 SEA 在环境保护和可持续发展中的作用和贡献。 SEA 出现了新的发展方向，例如寻求更为系统的方法和途径，确保实现环境可持性，为实行综合评估过程奠定坚实的基础。

在 2006 年，中国全国人民代表大会常务委员会在环境报告、“十一五”规划中要求，到 2010 年主要污染物排放量减少，单位 GDP 能源、资源利用率提高，市政固体废弃物的产生速率得到控制。鉴于此，SEA 的上述发展趋势在中国的适用性已经成为众人关注的焦点。不管是应用 SEA 的进展，还是 SEA 实施过程中悬而未决的问题，都值得分析和思考。虽然 SEA 是达到目标的前沿工具，但其目前在中国的应用仍处在早期阶段。在任何可能的时间和地点，SEA 必需的过程、能力和技能都可能会吸收国际上 SEA 实施的经验。很明确，SEA 的目标就是为合理决策提供信息，确保发展计划在一个相对安全的范围内，避免、减轻或补偿对自然资源和生态功能造成的损害。许多西方国家经常忽略的一点是，SEA 的方法、程序和报告都是实现上述目标的手段。

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欧洲的战略环境影响评价

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1 简介

世界各国的战略环境影响评价（SEA）过程和方法反映了常用的决策系统和支持手段。基于许多项目环境影响评价（EIA）的经验，SEA 已经逐渐融入到了规划和政策制定当中，尤其是那些与项目开发过程紧密相连的规划与政策。

在 2001/42/EC 指令生效之前，欧盟各成员国（如英国，丹麦，荷兰，瑞典，芬兰，法国，比利时，德国以及奥地利）出现的大多数 SEA 体系完全取决于各自不同的决策和规划背景。另外，由于各国的公众决策文化互不相同，各国在政策制定和规划过程中所推行的 SEA 体系也存在着差异。

早在 1975 年，对项目 EIA 指令进行了讨论时，政策、规划和计划的环境影响评价论题就已经被列入到欧洲的政治议程当中。1985 指令局限于项目评估，前提是欧盟各成员国对如何处理政策、规划和计划的环境影响问题难以达成共识。直到对 1985 指令的执行情况进行五年回顾之时，相关争论才得以终止。五年回顾毫无疑问地指出，EIA 没有早期介入决策过程是项目 EIA 不完善的主要原因(Feldmann, 1998)。

这个结论对于欧盟委员会及其成员国最终达成 2001 年欧盟指令起着决定性的作用，2001 欧盟指令侧重规划和计划的环境影响。然而在那个时候，SEA 已经开始以不同形式应用于欧洲各国家。

2 欧洲的 SEA——一种手段，多种概念

在欧洲，SEA 具有多种概念和多种不同的形式。在 2001 年以前，欧洲的 SEA 发展缺乏概括性模式。在此期间，整个欧洲制定了不同形式的 SEA 方法，并就 SEA 手段形成了多种概念。

因此，在 2001/42/CE 指令（EC，2001）生效前，欧洲为我们展示了：究竟 SEA 应该采用什么形式才能使其更具适应性，更加适用于不同的决策体系。

所谓的 SEA，通常被定义成“对政策、规划和计划进行的环境影响评价”。如果只是以此来解释 SEA 手段是没有问题的，但是它还不足以囊括整个 SEA 理念。

通过分析各欧盟成员国的 SEA 实践经验可以看出，SEA 方法通常被用于以下几个方面：（1）土地利用规划、行业规划及管理方法等(如海岸带综合管理，ICZM) ；（2）海岸带规划与发展或运输通道等特定背景下的规划议案。另外，欧盟委员会特别注重以下背景下的 SEA 应用：海岸侵蚀，(EC，2004)、结构基金(EC，1998)、泛欧道路运输网络(EC, 1999)和委员会的各项行业政策评估。

如上所述，按照整个欧洲使用的 SEA 方法，将 SEA 概念分为以下三大类：

- 将SEA纳入到行业规划和战略管理中，推动规划过程，选择负面影响较少的方案，使其更具可持续性；
- 作为一种积极的影响评价方式，在规划与计划提案制定过程中，在做出最终决策以前，评估各提案的环境影响，为规划和计划议案提供意见和建议，尽量避免或减少环境负面影响；
- 作为一种环境政策手段，SEA可以使环境问题得到充分的关注，并广泛纳入到各政策和规划部门的工作当中，实现可持续发展。

对海岸带地区的管理，欧盟委员会(2004)提出，在制定有关海岸带综合管理的国家战略时，应遵循以下 8 项原则：

- 全方位的视角
- 长远的战略眼光
- 适应性管理机制
- 地方特殊性
- 与自然过程相结合
- 所有相关机构的参与
- 相关行政决策方的支持与参与
- 多种手段相结合

可以看出，相对于以技术和项目为主导的 EIA 而言， SEA 则更具以政治及政府管理为主导的特征。同时，作为一项实现可持续发展的战略工具，相比其对于环境的保护功能来说，SEA 所起到的作用也是不一样的(Partidário, 1999; Bina, 2003; Partidario, 2005)。

欧盟2001/42/CE指令生效后，作为一项正式的指令要求，是推动欧盟成员国SEA实施的概括性模式，却并不限制各成员国采用欧盟委员会指定的SEA实施方式。从理论上来说，欧盟指令满足了上述三种SEA应用方式及8项相关原则。但该指令倾向于第二种SEA概念，即积极评价各项议案的环境影响，实际上并没有影响规划和计划的指定。

问题在于，第二种 SEA 概念是否会丧失欧盟成员国长期实践中形成的 SEA 成功经验。正如 Emmelin 和 Lerman (2005)分析的瑞典 SEA 案例那样，欧盟成员国尽可能按照欧洲指令的最低要求来实施 SEA。

以下章节将主要介绍欧盟指令生效前欧盟几个不同部门采用的 SEA 方法，2001/42/CE 指令的主要要求。然后分析几个欧盟成员国的 SEA 案例，以及欧洲未来 SEA 的发展展望。

2.1 欧盟委员会采用的 SEA 方法

欧盟委员会(EC)一直以来都在以不同方式推动战略性的影响评价。SEA 在欧盟的实施说明，SEA 如何才能适应多种形式的概念解释。其中，某些概念更具战略性，但所有概念又是明显相关的。

值得我们探索的 SEA 实践经验很多，但该部分将重点阐述欧盟委员会实施 SEA 的三个主要经验：将 SEA 用于区域发展及欧盟区域凝聚政策；将 SEA 用于交通运输路网以及基础设施建设；将 SEA 影响评价用于欧盟政策制定。

欧盟凝聚政策和结构基金中的 SEA

欧盟执行委员会对 SEA 的应用最早始于对其区域发展结构基金的分配，需要 对各成员国的各项议案进行战略评估。最初，在各国区域发展规划的经费分配方面，委员会主要考虑的是经济发展目标，旨在为今后的区域发展提供一套战略性的指标和框架。但自 1993 年以来，欧盟委员会 EEC2081/93 框架明确要求优先评估区域规划的环境影响，按照第 1，2 和 5b 条目标提交的区域规划，还需要递交一份相关规划的环境影响评价报告。

从 1993 年开始，所有要求欧洲基金支持的区域发展工作都履行了上述管理规定，而 1995 年通过的欧盟凝聚政策与环境框架中也包括这些要求。同时，委员会还于 1999 年出台了一部手册，旨在帮助各成员国实施区域发展规划和欧盟结构基金计划（EU，1998）的环境评价。尽管受欧盟区域总司的监督及欧盟环境总司直到，但 2001/42 指令并没包括 2000-2006 计划期间共同筹资规划和计划。

然而，在2007-2013计划期间，欧盟议会和欧盟理事会2001年6月27日通过的2001/42/EC指令要求对规划与计划实施环境影响评价，适用于欧盟凝聚政策基金规划资助的规划和计划，这在欧盟聚合政策的发展过程中尚属首次。最近，还颁布了有关2007-2013年期间欧盟凝聚政策的SEA专用手册 (GRDP, 2006)。

欧洲交通SEA

与欧盟凝聚政策和结构基金中的 SEA 应用相适应，欧盟运输总司在泛欧交通运输网络（TEN）背景下，也引入了 SEA 体系。随后，经过 1990 年之后的不断努力，欧盟于 1996 年通过了一项有关多模式泛欧交通运输网络的指南(1692/96/EC 决议) (Dom, 1998)。指南中认为 SEA 是交通运输政策、计划和规划决策过程的重要组成部分，通过 SEA 将环境评估与社会经济评估联系起来，尤其需要对交通运输基础设施以及整个交通路网和各交通线路的投资决策进行环境评估。

1992年又颁发了《交通环境影响绿皮书》，绿皮书的出台引发了交通运输与环境及可持性交通的公众争论。1995-2000年期间的《公共交通政策法案计划》规定必须制定SEA方法体系，并进行交通线路的SEA研究、建立环境分析体系(Dom, 1998)。

有关这方面的案例很多，比如高速铁路网络（High-Speed Railway network, HSR）的SEA应用、SEA的实施范围及方法研究、 SEA在交通基础设施及其他方面的应用回顾等，其中大部分由欧盟运输总司和欧盟环境总司主持实施。此外，就多模式交通廊道的SEA应用开展了五项试点研究，采用的SEA方法各不相同，其中许多应用方法与项目EIA的实施经验有着密切的联系（ERM, 2001）。

欧盟运输总司于 1999 年出台了《交通基础设施规划 SEA 应用指南》。实施几年后，欧盟运输总司决定制定另一部 SEA 手册，以满足欧盟指令（2001/42/EC）的要求。此外，基于 BEACON 研究计划(Building environmental Assessment Consensus on TEN-T，建立关于“泛欧交通运输网络”环境评估的一致意见)，最近制定了《交通基础设施规划与计划的 SEA 应用读物》，于 2006 年 2 月在网上公布，有待欧盟委员会批准通过。

影响评价交流

2002年欧盟委员会提出一种新的影响评估（IA）工具，用以改善政策制定过程的质量(欧盟委员会, 2002a and b)。2002年6月5日，欧盟出台了有关影响评估的信息交流文件COM

2002/276，其中对新的政策制定过程有详细规定，应用于欧盟委员会批准的所有政策提案，即欧委会年度政策战略或年工作计划中列出的政策议案。

作为政治决策的辅助手段，这一新的影响评估工具（IA）有助于加强、简化或者替代现有的独立评估体系，优化决策环境。其中，主要是通过这一工具（IA）加强不同决策情景的协调与对比，尤其是跨行业的决策情景，从而决定具体行动步骤。基于欧盟委员会规范管理计划（Better Regulation Package）和欧洲可持续发展战略框架，影响评估工具（IA）要求重点考虑一下两个方面的政治要素：

- 政策议案对经济、社会和环境的影响；
- 简化和改善管理环境。

根据有效实施影响评估工具（IA）的回顾性评论，可以发现影响评估过程非常复杂，需要长期的筹备工作。同时，还需要在各欧盟成员国和其他参与欧共体立法决策过程的机构之间实现 IA 的等效应用。此外，在欧盟委员会工作人员的工作文本中(SEC(2004)1377 of 21 October 2004)规定了改善影响评估工具（IA）框架、改进影响评估（IA）方法的的步骤和措施，尤其是有关以下几个方面的改善与改进：

- 需要更多的依赖欧盟可持续发展战略（ESDS，Göteborg 欧盟理事会）和里斯本策略目标（Lisbon objectives）
- 强化影响评估工具（IA），改善IA方法体系
- 提高影响评估工具（IA）的应用质量，更好的评估各种影响之间的协调性及其相互关系，增强量化能力和行政指导。
- 简化影响评估过程（IA）
- 加强利益相关者与相关机构、人员的磋商，增强透明度，改善数据的提供等其他相关服务功能。

相关经验表明，欧盟委员会政策提案中的影响评估实施与《监管影响分析》中采用的原理和方法类似。欧洲环境政策研究所及欧洲环保局在 2004 年的回顾分析草案中批评道，政策影响评价手段的应用模糊不清、极其肤浅。该草案没有发行。

2.2 欧盟 2001/42/EC 指令

欧盟议会和欧盟理事会于 2001 年 6 月 27 日通过了 2001/42/EC 指令，7 月份开始生效，旨在评价规划和计划可能造成的环境影响(Officail Journal L 197) (EC, 2001)。指令的第 13 条责令各成员国在 2004 年 7 月 21 日前都必须执行该指令的相关规定。届时已有 9 个国家将该指令导入本国法令。同时，该指令还要求欧盟委员会制定欧盟指令应用及实施成果的第一个五年报告，并于 2006 年 7 月 21 日之前，提交欧洲议会及欧盟委员会。届时，大多数的欧盟成员国可能都已经将欧盟指令纳入本国立法中。

欧盟 2001/42/EC 指令是欧共体及其成员国长期激烈讨论协商的结果。大量的文件证明，早在编制有关公共和私人项目环境影响的《欧盟环境影响评价指令》（85/337ECE）时，就意识到需要对政策、规划和计划进行环境影响评价，但直到 20 世界 90 年代末欧盟才开始全面筹备欧盟指令。

欧盟中是一个集政治实体与经济实体于一身，在世界上具有重要影响的区域一体化组

织，它的绝大部分成员都是发达国家。欧盟有关环境和可持续发展的立法和政策框架直接作用于所有成员国以及拟加入欧盟的国家，同时对全欧洲甚至全球也有着重要影响。

针对规划和计划环境影响评价的欧盟 2001/42/EC 指令，目前已成为当前欧盟最有效的 SEA 实施方法，并在全球范围内得到推广。当欧盟委员会及其成员国的 SEA 实践相对稳固的时候，引荐该指令。需要就指令的各项基本要求达成一致，等效的适用于各成员国，因此各成员国的管辖权已经发生了重大变化。有些成员国引入了正规的指令要求，而另一些则对其进行了适当的修改。

很明显，该指令强调将综合考虑可持续发展作为其重点要求："…重点保护环境，并将环境因素纳入规划和计划的编制和实施阶段，促进可持续发展"（第 1 条）。这些目标与欧共体条约等欧共体可持续发展政策中的总体目标一致。该指令要求对一系列可能造成重大环境影响的规划和计划实施环境评价。然而，该指令并没有明确规定评估过程与评估的最终成果，从而为评价工作的开展留下了一定空间。

该指令的条款具有程序性的特点，即指令规定了程序步骤、要求和结果，从最开始的筛选到最后规划和计划实施后的监管。此外，指令还特别要求开展公众参与和咨询。2001/42/EC 指令将环境评价定义为一个程序，包含以下内容：

- 针对拟议规划和计划可能产生的重要环境影响，编制环境报告书，包括以下几个方面的内容：评述规划或计划以及相关的替代方案、环境基线资料、与其它规划、计划及环境目标间的关系、规划或计划可能产生的环境影响、拟定的减缓措施，以及监管计划（第5条，附录1）；
- 就规划或计划草案以及随附的环境报告，咨询环境机构、利益相关方、同时咨询利益相关方、环境责任机构和其他可能受到影响的国家（指跨境影响）（第6条和第7条）；
- 在决策过程中将环境报告和咨询结果考虑在内，并提供有关环境评价过程的信息（第8条和第9条）；
- 对规划或计划的环境影响进行监管（第10条）
- 确保整个环境报告书的质量（第12条）

该指令明确规定下列规划或计划必须实施环境影响评价：

- 农业、林业、渔业、能源、工业、交通运输、废物管理、水资源管理、电子信息行业、旅游业、城乡规划与土地利用等相关规划和计划，这为《环境影响评价（EIA）指令》（85/337/EEC指令）附录I和附录II中所列项目的今后发展许可提供了框架；
- 考虑到可能产生的环境影响，按照欧盟栖地指令（92/43/EEC指令）第6条和第7条规定，必须实施环境评估的规划和计划。

按照欧盟指令的要求，环境报告是环境评价的重要组成部分。所有的环境评价都必须编写环境报告，报告中要对规划和计划可能产生的主要环境影响以及科学合理的替代方案等进行识别、描述和评价。其中合理的替代方案应该考虑规划和计划目标及其地理范围。

环境报告必须包含欧盟指令附录 I 中所列的内容，其中包括以下几个方面：

- 与规划和计划相关的环境保护目标；
- 环境现状的相关内容（即：规划和计划实施以前的环境状态）；
- 对环境可能产生的重大影响，包括：生物多样性、人口、人类健康、动植物、土壤、

水、空气、气候因素、有形资产、文化遗产、景观及其相互关系；

- 设想的减缓措施，替代方案的选用原因，以及设想的监管手段等；
- 并针对欧盟指令附录I中规定的题目，编写一份非技术性总结报告。

规划和计划成为实现环境问题与可持续发展一体化的焦点，这是实施欧盟指令的一个显著效益。为了提高有关环境问题的规划与计划的质量，欧盟指令责令对规划和计划过程实施环境评估。但事实上，由于种种原因，尤其是支持规划与计划发展的政治策略等原因，欧盟指令提倡运用 EIA 理念、实践经验和步骤实施环境评估。有专家学者认为，这是应对复杂战略决策过程的最低效的途径(Dalal-Clayton and Sadler, 2005; Partidário, 2005; Sheate et. al., 2005)。

事实上，指令中并没有提及 SEA 这个说法，因此人们怀疑用 SEA 这个表述来命名该指令是否合理。指令中几乎没有提到战略过程和方法等理念，如果不是由于该指令主要适用于规划和计划，那么它与项目 EIA 的要求也就没有什么不同了。Sheate 等人对指令 85/337 和 2001/42 进行了比较分析，发现这两个指令的要求在很多地方是相同的（Sheate, et al. 2005）。

此外，对欧盟指令存在很多不同的看法。Jones 等人认为该指令所设定的框架范围比较大，可以按照需要自行决定评价内容，紧紧阐述希望得到的结果，而没有明确具体的方法(2005)。Glasson 和 Gosling 谈到“雅俗共赏原则”，Risse 等人对此表示认同，认为欧盟指令的基本要求没有严格限制，留有足够的创造、变通和适应的空间，从而可以适应各成员国的不同背景(2003)。而 Dalal-Clayton 和 Sadler 则从另一个角度出发，认为规划与计划的 SEA 方法应当实现标准化，因此应根据 EIA 指令规范规划与计划的 SEA 方法，从而逐步改造欧洲的规划和计划体系，使环境因素纳入规划与计划编制及实施的整个过程中。然而，要达到这些目标任重而道远。

3 欧洲各国的 SEA 应用方法概述

欧盟指令（001/42/CE 指令）成为世界范围内 SEA 实施历史的分水岭，尤其是欧盟成员国 SEA 实施历史的分水岭，明显地将其分为两个阶段：欧盟指令实施前和欧盟指令实施后。

在欧盟指令生效前，SEA 与土地利用规划和政策评估联系密切，并影响 SEA 实施的特征、方法及程序。在许多欧盟成员国中，尤其是荷兰、法国、芬兰、丹麦、瑞典、斯洛伐克、波兰、匈牙利、捷克共和国以及西班牙与意大利的部分地区，相关的 EIA、土地利用规划和其他行业立法中都对 SEA 做了正式的要求和规定。

在 SEA 的实践中，有很多地方是值得我们注意的，例如：非官方的实践方式；与国家、区域、地方层次上的可持续发展框架之间的联系；在国家环境规划、综合行业发展规划、空间景观规划、功能区划或是建筑许可中的重要性；还有针对环境报告、监测、交流以及环境意识的不同模式及要求等。Dalal-ClaytonDalad 和 Sadler (2005)曾对指令实施前的 SEA 状况做过一个很好的总结。

欧盟指令生效前的经验表明：SEA 具有其广阔的使用和发展空间，它不仅用于政府议案和其他议会提案中（如丹麦和荷兰的环境检测）；同时也可以用于经济战略、欧盟结构

基金提案、市政与区域实体规划或土地利用规划、城镇规划和建筑施工计划以及跨行业规划、计划当中，譬如：

- 交通运输
- 能源
- 废物管理
- 水资源开发
- 林业
- 矿业

欧盟指令实施以后，各国通过制定新的法案或修订现有的规章制度，纷纷采用新的立法要求。经验表明，随后的 SEA 实践与欧盟指令的规定相一致。欧盟主页上并没有专门阐述欧盟指令在各成员国的具体实施情况，然而，Jones 等人（2005）试图就欧盟指令在土地利用规划等具体行业中的应用进展提供一些见解；同时，Sheate 等人（2005）对七个成员国的 SEA 实施现状进行了详细的回顾和分析。

目前，已经正式实施欧盟指令的欧盟成员国包括奥地利（运输行业和行业法案的修订）、塞浦路斯、捷克共和国、丹麦、法国、德国、匈牙利、爱尔兰、意大利（部分地区）、拉脱维亚、立陶宛、马耳他、斯洛伐克、西班牙（部分地区）瑞典、英国（在英格兰、威尔士和苏格兰地区分别实施）。其中，有少数国家或地区设法超越欧盟指令的范围，主要是通过明确要求实施政策层面的战略环境影响评价，如苏格兰地区和捷克共和国；而其他地区则仅仅局限于指令中的某项条款，要求对 EIA 立法中规定的规划和计划进行评估。

下面的案例简要介绍了部分欧盟成员国在欧盟指令生效后的 SEA 实施状况。Sheate 等人（2005）对下面的部分案例也曾做过相关阐述，然而其他的一些案例在此将不再介绍（如奥地利、法国、德国、爱尔兰和瑞典等国）。

捷克共和国

起源：尽管捷克的规划系统较为完善，但是只要求对区域发展规划实施环境影响评价，将环境问题纳入区域发展规划中，用于申请结构基金。环境影响评价在区域规划过程中的实践成为捷克共和国 SEA 应用的开端。

欧盟指令实施后的 SEA 应用范围：对各级政府机构详细制定的战略、政策、规划或计划实施 EIA，或对提交各级政府机构审批的战略、政策、规划或计划实施 EIA，尽管法律或行政决议中并没有要求 SEA 的实施细节。

法律框架和制度框架：2004 年，环境部负责《捷克 EIA 法案（2001）》进行了重新修订。

丹麦

起源：1925 年，丹麦首次对土地利用规划进行规范。1973 年，《规划法》开始实施，要求广泛的公众参与，并规定了 EIA 的相关制度和环境部的否决权限。自 70 年代初期以来，受上述功能强大的规划系统影响，1999 年通过了新的《规划法》，确保将环境问题纳入到计划和规划当中，同时也包括环境区划中项目 EIA 的相关规定。此外，自 1993 年以来，通过对政府立法提案的环境评估，政策评价制度安排就绪。从 1997 年开始，所有的规划中都需要附上一份独立的 SEA 报告。

欧盟指令实施后的SEA应用范围：严格按照欧盟指令的要求，于 2004 年通过了《SEA 法》。然而，只要规划或计划符合欧盟指令(2001/42/EC)的具体规定和程序要求（如公众参与），就可以否决《SEA 法》的裁决。《SEA 法》将主要用于实体规划。

法律框架和制度框架：从 1993 年开始到指令实施之前，《首相行政令》要求对所有提交议会审批的议案必须进行环境评价，并由环境部负责执行。对于规划和计划的环境评价，则由受《规划法》约束的主管机构负责。当欧盟指令生效以后，丹麦于 2004 年出台了一项新的《SEA 法案》，要求对规划和计划进行环境评价。

荷兰

起源：与美国相似，荷兰也是通过将项目环境影响评价程序扩展计划与规划评估中，进行战略环评实践。然而，在政策层次上的评估，建立了不同的评估体系-E 检测（环境检测）。荷兰曾是欧洲开展战略测评的前沿。

欧盟指令实施后的 SEA 应用范围：欧盟指令实施以后，新的制度本质上和以往的实践没有差别，适合评估规划与计划的等级和灵活性。有关环境监测的立法提案将如何演化，目前尚不清楚。

法律框架和制度框架：在 EIA 委员会的行政管理下，1987 年的《环境影响评估法》和随后的《环境管理法》（1998）为 EIA 和 SEIA 提供了法律依据。环境检测以经济部和环境部联合签署的行政命令为基础。

英国

起源：自 20 世纪 70 年代初开始到指令生效以前，由于具备比较完善的规划体系，英国通过城乡规划编制过程将环境问题纳入了规划与计划过程中。同时，自 1991 以后，英国制定了政策评估、发展规划的环境评估以及区域规划的可持续性评估等的相关术语，并编写了 SEA 的实践经验指导手册（1993，1998，1999 年又相继出台了更多的指南），从而使英国在早期的 SEA 发展中起到了领导作用。

欧盟指令实施后的 SEA 应用范围：英联邦于 2004 年将欧盟指令导入了英国法令，但对英格兰、威尔士、北爱尔兰的规定各不相同。上述规定均适用于规划和计划，只有苏格兰还要求将其应用于政策范围内。此外，英格兰 2004 年的《规划和强制性收购法》责令实施可持续性评估。2004 年，发行了有关综合 SEA 进行可持续性评估的 SEA 实施指南，同时相关的行业规划指南也已在准备过程中。

法律框架和制度框架：英国副首相办公室(The Office of Deputy Prime Minister)于 2004 年颁布了《SEA 指南》，严格按照欧盟指令的措辞。同时，而英格兰、威尔士、苏格兰和北爱尔兰议会也于同年分别采纳了英联邦于 2004 年出台的有关规和与计划环境评估的规章制度。

4 结论

本文介绍了欧洲使用的的各种 SEA 理念，重点阐述了欧盟委员会及其成员国目前采用的 SEA 模式和经验，特别是那些在欧盟指令（2001/42/CE 指令）颁布之前就已经开展 SEA 的国家。通过这些经验可以发现 SEA 的很多内在潜力，如作为协助决策制定的方法，实现可持续目标；作为一种过程，处理战略问题；发挥主动作用；将 SEA 与决策系统及

战略决策需要密切联系。

通过本文的阐述，我们知道，欧盟的 SEA 不只局限于欧盟指令（2001/42/CE 指令）所涉及的规划和计划可能产生的环境影响，对此其他文献似乎也提到过。

目前，欧盟的 SEA 正处于一个过渡时期。大多数情况下，欧盟成员国最近的 SEA 规定严格遵守欧盟指令对 SEA 的要求，SEA 的实施局限于某些行业；但也有极少数的国家或地区例外，相关规定已经超越了欧盟指令所规定的范围和要求（如：苏格兰和捷克共和国）。

欧盟各成员国在 SEA 的发展和实施过程中所取得的成就，可能主要受过去规划和政策经验的影响。过去的规划知识和欧盟指令制定之前的 SEA 实践经验以及欧盟指令的实施，在 SEA 的有效实施过程中起着极为重要的作用（尤其是丹麦、瑞典、英联邦和其他东欧国家）。要成功实施 SEA，要求实施 SEA 的相关规定、政策或背景都很重要（如爱尔兰国家可持续发展战略；寻求苏格兰更好发展得合作伙伴关系等政策导向文件）。然而，其未来的发展状况还将通过时间及实践的验证才能知道。

欧盟指令的主要作用就是将环境因素纳入规划与计划过程中，提高规划、计划质量，为此，需要注重以下几个方面的工作：提高有关可持续发展的规划与计划实践；系统分析决定规划与计划质量的环境要素；公众参与；制度咨询；替代方案比较以及监管和评论。此外，欧盟指令只是设立了一套最为精简的工作框架，并积极鼓励对 SEA 进行创新。如果关于规划与计划实践的经验比较丰富，那么它成功实施 SEA 的机会将有所增加；而如果其实践经验不足，同时它的规划和计划体系又不完善的话，那 SEA 的实施将会面临一定的困难和挑战，它的成功与否也有待考证。

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香港特别行政区战略环境评价和空间规划方法

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1 导言

在过去的几十年里，香港的经济增长显著，从过去的小渔村发展成了现代化的大都市。香港以向高层发展为典型特征，多高层建筑、密度大。香港是一个海岸曲折、多丘陵的地区，因此，许多空气区和水域的扩散能力受到限制。土地资源匮乏，各种活动的密度大，引起各种类型的土地利用冲突和一系列独特的环境问题。

香港 1996 年的的人口为 640 万，到 2011 年可能会增加到 810 万左右。如果不进行全港土地利用发展战略的可持续性综合评估，伴随着人口增加，土地利用矛盾和环境压力也会相应增大。为了应对这些挑战，政府一直在寻找适当途径，协调发展与环境之间的冲突。政府强调更好地规划发展战略及应用战略环境评价（SEA）就是其中的重要举措。

2 香港土地利用规划及发展规划的环境评价

如图 1 所示，香港具有三层分级规划体系，包括全港、次区域和地区三个层面（规划署，2000）。全港发展战略（TDS）旨在提供一个规划框架，综合土地利用、环境和交通要素，并在一定程度上平衡其间的关系。从而推动次区域和地区规划的筹备工作，综合有关土地利用及基础设施发展等方面的公共政策，更加重视大尺度的、长期的重新开发战略和跨境合作。

香港共有 5 个次区域。次区域发展战略处于 TDS 和地方发展战略之间，将全港发展策略转化为次区域具体的规划目标，并为下一级更加具体、详细的地区规划和工作计划提供了发展框架。根据《城市规划条例》的相关条款，通过两种法定规划制定和执行地区规划，其中，《城市规划条例》包括 OZP（outline zoning plans：分区计划大纲图），DPA（development permission area：发展审批地区）和两种行政规划。这两种行政规划分别是指 ODP（outline development plans：发展大纲图）和发展蓝图。分区计划大纲图强调土地利用，例如住宅用地、商业用地、工业用地、公共开放空间、法定机构用地、绿化带用地、自然保护区或其他特殊用途的用地及各规划领域的主要道路系统。

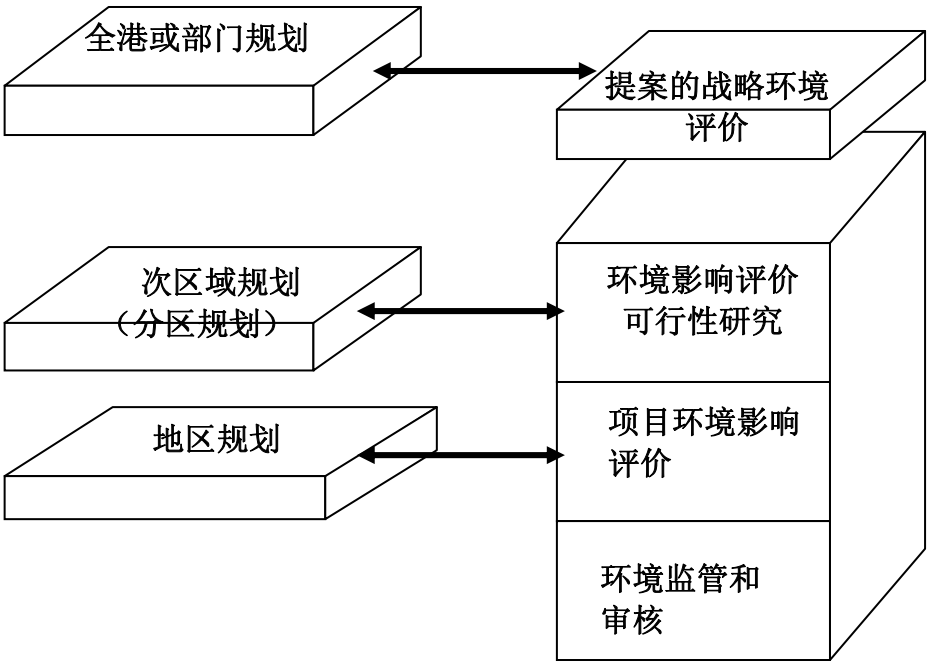

图 1　香港的规划层次和战略环境评价

在过去十年中，香港经历了环境评价与空间规划的一体化过程（Au， 2000） 。在编制全港发展策略框架及相关的主要发展规划中，表现出两者的明显结合。而在战略环境评价中，则将环境评价方法纳入空间规划过程。1988 年，政府签发了《有关重点发展项目的环境回顾性评价的通知》，主要新区发展项目及其他重点项目。自此以后，重大的发展规划必须经过环境评价分析，战略环境评价开始引入香港的规划过程。目前已经对十几个规划和新市镇发展规划实施了环境评价， 包括将军澳新市镇的战略环境评价（40 多万人口）和北大屿山新市镇发展规划战略环境评价（约 25 万人口）等（环境保护署， 2002） 。另外，新界西北及新界东北部等战略性增长区的战略环境评价目前正在进行。

上述环境评价活动符合战略环境评价的定义，原因在于，这些环评活动在规划的早期阶段对环境问题进行评价，旨在帮助决策制定，分析一系列可能的替代方案，并对提案和规划可能的累积环境影响进行评估，显然与具体的项目环境评价不同。

在《香港规划标准与准则》框架内，确定了战略环境评价和综合规划层次（图 1 ）之间的密切联系（香港特区政府， 1990）。该标准和准则有助于规划师、建筑师和工程师制定香港主要发展规划（Au，1998）。迄今为止，在香港实施的战略环境评价已经成为重要的环境手段，适用于全港层次的、战略层次的以及次区域层次上的规划过程。上述规划标准与导则也有助于将环境因素和累积环境问题系统地纳入规划决策制定中。

香港的战略环境评价经验涵盖广泛的领域，包括战略性增长地区、全港土地利用规划、交通战略和政策、发电技术及选址方案的战略提案（环保署， 1999 和 2004） 。重要发展战略的战略环境评价实例如表 1 所示 。

表 1　香港战略环境评价的主要案例

研究	参与的主要产业	规模	环境问题的范围	战略环境问题及关注的焦点
全港土地利用规划				
《全港发展策略重研》(TDSR)	全港土地利用 交通运输	全港性 人口从 1999 年的 680 万到 2011 年的 810 万	全港的 地区的	多种发展方案对环境的潜在影响和可接受性
交通战略策略				
《第三次整体运输研究》	交通运输	全港性 跨境 人口从 1999 年年中的 680 万到 2016 年的 890 万	全港的 地区的 地方的	不同运输方式、政策和重大发展对环境的影响
《香港第二次铁路发展研究》″	交通运输 燃料消耗 土地使用	全港性 跨境 人口从 1999 年年中的 680 万到 2016 年的 890 万	全港的 地区的 地方的	由于铁路发展方案对环境的潜在影响
电子道路收费研究	公路运输 经济与公平 收费技术	全港性 如果不进行限制，到 2016 年私家车将达到 96 万辆	全港的 地区的 地方的	各种收费系统的环绩效和潜在效益
1800MW 发电站	电力供应 地方土地利用 燃料供应 发电技术	1800 MW 发电能力	全球的 地域的 全港的 地区的 地方的	各种燃料、技术和选址方案对环境的潜在影响和环境可接受性.

3 案例研究：香港全港发展策略

《全港发展策略重研》(TDSR)是香港首次采用战略环境评价，对全港土地利用发展战略进行了总体评价（香港特区政府， 1995）。该战略环境评价开始于 1992 年，分两个阶段进行， 1995 年 12 月完成。报告于 1996 年 7 月呈交香港环境咨询委员会讨论。这次评价根据不同的经济、区域发展速度和程度设计了 20 多个替代发展方案，并对其各自的环境影响进行了分析。分析了 20 多个替代方案的环境影响。在整个评价过程中，根据战略环境评价的结果，许多损害环境的方案已被取消或已经过大幅修改。其中，一些可能会对香港东部及南部造成环境损害的方案已被摒弃，该区将作为自然保护区、风景区和休闲娱乐场所。

作为全港发展策略的首个重要战略环境评价案例，制定了一些基本的可持续性原则，作为评价框架的基础。主要原则包括：

- 原则 1 （关联原则）：强调建立可持续性问题与观念、发展途径和政策方针之间的联系和“桥梁”。

- 原则 2 （整体性原则）：旨在综合战略环境评价与其它经济、规划方法，促进整体战略的制定;
- 原则 3 （实效性原则）：寻求实用的、可操作的方法，用以处理复杂的、跨部门的、多学科的问题。

遵循上述原则，制定了分析评价框架。大量重要论题为该框架的确立奠定了基础，其中包括：自然资本、环境承载力以及不同层次的可持续性问题（Au， 2002）。

3.1 自然资本

自然资本，是环境资产（如土壤、大气、植物、动物、水、湿地）的存量，提供有用的物流和劳务流，包括可再生的或不可再生的、市场化或非市场化的物流和劳务流。自然资本存量的概念已用于全港土地利用规划，从战略角度确定土地利用与各种环境属性之间的联系。自然资本存量的概念如图 2 所示。

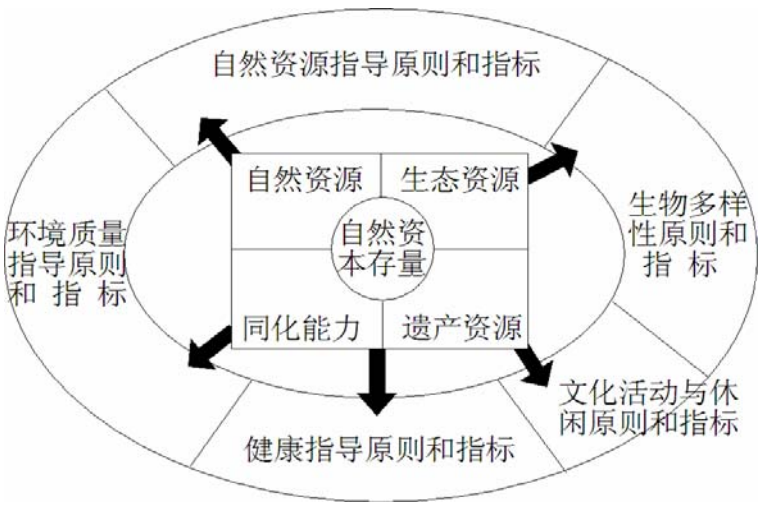

图 2 自然资本存量的基本要素

资料来源： 21 世纪香港可持续发展研究环境基线报告，香港特别行政区政府，2000 年 8 月

香港除其独特的天然港湾和多样的生态系统外，缺乏主要的自然资源。香港的食物、水和其他自然资源主要依赖中国内地和世界其他地区的输入。尽管“自然资本”概念在香港仍然适用，但它需要分解成自然的、人为的和生态的三个组成部分。自然部分是指自净化过程，可以维持环境和当地居民的健康。排水设备、污水处理设施及垃圾填埋区等人为的环境基础设施，有助于减轻自然净化过程的负担。生态资产为当地居民提供必要的功能和休闲娱乐等服务，而拉姆萨尔湿地等生态资产还能提供国际性的功能和服务。

这三个组成部分具备以下功能和作用：

- 重要局部性气域或地方性气域对大气污染物的吸收能力;
- 香港境内境外主要潮流、水域和海港的吸收能力;
- 区域性气域和珠江（中国内地） 的吸收能力及其对香港的影响;

- 米埔内后海湾拉姆萨尔国际重要湿地（the Ramsar Site in Mai Po）等湿地生态系统，提供候鸟越冬场所；
- 重要的土地资源保护区和海洋保护区，成为 640 万人教育、休闲和娱乐的重要场所。

在全港发展策略的回顾性战略环境评价中，运用定性，定量和半定量的方法分析了天然的环境自净过程，并评价环境承载能力。运用空间填图技术识别出重要的土地资源保护区和海洋保护区以及重要科学价值的场所，从而有利于避免不适当的发展，并提供有效手段，定性衡量生态资产损失的程度。

3.2 环境承载力

环境承载力及环境阈限是全港土地利用规划中重要的环境可持续性标准。评价环境承载力及环境阈限采用的参数和方法见表 2 。根据环境承载力检验拟定的发展阈限与发展战略，并将缓解或避免环境损害的预期成本纳入战略制定过程中。

表 2 评价环境承载力和环境阈限采用的参数及方法

环境承载力及环境阈限	分析方法
调节工业废气排放和交通废气排放的大气环境承载力	运用空气质量模型，确定各气域的承载力，并制定相应政策
道路交通和工业活动造成的环境噪音	预测由发展战略带来的主要噪音变化，估算减缓噪音措施的成本
水体、排水系统和污水处理设施的承载力	预测不同水体污染负荷的增加，估计可能会超出法定水质目标的部分，评价污水排水系统和污水处理设施的超负荷程度，并确定相应的预期成本
填埋区和废物转运设施的承载力	评价现有和拟建的填埋区及废物转运设施的超载程度，并确定政策和缓解措施成本。

除了土地利用，还需要分析部门问题的环境可持续性。战略环境评价除了不同介质（空气、水、废弃物、噪音、生态）的环境分析，还包括重要部门的环境分析，比如交通运输、港口有关的活动、工业和商业活动等。有关实现部门政策可持续性的指导方针如表 3 所示。

3.3 可持续性问题

需要建立全港发展策略 SEA 的空间分级体系，目的明确的评估不同层次的环境问题及各种类型的分析结果。从而对不同层的可持续性问题做出不同的政府相应。不同空间层次的可持续性问题在表 3 和图 3 中都有说明。

表 3　可持续性问题的层次和响应类型

问题的层次	重要的环境可持续性问题	评价方法和响应类型
地方可持续性问题	局部环境承载力及环境阈限（空气、水、噪音、危险废物、废物、污水）， 对局部地区陆地生态资产和海洋生态资产的影响	应用于方案评估的绩效手段 响应类型：战略修订、投资、技术调整、政策改变
区域可持续性问题	珠江三角洲粮食、能源、水和资源的需求和供应 珠江三角洲日益恶化的空气和水质	在区域背景下，对整个战略的区域可持续发展影响进行定性评价 响应类型：跨境环境合作
遵守联合国环境与发展会议通过的 21 世纪议程	温室气体、生物多样性、香港的生态足迹、节约能源以及人口问题	基于定量和定性评价的研究结果，按照 21 世纪议程各组成部分的要求评价整个战略 响应类型：政策改变、投资、技术、国际环境合作。

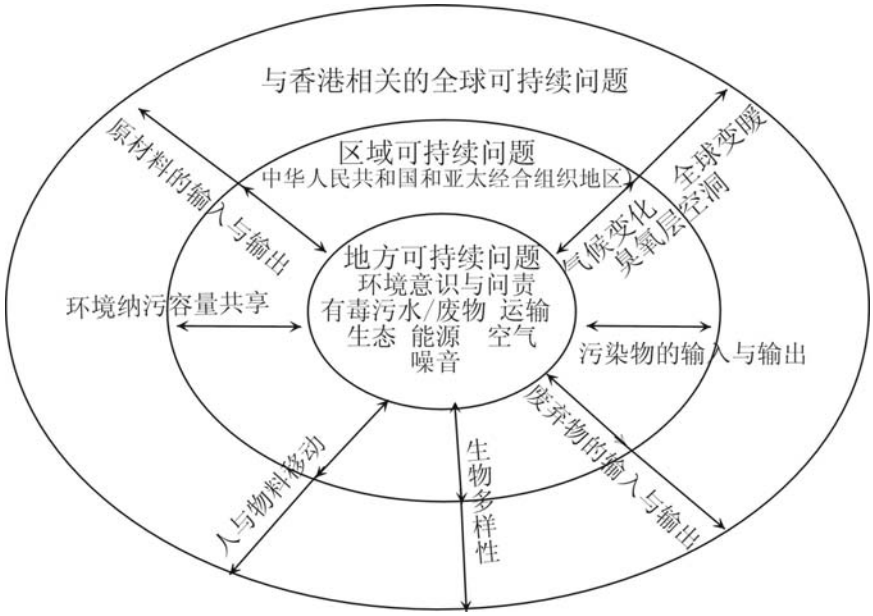

图 3　香港的环境可持续性问题

4 建立发展规划 SEA 制度

《全港发展策略重研》(TDSR)的研究表明，即使没有法律要求进行战略和政策的战略环境评价，战略环境评价依然可以进行。环境影响评价条例，于 1998 年 4 月生效，要求对二十万平方米以上或涉及 10 万人以上的重大发展规划进行环境评价。然而，重大政策与策略的战略环境评价的实施仍然依靠行政手段。行政部门必须认识到实施这种评价的价值，行政指令必须要求相关人员和机构参与实施过程。如前所述，这样的行政制度已经促进了战略环境评价和规划层次之间的密切联系，并有明确的环境规划标准与准则，帮助规划师、建筑师和工程师编制重大发展规划。这一制度的设置可以确保有关政府部门及办公署参与评估过程，而其还可以确保相关部门的早期参与。

如果没有立法的支持，战略和政策的战略环境评价研究可能会失去重点。香港环境保护署要求每个战略环境评价做出细致的研究概要，解决了这一问题。研究概要需要说明研究的范围和方法，并列出参考文献及其他指导材料和意见。在准备研究概要的过程中，环保署会对重要问题进行系统地分析， 从而判断实施战略环境评价的时间。环保署还主持一个跨部门环境研究管理小组，以指导战略环境评价，并对战略环境评价的研究结果予以评价。

《全港发展策略重研》(TDSR)的研究坚持了前面提到的三个可持续性原则和重要论题。环保署的参与了整个研究过程，对确定重要可持续性问题有很多帮助，并将 SEA 用于重要的可持续性问题。

5 研究方法和过程

香港战略环境评价受益于 20 世纪 80 年代以来的项目环境影响评价。项目环境评价强调对替代方案的考虑。因此，全港发展策略对各种发展方案的环境效益和弊端进行了充分的调查和比较。在方案讨论过程中，就全港发展策略中人口和经济增长的一些基本设想，提出了一些问题。全港发展策略的战略环境评价研究路线如图 4 所示。

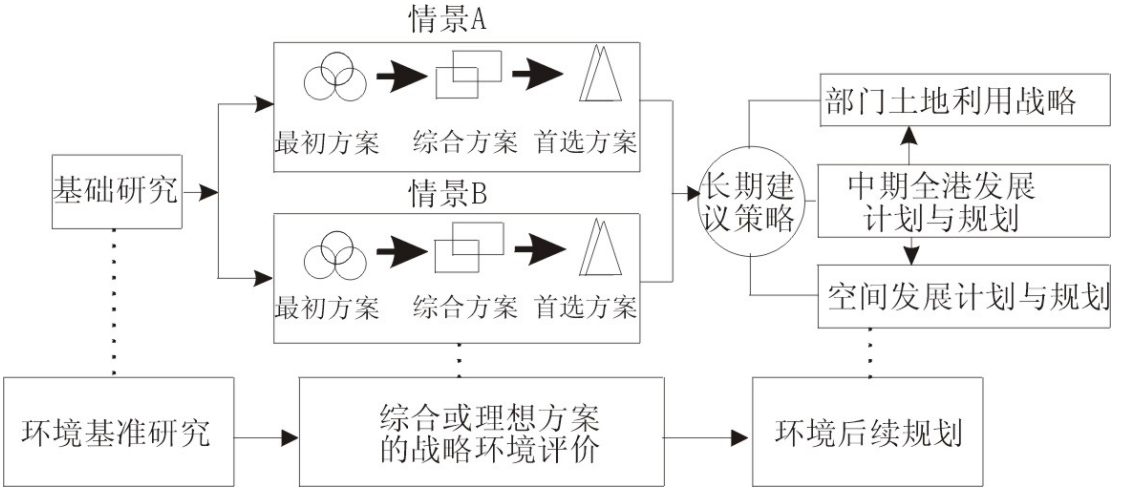

图 4　全港发展策略战略环境评价研究路线和土地利用规划程序

战略环境评价采用双层法，包括自上而下和自下而上（top-down and bottom-up）两种方法及行业评估与环境要素评估。采用矩阵法建立以下几个部门的联系：环境承载力、满足 21 世纪议程以及公共健康和生存问题的能力、可持续性评估等宏观评估。在评估过程中遇到了一些障碍因素，如表 4 所示。

表 4　全港发展策略战略环境评价中出现的困难

主要困难	解决方案
时间/预算限制	依靠现有的数据和研究报告
不可能全部量化	采用"最优估计"方法;
倡议者/部门的持续支持	侧重于共同的目标; 侧重于第 1 阶段附加给公众的价值; 简化程序

对某一特定战略或地区最关键的问题缺乏关注，这是战略环境评价固有的弱点。在评价分析过程中，许多研究不是范围太广，试图处理大部分问题/方案，就是研究范围太窄。在香港，通过采用"自然资本"的方式已部分解决这一问题。在环境基线研究中，通过"自然资本"方法识别出关键环境属性和战略环境限制。同样，也是在这个阶段，运用可持续性原则以及预防和避免的原则，制定评价准则和发展方案。

在香港独特的高楼层和高密度的发展模式，已经使其他地区发展起来的传统评价方法的应用受到限制。香港已经发展了一些粗略的评价技术，特别适合 SEA 实施的目的。其中，《香港规划标准与准则》环境篇章中的环境指导方针，已经得到了广泛应用（香港特区政府，1990） 。

在香港就 SEA 结果征询广大公众和环境咨询委员会的建议是非常重要的一步，并已经产生了巨大帮助。参与人员包括行业代表、专家团体、学术机构和环保团体。然后，将 SEA 的主要成果与利益相关方协商后，才得出最后结论。经验显示，在公众咨询的第一阶段收到的意见，有助于确定关键的可持续性问题、缩减研究范围，并重新确定评价框架；另外，还提到相关政府部门和办公署应该早期介入的问题。

以环境承载力为基础，根据环境的"底线"评估替代战略，从而制定适当的战略，可避免或最大限度地减少对环境可持续性的负面影响。无论何时进行可持续性问题的研究与确定，都要分析跨行业的环境影响以及累积的影响。行业问题的评价有助于建立部门政策间的联系和因果关系，并进行相应的政策性或制度性调整。根据重要的可持续性指标，评价发展战略的累积影响，从而确定必要的政策调整和规划响应。

《全港发展策略重研》(TDSR)证明研究可以促成政府行为和政策变化。通常情况下，先是一系列可能的政府响应，然后制定适应的管理技术和行为规划，应对突出的可持续性问题。香港已经设计了战略性环境监管与审查框架，以追踪政策与规划制定。

香港案例成功的一个关键的因素是战略环境评价的结论必须以高层决策者可以理解并便于使用的形式呈交，用来判断未来发展战略的影响。这样，有助于高层决策者更好地了解其决策行为的可持续影响，并着手对重要的可持续性问题进行跟进研究或采取行动。

6 主要成果

无论是对决策者、公众、环境还是参与评价过程的相关机构，《全港发展策略重研》(TDSR)已取得了相当大的效益。最主要的效益就是公众舆论的建立，要求对可持续性问题采取行动。决策者和关键的利益相关方通过更为系统的方法处理可持续性问题，及时接受了舆论要求，对一些地区和区域性的重要的可持续性问题采取行动。其次，提高了了《全港发展策略重研》(TDSR)的可持续性。关键的自然栖息地能够得到有效保护，避免了任何严重的环境破坏。第三，虽然可持续性分析不能立即解决所有严重的问题，但已经产生了较为具体的行动议程。

战略环境评价成功的引起了公众和决策者的关注，使他们注意到《全港发展策略重研》(TDSR)对环境质量潜在的负面影响以及采取行动来处理可持续性问题的迫切需要。战略环境评价引发了一系列跟进行为。首先，战略环境评价促使政府启动了一项有关香港可持续发展的重要研究，即 2001 年完成的《香港二十一世纪可持续发展研究》（SUSDEV21）；其次，编写了环境基线报告，对香港当前的发展压力和环境状况进行了全面回顾。基线报告为评价未来政策或战略建议的环境可持续性影响提供了一个平台。

《全港发展策略重研》(TDSR)不仅提出了一些支撑香港可持续发展的关键问题，而且为其他战略环境评价研究拟定了框架。认识到交通运输是可持续性的一个重要决定性因素，香港特别行政区政府进行了两项交通战略研究，都包含战略环境评价部分。尤其是香港第三次整体运输研究（CTS3）特别突出，对交通政策进行了回顾与分析，提出了相应建议以及重大发展，制订了一套适用至 2016 年的均衡 运输策略，以满足港内及香港与内地之间增长的运输需求（香港特区政府，1999）。附随的战略环境评价分析了各种战略方案可能造成的环境影响，对各种环境限制因素和机遇进行了确认，并列出应采取的一系列跟进行动。而战略环境评价的结论则被提交给环境咨询委员会及立法会，从而使各种长期发展方案造成的造成的长期环境影响引起了更为广泛的关注。由于土地使用与交通运输息息相关，《全港发展策略重研》(TDSR)对交通运输战略（第三次整体运输研究（CTS3））和铁路发展战略（第二次铁路发展研究（RDS2））分别进行了战略环境评价分析。

参照第三次运输整体研究（CTS3）的结果 ，第二次铁路发展研究（RDS2）计划确定铁路发展方案及铁路管理和运作的改进措施，满足全港直至 2016 年交通运输的设计要求，并提高铁路网络的效率。从 1998 年 3 月开始，战略环境评价（香港特区政府， 2000 ）评估了各种铁路网络方案及各条线路对环境的潜在影响。第二次铁路发展研究（RDS2）涵盖了有关战略环境问题。该项研究中提到，交通运输方式从公路运输到铁路运输的改变，可能会带来环境效益；而且还进一步提到对环境敏感地区间接的环境影响。另外，该项研究还确定了环保首选方案及其它方案的环境可接受性。

在《全港发展策略重研》(TDSR)的推动下，随后进行的第三次运输整体研究（CTS3）和第二次铁路发展研究（RDS2）强调了交通运输在香港空间规划中的重要性，因此有必要采取以下措施：

- 整合土地利用-交通运输-环境规划，将环境研究中的反馈信息纳入运输模型，满足未来发展需要，尽可能的减少行程。
- 力求达到空气质量标准，防止空气污染对健康损害，控制汽车尾气排放

- 增加非环境敏感线路上的私人行程和货物运输量
- 增加公共交通的投入，特别是铁路客运，以减轻空气污染，同时限制私家车数量
- 比较运输方案的成本，包括外部成本，如由于道路限制因素造成的地价损失以及减缓措施的资本成本和维护成本。

7 主要经验

最显著的经验是，需要精心规划采用的战略环境评价方法，使共同参与研究的其它专业人员和决策者能够理解相关概念。需要进一步努力建立可持续性问题和当前决策过程之间的联系，还需要做更多的工作。好的意图并不一定带来好的结果，除非所有参与者能够充分理解相关问题。

任何有关可持续发展的严谨分析都需要大量的数据，有些未必能在研究时限内收集到。此外，数据采集工具可能不完备。因此需要实际有效的途径，采用最佳可行的方法进行分析。同时，对于可持续性问题及相关政府影响，应该具备适当的空间分级体系。针对不同层次的可持续性问题，则需要进行与此相对应的、适当等级的 SEA 和 EIA。单项战略环境评价不可能解决所有复杂的可持续性问题。此外，同环境影响评价一样，如果没有严格的战略环境跟踪和审核机制，任何可持续性分析和战略环境评价注定只是纸上谈兵。

在香港，战略环境评价的应用已被证明是值得的。基于 SEA 在香港的实施经验，2004 年出版了《战略环境评价手册》（环境保护署，2004）。以下几个战略环境评价要素非常重要，可以普遍应用：

过程设计：根据实践经验，战略环境评价与环境影响评价过程明显不同，战略环境评价必须适合不同类型的政策和战略，考虑不同类型的决策制度和政治体制。不过，必须明确以下几个必要组成部分：

- 制定的SEA过程用来评价不同的政策或战略替代方案和响应方案对环境的影响,;
- 制定的过程应包括各种类型和层次的决策信息，适合政策和战略决策的类型和层次。
- 政策利益相关方和社会利益相关方应该参与 SEA 过程，就重要的战略环境问题进行有意义的、建设性的、广泛的讨论。

过程管理：与项目不同的是，战略与决策的制定涉及许多政策制定部门和政府部门，因此有必要进行客观系统的技术监督。为了确保主流评价程序的客观性不受其他决策因素的过分影响,确保最大程度的实现综合,有必要与主流政策制定适当的结合与综合。

利益相关方参与及公众参与：因为许多政策和战略高度敏感，并容易受到争议，因此，与项目环境影响评价相比，在 SEA 中实现利益相关方的参与和公众参与，说起来容易做起来难。在战略环境评价过程中，较晚的公众参与损害了战略环境评价的可信性，并导致缺乏重点。而太早参与则不会有足够的有价值信息和选择方案供来讨论。最理想的是，公众参与要根据不同的目的、并基于不同类型和程度的评价信息和成果，分成有意义的几个阶段。

表 5 香港战略环境评价

标准	是	部分	否	不知道	注释
法律基础		*			环境影响评价条例要求对规划范围超过二十公顷或超过 10 万人的发展规划进行环境评价。通过政府指令要求对战略或政策实施环境评价。
综合性	*				在规划决策过程中，经常充分考虑战略环境评价的成果，并将平价成果呈现给公众。
导则	*				对每个战略环境评价研究，环境保护署（环保署）发布了一份详尽的研究大纲，制定范围、方法、以及其他大量的具体指导。同时，还公布了过去的战略环境评价报告、案例和一本临时战略环境评价手册。
涵盖范围	*				涵盖所有涉及环境可持续性的重大问题。
分级	*				对 SEA 过程进行分级，促进对关键问题更为深入的研究
可持续发展	*				可持续性已经成为香港战略环境评价的焦点
替代方案	*				与经过论证的首选方案一样，需要考虑一切合理和可行的方案
筛选	*				环境影响评价条例规定，规划范围超过 20 公顷的发展规划必须进行评价
仔细研究	*				所有关系到可持续发展的问题都需要评估
预测/评估	*				在环境影响评价条例中规定的或认为适合某一特定研究的方法
附加的影响		*			累积性的影响需要加以解决，但对次要的社会经济影响没有规定
回顾	*				提交环境咨询理事会批准
缓解	*				需要缓解所有已知的不可接受的影响
监管	*				已经建立了监管机制，监督发展的影响，并跟进战略环境评价的建议。
咨询及公众参与	*				咨询环境咨询委员会，在政府网站上公开相关报告
决策	*				对发展战略以及交通运输策略已产生显着的影响，
成本及收益	*				在处理可能有重大影响的主要政策、战略或规划时，战略环境评估的效益高于成本，
环境质量	*				香港的环境质量已经得到保障，并将环境因素纳入其他政策，如交通运输
系统监管		*			对 SEA 系统的某些监管形式已经存在，但这方面需要做的更多

8 结论

表 5 简单归纳了香港战略环境评价的现状。《全港发展策略重研》(TDSR)中 SEA 的实践表明，战略环境评价已对决策者、公众及参与评价的相关机构长生了巨大效益。战略环境评价有利于建议舆论，要求对可持续性问题采取行动，明确决策者和公众所关注的关键领域，并极大地促进可持续发展。战略环境评价还可以为土地利用规划的跟进和回顾评价建立一个更为具体的框架。

有关各种开发和土地利用方案的环境后果，《全港发展策略重研》(TDSR)提供了一些简洁信息；同时也强调了以下几个方面的需要：（a）可持续交通战略；（b）与相邻地区相结合；（c）长期监测；（ d ）早期开展战略环境评价（概念化阶段）。认识到土地利用与交通规划的复杂关系，需要综合考虑两者，尽量减少行程，降低噪音缓解措施的成本，并鼓励环境友好型运输方式。同时，《全港发展策略重研》(TDSR)已经使决策者认识到，香港环境的可持续性正越来越多的受到全球和区域经济、跨境环境问题和全球环境问题的驱动。为了缩小地区和区域环境可持续性之间的差距，需要适当考虑区域合作以及战略环境评价期间确定的关键问题。香港的实施经验证实，有必要加强监管力度，以评估各种措施的有效性。目前面临的主要挑战是制定适当的程序和方法，建立早期舆论，对重大可持续性问题采取适当的政策响应，对重要决策的环境影响实现早期评估。。

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［本文观点代表作者本人观点，并不代表作者所在机构的观点。］

中国特定背景下的战略环境影响评价综述

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摘要：在追求经济增长、社会发展和环境保护相协调的过程中，中国面临重重困难。经济的高速增长破坏了中国 13 亿人口维持健康、幸福生活和赖以生存的环境基础。为了进一步实现环境的可持续性，中国于 2003 年正式采用规划和计划方面的战略环境评价（SEA）（指PEIA）。相关文献主要探讨了SEA的方法和法律程序。本文认为SEA是一个体系（目的、战略和手段），其有效性与其实施的大背景密切相关。基于原始数据和文献资料，本文分析了中国广阔的社会背景对PEIA实践形式和有效性的影响，批判性地回顾了PEIA的概念和最新的实践经验，指出了SEA现行体系不足以应对当前的严峻挑战。为加强包括战略层面在内的实践有效性，本文总结了中国特定背景下SEA体系的修正意见与建议。

关键字：中国 战略环境评价 有效性 目的 战略 方法 背景

1 中国的发展、环境与战略环境评价

如今，中国正以空前的速度摆脱贫穷和落后。数亿人口已经成功脱离贫困（刘 2007），但是快速的经济发展已经造成严重的环境恶化（Day 2005；经济 2004）。由此带来的挑战迫切需要将环境因素纳入发展决策，寻求更有效的环境管理体制，加强环境管理（OECP 2007）。正是在此背景下，战略环境评价（SEA）手段愈来愈受到中国的关注，而战略环境评价（SEA）已越来越多地用于环境政策融合、加强环境管理（Xiuzhen等，2002）。SEA是一种工具和过程，用于系统分析计划、规划和政策的潜在环境影响(Sadler和Verheem 1996；Thérivel等 1992) [i]。自 20 世纪 90 年代中期以来，SEA评估手段在发展中国家和发达国家都得到了快速发展和应用(Dalal-Clayton和Sadler 2005)。1998 年，中国国家环保总局(SEPA)和国务院环境与资源委员会(ENRC)也顺势开始起草环境影响评价法：“SEPA和ENRC推出本法的主旨是解决政策与规划制定过程中存在的以下问题，即没有评估政府行为的环境后果。”(Zhu和Ru 2007：5)。五年后，中国施行了《环境影响评价法》（NPC 2002）[3]，规定了一种类似SEA的程序：规划环境影响评价PEIA（在后文中，SEA指“国际实践”，而PEIA指“中国实践”，根据Tao等 2007）。

《环境影响评价法》于 2003 年生效，实践经验非常有限。然而，对环境政策手段这一新领域的学术讨论却愈演愈烈，相关议题主要集中在法律要求(Bao 等 2004；Lindhjem

[i] 后面将讨论到，SEA不再是一个简单的“工具”，而是一个概念框架，其概念和实践已经逐步具有更为广泛的功能。
[3] 诸多译本中，对其翻译有细微的差别。本文参照ACEE/SEPA的译本(2005 年 11 月)。朱达和茹江(2007)的文章中对中国SEA或PEA起源有全面的说明和分析。

等 2007；Wang 等 2003)、案例回顾和方法论(Bao 等 2004；Tao 等 2007；Xiuzhen 等 2002)等几个方面。根据有关 PEIA 的中文文献，Che 等 (2002，Zhu and Ru 2007：2 引用)指出“中国的 SEA 研究主要是针对 SEA 概念、理论和方法方面”。台湾的 SEA 研究也具有类似的情况(Liou 等 2006)。Tao 等(2007)从行业角度出发对 SEA 进行了深入分析，提到 SEA 在土地利用规划领域的应用，这是世界范围内 SEA 应用的传统领域。

在 20 世纪 90 年代初期，欧洲、美国和其他地区最初也采取相同的研究方式，重点进行制度和技术方面的研究（两个典型例子是 Sadler 1996；Thérivel 等 1992）。尽管前文提及的大部分学者，特别是包存宽等，（2004）罗列了中国 20 世纪 90 年代以来的大量“成功实施”的 PEIA 案例，但是中国的 PEIA 实践仍然刚刚起步。朱达 和茹英 (2007：1)谈到，在中国的特定背景下，“SEA 概念的改进、法定规划环评的动机和政策基础、当前有效实施规划环评的相关制度安排的意义等论题仍待进一步研究”。朱达 和茹英 (2007：1)的这篇论文通过分析《环境影响评价法》的政治和制度因素及其实施情况，标志着中国 PEIA 学术讨论的一个转变。这一转变与最近开展的相关讨论一致，如制度背景、熟知 SEA 相关组织机构及决策过程的必要性等问题的讨论，而这些讨论正是 20 世纪 90 年代后期以来 SEA 分析和研究的典型特征(James 等 2003； Brown 和 Thérivel 2000；Caratti 等 2004；Owens 等 2004；Partidario 2000；Wallington 等 2007)。

实际上，从项目 EIA 逐渐发展为早期的 SEA 思想以来， SEA 的深入分析和研究已发生了显著的改变(Thérivel 等 1992；Petts 1999；Sadler 1996)。结果出现了很多 SEA 方法和途径，但尤为重要的是，过去的 SEA 研究注重评估与评价的技术和推理领域，而目前逐渐包括了优秀管理经验、理性经验和社会经验等更多方面的内容。(Bina 2007；EC 2005；Vicente 和 Partidario 2006；世界银行 2005)。20 年的实践经验表明，充足的信息虽然必不可少，但仅有充足的信息不一定能够制定出合适的规划和决策(Jasanoff 和 Wynne 1998；In 't Veld 1999；Owens 等 2004)。然而，正是规划实施的背景条件，尤其是公认的有效管理手段，决定了规划及决策成果的优劣，因此，对相关背景和制度的研究日益受到关注；另外，朱达和茹英（2007）已经开始了中国这方面的研究。

本次研究的目的在于从一系列不同的角度分析中国的最新经验。虽然 SEA 在中国刚刚起步，但若想借此制定更加可持续性的规划，需要不断学习和适应新的观点与创新方法。因此，笔者设想从系统和特定背景的角度，分析 PEIA 的概念与实践，提出增强战略层面实践有效性的途径。本文包括以下五个部分：分析说明特定背景下的 SEA 系统；分析中国影响 PEIA 实践形式及其有效性的几个重要背景；评论迄今为止产生的 PEIA 概念及其实践；提出改进 PEIA 方法的几个要素，有助于中国实现具体目标。

本文的分析基于大量的资料。除了近期的相关文献，还包括 2005~2007 年间走访政府官员、学者和技术人员获得的原始资料，以及围绕SEA和中国环境挑战的相关研讨会（在中国举办）上专家的讨论资料[3]。上述走访资料，一部分是为了研究中国的环境管理能力，目前仍在进行；另一部分则用于分析中国交通部门实现SEA制度化的途径。为尊重保密承诺，所有调查都以代码形式表示：“CG”代表在中国政府机构工作的被访者，“A”代表学者，“I”代表非中国机构的被访者。被访者有来自交通部、SEPA、环境工程评估中心（ACEE）的高级官员，有来自交通（交通和经济规划）和环境（常被称为“设计院”或“研究所”）等政

府专门研究机构的技术专家，也有来自咨询界、学术界和国际组织的代表[4]。

1.1 特定背景下的 SEA 系统

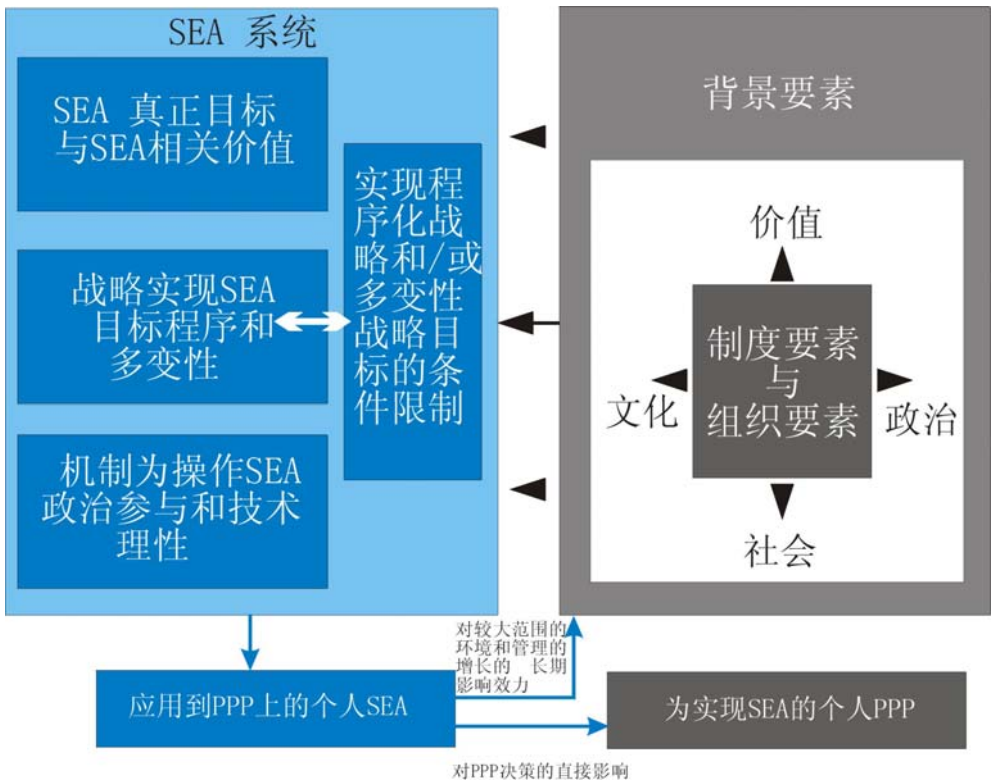

图 1　特定背景下的 SEA 系统

基于：Bina (2007) 和 Wallington et al. (2007)

任何关于分析体系的争论都是以有效性为核心(实践者的观点： Dalal-Clayton 和 Sadler 2005；Sadler 1996；世界银行 2005；理论上的讨论：Owens et al. 2004；Runhaar 和 Driessen 2007)。笔者将提到以下两种理念：传统的直接影响的观点和递增影响的观点。前者是指对接受评价的规划或政策制定产生的直接影响；而后者则是指思维模式、意识水平、组织机构的建立与推动规划实施的文化等各方面的递变。其中较为长期的影响是指 SEA 应用的广泛背景，是指环境管理的重要论题，这对中国而言至关重要。这些广泛背景（见图 1，右侧）：

‘包括决策过程中的组织机构和制度定位（制度与组织要素），他们本身位于特定的社会，并受其广泛的社会、文化和政治价值观的影响。（政治、社会、文化要素）’(Bina 2007：6；也可见 Hilding-Rydevik 和 Bjarnadóttir 2007)。

直接的影响和不断增加的影响相结合强调了 SEA 的战略性质。

将 SEA 概括为一个系统，这样就可以集中分析和研究 SEA 与其广泛的背景及其在环境管理中的潜在作用之间的相互影响，近期有关 SEA 的论文中也强调了这一点。 (Bina 2003；2007)。评价、规划过程都有其广泛的实施背景，而 SEA 的系统思想就是建立在对

评价、规划过程与其实施背景之间的相互关系不断认识的基础上(Audouin and Lochner 2000； Bina 2003；Partidario 2003)。笔者参照 Wallington(2007)等最近提出的理论框架，来说明 SEA 的系统层面。Wallington(2007)等通过三个必不可少的要素，将目前有关 SEA 理论的探讨及其基本假设组织起来，形成这一理论框架。这三个要素分别是：“与 SEA 有关的实质目标和价值，为实现该目标而选择的战略以及执行 SEA 的机制”（见图 1，左侧）。

第一个要素设置了总目标，是“长期以来在法律框架、规划背景和/或特定组织机构范围内规范 SEA 的主要原因” (Bina 2007：6)。这表明，该价值体系需要通过 SEA 实施才能得以肯定。Wallington 等(2007)将 SEA 的实质目标定义为“重获环境评价的初衷，通过将生态合理性引入管理系统来促进发展变化”。第二个要素是指有关以下几个方面的价值及其合理性的各种假设：政策和规划制定、决策背景的结构特征以及 SEA 本身(Wallington 等 2007)。 Wallington 等(2007：7)在一系列可能的战略决策中提出了两种极端情况：程序化战略和多变性战略。前者将 SEA 作为一个系统合理的过程，设法影响具体政策、规划或计划的制定；相反，后者，将 SEA 作为目的明确地政治过程，试图改变决策方式，从而激发相关机构和人员了解各项制度、相关机构和社会内部隐含的环境价值。”第二个要素与 SEA 的特定背景密切相关：SEA 的体系受特定背景的影响，同时它也能影响其概念形成和赖以实施的特定背景（见图 1）。最后，第三个要素与实现 SEA 的机制和手段有关。Owens 等(2004)和 Wallington 等(2007)指出， SEA 的方法和工具是一组成份复杂的方法体系，包括行政手段、对话方法和参与性方法，以及更多的传统技术手段和推理手段。两篇文章都建议， SEA 的相关机构和人员应当最大程度的发挥政治手段和技术手段的协同作用(Wallington 等 2007：10)。由于最合适的方法经常会综合上述两种方法体系，因此要避免使争论和实践出现两极分化。总之，这三个要素体现了 SEA 的系统性与战略性特征。

评价、规划与其背景之间的关系极为重要，是 SEA 系统的基础并影响 SEA 系统，但对此却鲜有明确地说明。Wallington 等 (2007)的战略概念改变了这种状况，使它们的关系处于 SEA 理论的核心地位。新的战略概念在为什么提出 SEA（目的）和如何去做之间引入中间步骤，而传统上的解释则较为狭隘，相对更加侧重方法与技术方面。Wallington 等(2007)的框架中，分两步回答了“如何去做”的问题：战略和机制。前文所述的两种类型的战略是关于评价、规划与其背景关系的两种主要的形式：a）程序化战略，其背景是 SEA 战略适用的一组边界条件；b）多变性战略，其背景是 SEA 战略试图达到的目标。战略观点强调 SEA 的特定背景，鼓励 SEA 的实践者和学者考虑并定义上述关系，从而使 SEA 最大可能的发挥潜力，不管改善环境管理(Bina 2007； Hilding-Rydevik 和 Bjarnadóttir 2007)。同时，它具有长期的有效性。

1.2 挑战还是机遇？

根据以上的概念框架，笔者开始研究更为广泛的背景，包括紧密相关的四个方面（图 1）：影响“制度要素”和“组织要素”的“社会政治要素”和“文化要素”，相反，“制度要素和”组织要素也会影响“社会政治”和“文化要素”。表 1 和表 2 总结了有关广泛背景的内容，其中包括与PEIA相关的受访者提供的信息、文献中强调的部分以及笔者本人

根据研讨会内容所作的分析总结[5]。

表 1　PEIA 背景的重要因素：政治与环境

政治与环境	关键因素描述
发展与环境之间的矛盾	• 资源消耗、污染、长期或不可逆的损害破坏正影响着中国全部重要的资源基础(实例见：CCICED 2005；Crawford 等 2006；Day 2005；经济 2004；Liu 和 Diamond 2005；世界银行 1997；世界观察研究所 2006)。 • 经济的快速发展是其主要原因： o 数亿人口脱贫的需要。 o 发展、合理性与当前专制政体的未来三者间的关系(Liu 2007；Pei 2006)。 • 政府和谐社会政策的目标不易调和：和谐社会旨在储存能源、减少能源消耗和污染的同时，利用有效快速的经济增长来缩小贫富差距(Hua 2007)。然而，快速的经济发展必将增加原本已经严重的环境压力和 PEIA 人员在规划阶段遇到的主要风险。
中央政府不断变化的发展政策	• 国家领导人提出 2006 年国家发展模式新议程：效率将替代速度作为优先指标(胡锦涛总书记，新华社，2006)。 • 效率和“科学的发展观”推动了国家的现代化进程(人民日报 2004)。 • 目前正在讨论循环经济法。概念：充分有效地利用资源和废物排放的最小化，通过 3-R 原则：减量化、再利用与再循环，带来能源的低消耗、污染物的低排放和高效率（新华社 2006a)。 但是： • 政府执行政策的能力不强(Liu 2007；Pei 2006). • 难以解决的问题：中央政府对于省市级政府的调控权力有限(OECD 2007) • 将 PEIA 政策整合到省或当地规划方面存在很多问题。(CG1-CG6, CG8, CG9, CG11)
环境识别方式和环境政策缺陷	• 从将环境问题作为外部因素的传统观点转变为主动进行环境管理，强调： o 潜在的经济和财政利益 o 对确立更好的管理与可持续发展实践的贡献(Michalak 2005)。 • “环境保护”的定义由“是科学和技术问题发展为综合考虑社会和政治因素的问题” (Child 等 2007 出版)。 但是： • 环境观念的改变缓慢。 • SEPA 副局长潘岳 (潘 2007)仍在关注：“在中国，环境问题总是被看作是孤立的…，在环境保护与经济发展发生冲突时，国家尚未有系统的政策框架，也没有确立思考的途经”。

发展优先和环境之间的矛盾（尽管出台了新章程，发展却仍然很强势），加之环境政

[5]特别是在研究交通相关行业SEA/PEIA制度化的过程中出现的背景。

策与执行手段的软弱，为PEIA带来了极大的挑战。交通行业的受访者和环境专家（CG1-CG6, CG8, CG9, CG11）认为，环保本身就应该是一个“行业”，而不是经济增长的一个要素。尽管很多人认为，“十一五”规划开始强调节能和环境保护并以此作为行业发展的优先考虑点，但经济发展依然为先，当前的PEIA也不可能改变这一点。一位资深的交通专家（CG19）说：“新的优先政策固然很重要，但是不可能与经济增长同等重要”[6]。《国务院交通发展导则》提出了 2020 年各种交通方式的增长目标。在讨论《国务院交通发展导则》过程中，受访者(CG13-15)解释说，规划开始时，要说明如何满足经济增长的要求，如何实现能源节约目标和控制大气污染；但“有时环境保护要为经济发展让步”。他们认为有必要“将环境问题作为议程的首要问题”，从而在五年规划等规划过程中，将环境问题与解决方法综合考虑在内。

表 2 总结了影响 PEIA 有效性的另外三个背景。尤其是合作的质量，作为可持续和环境管理的核心(Jordan 和 Lenschow 2008)影响 SEA/PEIA 的实践(Caratti 等 2004；Owens 等 2004；Vicente 和 Partidario 2006)。受访者表示，合作质量也会直接影响 PEIA 在中国的有效实施。

这些背景因素是如何影响 PEIA 的呢(参照 Wallington 等的‘程序化战略’思想)？PEIA 的运作能够影响背景、推动政策整合及环境管理的水平吗（‘多变性战略’）？如果没有协调与合作，各 PEIA 过程很可能沿平行的轨迹发展，从而导致资源浪费，并限制了影响规划制定的能力，即众所周知的“低效”问题(Weiss, 引自：Owens 等 2004)。然而，与系统、战略和有效性的概念一致，所有这六个背景不仅带来了挑战也会带来机遇。PEIA 可能会为以下几个问题提供讨论平台：GDP 增长作为支配性的指标衡量经济、社会与环境的平衡遭到质疑；经济发展与环境保护相协调的理念遭到挑战(CA2, CA3)；规划（发展）先行、评价（减缓不必要的影响）紧随其后的基本思路被过程整合取代；随着 PEIA 的不断实施，进一步加强协调与合作。

2 中国的 SEA 理念与实践：规划 PEIA

当前的 SEA 实践的优势和劣势，部分回答了“背景是挑战还是机会”的问题。笔者借助于 SEA 文献中有启迪作用的、重点关注的中国 PEIA 体系的三个方面，对上述观点进行判断与分析： 1）评价的目标和概念，2）过程质量：时间安排、替代方案和公众参与，3）方法和不确定性。

2.1 评价的目标和概念

《环境影响评价法》(NPC 2002)第一条将“目标”定义为：

“实现可持续发展战略，预防规划和建设项目实施对环境的负面影响，推动经济、社会和环境的和谐发展”。

因此，PEIA 和 EIA 旨在通过三大支柱的协作、防止负面影响，促进实现可持续发展。如前所述，此举顺应国际趋势(Sadle 等 2008)，与中国的政治和制度背景密切相关。

然而，PEIA 目标的设定通常与 Bao 等(2004：29)的片面阐述相类似：“SEA 的目标

[6]直接引自采访资料的用“…”标记，引自出版物的用‘…’标记。

是防止和减缓政策规划带来的环境负面影响，从源头上控制环境恶化现象”。该观点强调了条款 1 的一个方面：预防影响。通过对迄今为止的实践经验进行分析（例如，Tao 等 2007；Liou 等 2006）证实上述观点；同时在 2005~2007 年间笔者走访的大多数实践者(除了 CG9, CG34)对此也表示赞同。但是预防影响（并协调社会经济与环境利益的关系）是实现最终目标的手段，并不能代表实质目标(Wallington 等 2007)。目标设定的不准确性影响了 PEIA 有效性的表述：

PEIA 的有效性只与对决策过程的直接影响有关；忽视了协调能力与环境管理能力的不断提高（与图 1 比较）。通常是以下几个方面的增量改善发挥了主导作用：

比如用于随后一系列决策过程的更多想法或者新的思路；或对过程产生的影响，不包括 EA 过程(Runhaar 和 Driessen 2007：3)。该作用在 PEIA 的广泛背景中尤其重要。

表 2　PEIA 背景的重要因素：制度、组织和参与者

机构、组织和参与者	关键因素描述
低水平的协调性和透明度	• 有关机构之间合作与协调的相关规章与文化（行业之间，比如土地利用和交通；环境与重要的发展机构之间）不利于形成良好的工作关系(Michalak 2005)。 • 一般情况下，“政府部门不能相互要求…官僚文化抵制了部门间的合作(I11)”. • 大多数受访者认为部门间协调不够是主要问题(CG8, CG9, I11, I6)：“促使人们交流是困难的”。 • 规划的文化和社会政治背景为透明度和争论留有较少的空间，限制了信息的流通以及共同理解问题、解决问题的机会，这对 SEA 的有效实施至关重要。(Owens 等 2004； Runhaar 和 Driessen 2007；Vicente 和 Partidario 2006)。 • 严格的等级结构，加上文化和制度的影响，将技术专家、官员和高级领导人分离开来，限制了由顶层到底层散布信息的数量和质量。结果导致不能全面地了解问题背景，从中找到实现可持续性的解决办法。
缺乏清晰的任务和责任	• 通过回顾和审批规划环境评价报告可以看出，环评法对环境机构的责任表述不明确(比如 SEPA, EPBs 和 ACEE (Bao 等 2004； Wang 等 2003))。 • 责任不明确影响了当前的实践。 • 环境机构强制执行 PEIA 和责令遵守环评报告的能力有限(CG9、CG23、CG34)。 • 负责执行 PEIA 的实施机构和人员不明确(CG3、CG18、CG23)。
指派建设项目环境影响评价研究机构进行 PEIA	• 已有资质进行项目环评的机构作为技术部门执行 PEIA (Zhu 和 Ru 2007)。 这种选择方式的优势： • 重要的经验。 • 现有的工作网络。 • 丰富的技术、科学和专业知识。 • 机构特征保证对 PEIA 的独立性和透明度。

	劣势： • 与几家此类机构的负责人(CG3、CG9、CG18、CG20、CG22、CG23)探讨得知，这种制度连续性将导致 PEIA 的狭隘阐述，本质上是 EIA 的一种延伸。 • 偏爱自然科学与工程的有资质的研究机构不适合解决战略和可持续性问题，损害了 PEIA 的效果。需要更多的技能（特别是在社会科学方面）。 • 外部机构阻碍了整合（规划和评价）的进程，没有从内部从内部的经验中受益。 • 机构与决策者的联系贫乏。 • EIA 专家很少有机会和规划部门一起参与、分析和公开讨论战略方案：大部分专家解释道，他们主要致力于通过技术途径寻找解决环境问题的方法(CG9、CG18、CG20、CG22、CG23、CG34)。

《环境影响评价法》其他部分阐释了中国相关实践人员只关注负面影响的原因。条款 1 列出了 PEIA 的目标，而环评法第 1 章（“总论”）和第 2 章（“规划环境影响评价”）内容则解释了评价本身的概念，揭示了项目环评传统概念的相关要素：理性客观的论述和影响评价思想。评价是指对规划（第 7 条）、项目 以及对策与措施的“潜在环境影响的分析、预测和评价”，其中，对策与措施用于预防或减缓负面影响（第 2 条）；其目的在于提供“客观、公开、公平”的信息，从而“为制定决策提供科学的依据” （第 4 条）。因此，环评法支持以传统预测和评价观点为中心的评价思想，寻求防止、减缓和补偿措施。

以上内容与有效实施 SEA 的原则形成了对比（例如：IAIA 2002）。一旦所有方法都试过之后，包括制定目标与替代方案在内，防止和减缓环境恶化应被看作是最后的解决方法。有必要努力实现许多国家公认的客观性和公正性。然而，除了强调目标的实现，也要考虑其局限性；同时有必要平衡理性与权利的关系，既要重视资料的搜集，也要考虑其价值，并承认战略性评价具有不可避免的不确定性(Hildén 等 2004；Owens 等 2004；Sadler 等 2008；Vicente 和 Partidario 2006)。中国早期参预 PEIA 的专家和实践人员逐步认识到上述需要和困难(CG9、CG22、CG23、CG34、CG35、I5 ——见下文方法和工具部分)。

在关于 PEIA 的论述中普遍存在一条有趣的线索，通过影响评价思想，可能有利于改进实现可持续性的总体目标。相关学者(Bao 等 2004；Zhu 和 Ru 2007)和受访者特别关注累积影响。一位 SEPA 的高级官员(CG8)解释，EIA 并没有有效地“保护环境”和“控制总量排放”，目前有必要“计算区域污染物总量”(CG8)。对空间区域内累积影响的关注（如流域或行政区）反映了中国对有限的、快速消耗的自然资源基础的忧虑。相应地，2003 年 8 月发行了第一份 PEIA 导则，即《规划与计划环境影响评价技术导则》（SEPA2003），指出需要结合地理与行政要素来说明有待评价的地域范围，并强调考虑“生态敏感区生境”的必要性。该导则的很多部分直接或间接提到了生态可持续性及承载力的概念。

《学习时报》是一份由中共中央党校主办的颇具影响力的出版物，潘岳在该刊物上指出，“我们需要实施能够设定区域环境容量的环境评价…保证经济发展不超过环境容量”（引自：The Peninsula Quatar 2007）。对中国有限资源的关注是中国生态研究的核心内容(经济 2004；Liu 和 Diamond 2005)，潘岳也再三地将其与 PEIA 联系起来。2005 年，他明

确指出，在中国实施 SEA 必须关注以下几个问题：

“执行 SEA，更加严肃地对待自然资源基础以及基于该基础的需求涵义；

作为环评的一部分，SEA应该致力于实现循环经济[8]；

SEA 应保证环境政策整合和行业间协调；

SEA 应考虑累积影响；

SEA 应考虑社会影响；

SEA 应考虑间接影响；

SEA 提升了公众参与的重要性和实践”（附加强调）。

以上几个方面有助于诠释立法并指导其实施。基于此，笔者根据中国 2002 年环评法中实施可持续发展的目标表述，认为可以更加明确的设定中国 PEIA 体系的实质性目标，比如循环经济概念和总体上维持中国自然资源基础（目标）。笔者还认为，PEIA 可以致力于保护生态系统的承载能力，改进生态足迹的概念(方法)。最后，还可从苏格兰的 SEA 制度中汲取重要经验，强调环境公平(Jackson 和 Illsley 2007)中借鉴经验。如果中国贫富差距（家庭收入不平等的基尼系数从 1988 年到 1995 年增加了 7 个百分点）和城乡收入差距进一步加大（目前的比率：3：1），实现环境公平就可能成为 PEIA 的一个重要目标。

2.2 过程质量：时间安排、替代方案和公众参与

时间安排最能说明以上的评论。很多 SEA 相关文献建议尽可能早的实施规划环评，与规划编制过程密切联系(例如：Caratti 等 2004；EC 2005；Partidario 2000)。在完成规划草案（即使仅是初稿）之后再进行 SEA 相当于没有进行战略评价(Bina 2007)。如前所述，SEA 的实质是改进规划过程、加强环境管理、确保环境政策体现发展的思想，这也符合潘岳的期望。

除了前面所述的评估概念，问题在于法律要求。一方面，《环境影响评价法》第七条规定土地利用总体规划等几类规划“应在规划编制阶段实施” PEIA(Tao 等 2007：252)。然而，对于其他类型的规划，《环境影响评价法》规定其 PEIA 应在“草案完成之后，提交评论和审批之前”进行(Tao 等 2007：表 1)。在实际操作中，这种规定的差别毫无意义，受访者指出几乎所有 PEIA 都是在规划草案编制完成时才开始(CG3、CG9、CG23、CG34)。此外，专家指出，在当前文化、政治和制度背景下，不可能在规划草案完成前实施 PEIA。个别案例除外，这些案例可能符合主导的政治思想(CG9、CG34)。

在中国，如果将环境承载力视为 PEIA 潜在的重点内容，那么，环境承载力在以下两种应用方式中具有明显差异：将其视为信息，纳入土地利用类别的定义和分配以及其它概念中；将其作为评估标准，用来评价规划中建议的行为可能产生的负面影响。但 Tao 等(2007:260)的有关土地利用总体规划的分析证实了 PEIA 的滞后性及其对战略性评价的第二个显著特性的影响（战略性评价的第二个显著特性是指其有助于对替代方案进行讨论）：

[7] 来自绿色中国论坛（2005）。通过对一家SEA研究机构的受访者的中文文章翻译而成。注意中国文本使用SEA而不是规划EA。

[8] 循环经济法律草案计划于 2007 年 8 月上报全国人大常委会讨论（‘中国循环经济法草案’http://english.people.com.cn/200611/16/eng20061116_321892.html, 2006 年 11 月 6 日）。

“假定 SEA 在规划草案编制完成之后才开始，环境现状识别和环境影响分析会与规划筹备过程脱离，因此几乎不可能进行替代方案的比较。如果规划过程中的重要决策制定以后才实施 SEA，将很难显著地影响规划”。

这对交通行业也同样适用，PEIA 局限于对预定交通运输方案的替代线路进行讨论：可以讨论应该避免的敏感区和减缓措施，但不能对战略性选择提供建议，比如选择特定的交通运输模式、以基础设施建设替代需求管理等战略选择(CG13、CG20、CG22、CG23、CG40、CG41)。

更广泛的背景带来了更多的问题。政府由上至下的决策方法以及普遍缺乏透明度（见上文）限制了信息公开的范围以及规划、评价过程中的公众参与。尽管在某种程度上已经正视基层的诉求，但标准的五年规划等实质上还是由上到下的宏观目标，这严重限制了地方政府规划和决策的权利(CG2, CG12)。这意味着以目标为主导的方法不能有效实施 SEA，而实际上在中国也很少用到这种方法（见下文）。比如在交通行业，省级行政部门被告知拟建基础设施的长度(CG5)，减少替代方案的范围，从而进行适当的、有意义的讨论。这些原因与前面分析的“组织和参与者”要素共同表明，为什么即使 PEIA 早期介入，其分析可持续发展目标和解决方案的能力也经常会受到限制。

环评法第 11 条（2002）提出举办“专家论证会和公众听证会”的必要性，邀请他们针对结果给出“认真”的考虑，并解释采纳或不采纳的理由。朱达和茹英 (2007：7-8)认为“中国的法律法规还必须为有效的公众参与设立三个先决条件：信息的可达性、决策过程的公众参与和公平性”。时间安排在这里仍是问题。根据当前的项目EIA实践，公众咨询常常出现在EIA的后期，若影响决策，也只是通过减缓措施来实现。迄今为止，为数不多的PEIA实践也是如此(CG23、CG28) [9] 。即使以上问题不是很经常出现，偏爱由上到下的指令方式，“训诫”公众需要保护环境而不是告知公众 “环境问题与其解决方案”、创造对话空间(Michalak 2005：522-523)， 这仍然是有效实施PEIA的障碍。

潘岳(Xie 2007)坚决维护公众了解、参与和监督环境事务的权利。他承诺出台新的立法加强公众参与力度，指出“解决中国严峻环境问题的最终动力来自于公众”，公众应“充分行使他们的权利…真正深入参与到环境保护的战斗中” (Xie 2007)。因此，SEPA 希望公众能够支持政府从盲目的追求增长模式转变为更加合理的发展模式——前文总结了这两个政策的转换。为此，SEPA 建议实施《环境信息公开办法（试行）》（预计 2008 年 5 月生效），要求官员公布大气和水环境质量、污染泄露信息和违规者的姓名及其违规行为(路透社 2007)。此外， SEPA 于 2006 年颁发了一系列关于项目 EIA 的公众参与导则（政府网 2006），并保证通过导则建立发布环境信息的综合系统，制定较为详细参与步骤，确保公众参与的有效性。

然而，总的说来， PEIA 的质量缺乏有效实施的三个基础标准(IAIA 2002)，同时几个方面的背景抑制了 PEIA 的发展。许多国家有着相似的经验，并已经用了十年的时间普及这三个标准（若还未实践，见：Sadler 等 2008）。但是除非改善中国的 PEIA 过程， PEIA 才有可能实现相关目标。《环境影响评价法》第 1 条对 PEIA 目标进行了规定，潘岳对此

[9] 此问题在 2006 年 4 月 3 日~6 日中国贵阳举办的为期两天的EIA和SEA公众参与培训上得到广泛认同。
[10] 2006 年 4 月 3 日~6 日在中国贵阳举办的为期两天的EIA和SEA公众参与培训课中广泛承认了该问题。

有进一步的阐述（见上文）。

2.3 方法和不确定性

已经对 PEIA 的目的和过程进行了详细分析，笔者将进一步讨论 SEA 体系的最后一个部分：方法体系，这也是迄今为止 PEIA 系统中最受学者关注的一部分(Bao 等 2004；Tao 等 2007；Xiuzhen 等 2002)。笔者将根据 PEIA 的背景条件讨论这个问题。在前文提到的几个问题中，多数都能影响方法的选择，其中两个方面的影响特别显著：强调“评价”概念的“技术”和“推理”方面，实施 PEIA 的 EIA 研究机构进一步证实了这一点。文献和实地调查数据显示，没有清除的理解 EIA 和 PEIA 之间的差别。同样，这在欧洲 20 世纪 90 年代的相关实践者中也很普遍。尽管规划 EIA 属于中国的 SEA 体系，但对解决环境问题似乎无所助益。

当被问及目前执行 PEIA 过程中面临的最大的挑战时，来自研究机构的专家(CG18、CG20、CG24)对实施技术和方法的确定表示困惑，并略表歉意地承认他们“通常按照 EIA 的标准实施 SEA”。尤其是在确定 PEIA 实施范围时做出的决定提出了 PEIA 的最大挑战：“旨在达到多大的分析深度…EIA 非常具体和详细…包括大气和噪声污染…PEIA 的层次更高”，要求考虑更多的项目、更多问题，关注“范围更广”。来自交通部门的一位高级官员(CG3)认为规划中的“不确定性”，即难于充分了解可能的项目、掌握足够的“基础资料”实现“量化”，使得 PEIA 变得“非常困难”。另一位专家(CG18)解释“有必要了解在 PEIA 中如何定量分析生态环境影响和其他外部因素”，同时他们“也缺乏进行经济研究分析的机能”。

有关学者提出战略评价的实质和理解和实施PEIA的途径之间存在着差别。SEA要求专家优先考虑战略问题，降低复杂性，突出进行规划决策的关键因素。若达到以上要求，需要规划人员和环境人员的紧密配合，如前文所述，这在中国当前背景下是难以实现的。因此，专家们努力将项目EIA的概念用于规划草案，但存在数据的有限性和规划固有的不确定性等问题。许多受访者担心PEIA(SEA实例)不够详细，将其视为“EIA的简单描述”(CG23)。许多注册环境评价师的理工科背景使其难以接受半定量化方法（例如用简单的符号矩阵表示趋势而不是变化），即使保证这些做法已在国际上普遍采用也不能减少他们的疑虑[10] 。这就是当今战略层次评价面临的挑战所在。台湾SEA经验说明了类似的困难：对评价方法不熟悉，特别是现存的“行政框架”与SEA的执行条件不相容等很多问题(Liou等2006：174)。绝大多数行政部门和专家在从EIA到SEA的过渡初期都要面对此类问题。

分析结果表明，应该努力简化战略评价并优先考虑，从而将更多的细节问题留给项目 EIA。目前，PEIA 的滞后性表明使其分析水平接近项目 EIA。国家环保总局已经认识到由此产生的问题。SEA 两方面的经验可能会促使评价更加关注战略性的问题和建议，至少可以增强 SEA 实践的直接影响（与图 1 比较）：以目标为主导的方法(Sheate 等 2007)、技术推理方法与参与性方法之间的平衡。

全球普遍认同面向目标的 SEAs 的合理性，一系列环境可持续目标推动评估的实施，有助于集中分析、减少定量化的必要、获取合理的结果（台湾有丰富的经验：Liou 等 2006）。有专家(CG22)认为：“目标和环境标准是至关重要的”，但是却指出定量的困难及其量化的

[10] 对方法和定量方法有效性的讨论是我在 2005~2007 年间参加的会议、访问、研讨会和培训的不变议题。

默认需要："谁来设定目标和环境标准？…是的，我们能够采用立法和声明中的目标和标准，但其中有一些非常含糊——如何量化他们呢？"。面向目标的方法也取决于对"宏观环境政策框架"的了解，这是 SEPA 力求通过培训填补的另一个主要缺口(CG9)。以目标为主导的方法包括环境优先与行业优先之间的政策一致性评估；并系统评估规划议案对环境目标的影响，从而提高 PEIA 结果的政策相关性。突出目标同样有助于进行累积影响评价、承载力研究和足迹分析（在 PEIA 目的中提到），而足迹分析能够促进影响因子的选择。此外，所有这些方法都能利用（虽然细节各异）敏感度和脆弱度图谱和因果关系流程图中的关联性。(Sheate 等 2007)

最终，通过以下材料证明需要更多的运用公众参与机制。规划及其涉及环境、社会和经济价值的对话与交流(Caratti 等 2004)。Vicente 和 Partidario (2006：697)指出"SEA 必须正确传达环境价值信息，从而实现决策的核心目的"。换句话说，目的是为了不掉入上述的"低效"的陷阱。主要是由于战略性抉择的不确定性，通过日益复杂的定量分析几乎不能解决"低效"问题。即使在在累积影响评价或环境承载力分析中，也必须包括价值判断（比如什么是危险的，什么需要计算等），也要求对紧迫的目标和价值进行讨论，并协调数据与讨论之间关系。研讨会、例会和联合特别工作组均有助于更好的理解世界观和局限性，有利于推动中长期的学习，有助于合作与透明度的增量改善(Bina 2003；Runhaar 和 Driessen 2007；世界银行 2005)。而前文中已经强调指出，相互合作和透明度问题是严峻的背景挑战。

较好地综合技术和推理等方法，促进各机构部门之间的对话、协调与合作是 SEA 的核心问题(Owens 等 2004；Vicente 和 Partidario 2006)，也将影响着 PEIA 的未来。

3 结论：面向特定背景下的 SEA 体系

3.1 抓住机遇

中国的 PEIA 在环境迅速恶化和经济持续高速发展的激烈矛盾中开展。基于对其概念、实践、运作背景的回顾性分析，笔者认为，当前的体系并没有按照条款 1 的要求实现可持续发展目标、并协调环境、社会和经济的关系，也没有实现潘岳提出的六点期望：1）对于中国有限的资源，只能缓解或者防止损耗，但不能将其作为发展概念的主要信息，2）追求能源低消耗、污染物低排放、废弃物的减量化和高效率，虽然多数只从技术角度考虑，基本不从预防的角度出发，3）环境政策整合的需要仍存在缺口，4）行业间的良好协作有待时日，5）需要进一步考虑发展的社会影响及其累积影响，但仍有前进空间 6）认识到提升公众参与的重要性，但是在实际操作中却很少有效实施。

首先，SEA是一个机遇，有助于帮助政府面临 20 世纪 70 年代以来国际范围内不断提出、而在中国背景下确实存在的严重挑战[11]，包括一系列复杂但差别不大的障碍，与文化、政治、社会以及其中运作的制度和机构等密切相关。 要解决这些障碍问题，只靠好的甚至完美的评价程序和方法是不够的。需要引入PEIA等新的机制，同时要求立法、导则、培

[11]包括：抛弃将环境与政治隔离开的思想(WCED 1987：313)；强调环境是经济政策的一部分而不是一个项目(世界银行发展委员会, in：Noble 2002：4)；通过部门和程序的综合议题，推动决策制定、决策者和评价规划工具的需求(21 世纪联合国环境与发展大会议程第 8 章和第 10 章)

训和现有行政程序的改进，所有这些都要利用有限的财力和人力资源。因此，有必要实现“机遇”最大化，笔者认为，特定背景系统的定义可能就是实现“机遇”最大化的有效途径，特别是在讨论新的EIA规定之时(AC1)。同时，该定义也有助于判别PEIA与项目EIA的不同之处(Bina 2007)。PEIA用于规划而非项目的事实并不能从根本上说明两者的差异，当前的相关目标、程序和方法几乎没有对该问题作进一步地分析。

基于本文分析的理论与经验结果，图 2 概括了可能适用于中国的 SEA 系统。在关于目标、程序和方法的论述中，笔者提出许多改进部分，可能会增强现有体系有效性（见表 3）。最后，笔者分析了特定背景下 SEA 系统框架的最后一个要素：SEA 战略。论文通篇谈论中国的 PEIA 实践，它不仅符合法律，也符合分析中提到的对评价目的和概念的片面阐释。随后，笔者建议建立特定背景系统，试图使中国的实践更多地面向战略评价。因此，此后笔者将运用 SEA 这个术语。

3.2 SEA 战略的组成要素

清晰地表达评价体系的目标（见上文）涉及到“为什么”的问题。下一步就是

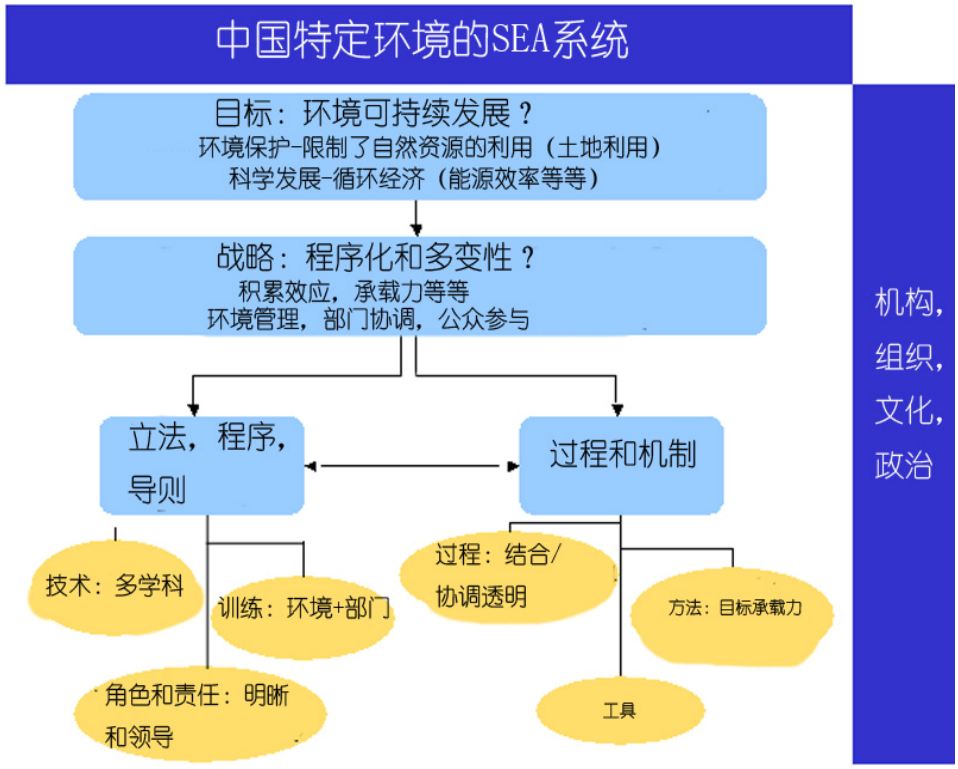

图 2　特定背景 SEA 体系的因素

来源：作者

定义战略来解决“如何”运作 SEA 的问题，明确 SEA 的作用，解决规划、决策和背景中出现的挑战，为法律、导则、培训的定义设定了边界，并提出了程序和方法的细节（图 2）。

除非从根本上修订当前的 PEIA 战略，否则上述实质目标就仅仅变成了一种期望而已。目前，PEIA 被程序化的战略驱动（图 1），将影响评价片面解释为技术推理方法，识别对环境可能的负面影响，并且在争论不休的背景中实施。其中，经济增长是规划的首要内容，而环境部分则是或多或少的有所改变。环境影响信息的缺乏与不完整是规划破坏环境的主要原因。此类战略与作为边界条件的广泛背景密切相关，进一步确定了在背景和实践的回顾部分涉及的部分困难。

如果中国的 SEA 具有更加战略性的目标，有必要修订“评价”概念。来自 SEPA 和 ACEE 的受访者提出 SEA 期望达到的效果：

- *主要通过对具有生态一致性的地理区域中(特别是拟建不同大坝建设项目的流域)多个项目累积影响评价来推动技术革新（短期）。*
- *推动基础制度的改善（长期），权力机构借此将环境纳入规划过程。*

通过走访 SEPA 和一些研究机构，结果表明，上述期望目标要求尽可能全面的解释中国法律，尽管知道相关实践需要很长时间才能赶上去（事实上，国际范围内对这些问题的理解也花了十几年的时间）。

基于此，努力将程序要素和多变的要素结合起来，发展 SEA 战略似乎合情合理(比较：Wallington 等 2007)。笔者先前提到程式化的因素(见表 3 的总结)。现在，将重点分析多变性要素，可以促进 PEIA 向战略评价和更为显著的有效性标准转变（正如本文的理解）。作为 SEA 的长远目标（除了 PPP 本身），多变性战略在广泛背景下分析环境管理的弱点。中国类似的 SEA 战略作为政策转换

表 3　中国特定背景下 SEA 体系的建议总结

系统要素 (如图 2)
• 中国特定系统的有关建议
目的
• 根据中国 2002 年环评法中实施可持续发展的目标表述，认为可以更加明确的设定中国 PEIA 体系的实质性目标，比如循环经济概念和总体上维持中国自然资源基础（目标）
多变性战略
• SEA 作为政策转变工具；
• SEA 作为组织和社会经验的贡献者；
• SEA 作为加强部门合作、发展机构与环境机构合作的手段；
• SEA 作为民主决策的方法；
• 考虑使 NDRC 和 DRC 支持 SEA,从而使其发挥必要的政治杠杆作用，提高 SEA 有效性。
立法、程序和导则
立法
• 修订条款 1, 区别实质目标（目标）及实现目标的方法，尽量明确目标；
• 确保所有 SEA 开始于规划初期：责令 SEA 早期介入；
• 加强发展机构与环境机构间的协调与协商（从确定范围阶段开始）；
• 改进公众参与的质量和适时性；

• 见 Zhu 和 Ru 2007 更多详细介绍。
技能和培训 • 急需为社会科学人员补充自然科学知识和技术背景资料； • 考虑政府支持对各行业部门员工进行 SEA 重要性培训(现如今参与者还是很有限)。
角色和责任 • 由于现有政策针对有资质的 EIA 研究机构, 应考虑任命来自行业机构的 SEA 负责人或支持者负责规划审查工作： o 支持者可保证规划与 SEA 的紧密联系，并使学习机会最大化 o 有助于强化规划部门的评价态度，防止角色与责任的混淆
过程和方法
过程 • 责令较早地开展 SEA； • 促进规划与评价的紧密结合（见实例：EC 2005），特别要依据问题、目标、替代方案的解释以及实际效果； • 在问题、目标、替代方案的确定以及实际评估期间，推动行业间以及发展机构与环境机构间的协调与协商； • 要求从环境可持续角度考虑和讨论替代方案,注重根据 SEA 目标需要优先考虑的问题。（这里指维持自然资源基础和促进环境公平）； • 鼓励在目标和替代方案确定期间进行系统咨询和公众参与，讨论评估结果。
方法 • 拓宽评价所用的方法和工具体系(协调技术推理方法和参与性手段之间的关系)； • 提倡目标导向性方法(使其与累积影响和环境承载力分析相联系)； • 编制导则指导如何根据有限的可用数据和现有资源进行环境承载力分析； • 加强现有的评价实践工作之间协同增效作用，更好地理解问题和可能解决方案（例如，PEIA 框架外正在进行的行业分析和经济社会评估）； • 进行宏观环境政策培训(特别对于行业部门的员工)； • 建立合理存取基线数据的政策（如果不是免费的）。

来源：作者

机制，可以确保宏观环境政策概念在行业机构的参与者中广泛普及，促进对环境理解的转变。对环境的理解不再局限于技术方面，还包括社会、政治因素。通过 SEA 战略的反复实施，也可以推动组织和社会经验，从而使 SEA 能够用于质疑当前盛行的“发展优先”的观点，推动大家思考对社会及其自然资源基础的长期影响。另外，多变性战略可以推动新的合作文化，包括行业之间以及发展机构与环境机构之间的协作，促进高层管理者与技术性较强的专家机构之间的信息流通，从而使后者了解 SEA 实施的大背景，增加透明度和对话机会，通过在规划和评价的不同阶段展开公众参与使决策过程民主化。

事实上，通过使国家发展和改革委员会（NDRC）以及相关地方政府（称为 DRCs）支持 SEA，可以短期解决上述部分挑战。受访者普遍认为 NDRC 实际上是唯一一个有能

力（法定权利）发表跨部门综合意见的机构，而这是实现可持续发展必须具备的能力。以交通运输为例，将其划分为航空、陆路、水路和铁路运输。国家发展和改革委员会（NDRC）以及相关地方政府（称为 DRCs）可看作是中国背景的优势所在。得益于他们与国务院的紧密联系，他们目前有一套制度网，发挥强大的杠杆作用，并具有总揽全局的优势。若中央政府认真地考虑前文提到的政策转变问题，NDRC 将 SEA 作为其实行管理的一部分将是向前迈出的重要一步。

SEA 战略的组成因素体现了可使评价更加有效地实现目标的重要价值、合理性和标准。可通过影响立法、程序和导则以及过程和方法来促进 SEA 实践。SEA 体系相关方面的提议见表 3。

总之，中国的高速发展正在破坏 13 亿人口健康、生存和发展的环境根基。中国领导人已经充分意识到面临的挑战，正积极寻求人和自然共同发展的广阔前景。目前已经提出要进行一个大胆的政策转变，但经济增长和环境恶化的速度和规模要求更加果断的采取行动，保护人类健康和赖以生存的环境。

PEIA 和 SEA 可以通过不同的方式发挥作用，为政府改进管理方法带来了机遇和挑战。如果政府打算进一步加强战略层面的评价，则应抓住机遇重新设计 SEA 体系，通过强化环境管理，使其成为短期内能够促进规划制定的革命性力量，同时促进社会政治、文化、制度和组织背景的长期改变。不管未来的发展方向如何，有必要加强对 PEIA 的目的和功能的政府支持任何指令、有力的政府支持对于 PEIA（未来 SEA）是非常必要的。领导人对人均资源短缺的忧虑及农村贫困的不满可能会将这些问题提上议事日程。

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战略环境影响评价在战略决策中的作用

对于理性增长和稳健发展的国际性演化与学习过程

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1 导言

欧盟战略环境影响评价指令于 2001 年颁布，在全球范围内引起了对战略环境影响评价的密切关注，同时就如何实施战略环境影响评价（SEA）提出了一系列问题，而战略环境评价系统可能会对决策过程产生积极影响。此外，SEA 系统如何与可持续发展相互作用，如何有助于实现可持续发展目标，也是目前面临的一个问题。中国的《环境影响评价法》也面临同样的问题，该法自 2003 年开始生效，规定实施规划环评。有关规划环评的规定，欧盟指令和中国《环境影响评价法》有诸多相似之处；另外，两者都没有明确规定政策层面上的环评。

对于世界各国，特别像中国这样的国家，21 世纪仍然面临着巨大的增长和发展压力，要改进重要政策、计划的编制工作和决策制定过程，还有很长的路要走，这是一个逐步变化的过程，也是一个重要的学习过程。要展望未来，我们必须先回顾过去，了解和思考理性增长和稳健发展过程中的关键要素。

2 国际影响评价协会（IAIA）在战略环境评价发展中的作用

早在 2001 年欧盟指令颁布之前，国际影响评价协会（IAIA）就采取主动措施，促进 SEA 的相关研讨和有效实施。根据 Maria Partidario 分析（见参考文献 1），早在上个世纪 80 年代就已经开始关注 IAIA 成员的 SEA 实行情况，而由 IAIA 主办的以 SEA 为主题的正式会议则是在其于华盛顿举行的 1992 年年会上首次召开。这次会议由 IAIA 及其前任主席 Richard Roberts 和 Robert Goodland 旗下的其他机构联合举办。

此后，SEA 成了每年 IAIA 年会的热门话题，吸引了世界各地各种不同类型的相关论文。据 Maria Partidario 的粗略统计显示，自 1992 到 2000 年总共有 8 次 SEA 专题分会、2 次 SEA 讨论会、7 次 SEA 特别会议以及 6 个培训课程和研究项目。这些活动都极大地促进了 SEA 方法和实践的发展，并引起了许多国家对 SEA 的关注和重视。

1996 年，IAIA 与加拿大环境评价局及其他机构合作完成了有关环境评价有效性的国际研究。由 Barry Sadler 筹备、由加拿大环境评价局主持编写了这次研究的总结报告（见参考文献 2），报告中提出战略环境影响评价是确保实现可持续性、改进政策制定过程的关键手段。从此，SEA 在 IAIA 中的影响再次扩大，SEA 部门在 IAIA 中正式成立，并成为

了 IAIA 有史以来最活跃的一个部门。

3 有效实施战略环境影响评价、实现理性增长和稳健发展的指导方针

第二十届 IAIA 年会于 2000 年 6 月在香港举办，会议期间出版发行了一本关于“IAIA 主席对影响评价的远景设想”（“IAIA Presidents’ Vision for Impact Assessment”）的手册，书中包含了许多关于 SEA 具有远见的深刻思想，从而进一步推动 SEA 系统及其实践的研讨与发展。另外，在这次年会上， SEA 分会主席 Rob Verheem 和 Maria Partidario 根据 IAIA 成员在会上的讨论和发言，提出了一系列远景设想和行动指南。

根据这些讨论，我们可以确定存在 SEA 过程和方法，特别是在发达国家。而发展中国家也正开始构建自己的评价方法和手段。然而，SEA 多数情况下用于战略规划的较低层次。SEA 在规划最高层次上的应用，仍处于起步阶段。有关有效实施 SEA 的几点重要指导原则如框 1 所示。

自 2001 年 7 月以来，IAIA 参加了联合国欧洲经济委员会组织的一个特别工作组的讨论，旨在筹备《战略环境影响评价草案》。其中，IAIA 的设想是由 Barry Sadler 领导的 IAIA SEA 工作组制定的，工作组由 Maria Partidario、 Rob Verheem 和 Thomas Fischer 等成员及其他相关人员组成。IAIA 的设想主要以下面几条原则和前提为基础：

1. SEA 应该与整体目标相结合，具体分析与环境保护、人类健康及可持续发展有关的机构设定的目标。

2. SEA 应该在决策制定的早期阶段介入，从而可以合理识别重要的环境后果，毫无限制的分析各种替代方案。

3. SEA 的适用范围应该是全面且符合实际的；包括各种类型和各个层次的战略决策，涉及到环境影响、健康影响、可持续性以及跨边界的影响等诸多方面。

4. 在 SEA 的执行过程中，不仅要分析决策对环境的潜在重要影响，同时也要根据决策本身的特性，考虑概括性的政策与较为具体的计划、规划之间的差异。

5. SEA 有助于实现有效管理，积极应对布伦特兰委员会(Brundtland Commission)提出的的“20 世纪 90 年代的首要制度挑战”(chief institutional challenge of the 1990s)。

6. SEA 应该和战略决策制定过程紧密结合，推动环境可持续发展。

7. 实行 SEA 应遵循公认的有效实施原则和标准。作为可以自由选择的导则，可以将其在草案中详细列出。

鉴于 SEA 成为了热门话题，IAIA 试图提供一个相关的专业成果帮助 IAIA 各成员。，在其 2001 年 11 月举办的中期董事会议上，IAIA 董事会正式颁布了一套 SEA 执行标准，作为 IAIA 的首个特别报告书，并在 2002 年 1 月向所有成员发布。相关标准如框 2 所示，旨在指导相关机构建立行之有效的 SEA 方法、并评估现有 SEA 方法的有效性。荷兰环境影响评价委员会的 Rob Verheem 通过与 IAIA SEA 部门的成员商讨，并依据 IAIA 1998、1999 及 2000 年会中的专业论坛，制定了上述标准。在历届年会中，该文件都会通过因特网向其 SEA 部门成员传发以听取意见和建议，经过了若干次的修订，并在 IAIA00 和 IAIA01 两次年会上进行了讨论。如今，很多 IAIA 成员已经采用了该 SEA 执行标准，并在实践中对

其进行了检验。

世界可持续发展首脑会议筹备委员会第三次会议于 2002 年 3 月 25 日至 4 月 5 日在纽约召开，IAIA 参加了这次会议，并通过与其他机构的协力合作，递交了相关报告。IAIA 及其他机构认为，所有国家在 2012 年以前都应该采取行动将战略环境评价用于所有相关行业的政策、规划和计划，尤其是对那些可能产生重大环境影响的政策、计划和规划进行战略环境影响评价，促进社会、环境和经济的综合影响评价。IAIA 与 2002 年提交世界首脑会议的重要立场声明归纳如下：

- 影响评价是实现可持续发展目标的重要手段。过去十年间，已经提出了一系列评价工具，有利于推动可持续发展；
- 为了应对国际首脑会议筹备过程中及筹备会议中指出的主要挑战，需要建立重要的战略联系，确保可持续发展不仅仅是口号或者标语，而是要落实到诸多政策、计划、规划以及其他行动或决策上。通过影响评价可以建立以下五个主要关联，推动可持续发展进程：
  - 通过战略环境影响评价，把可持续性和政策、规划及计划连接起来；
  - 通过影响评价，把贸易、环境保护和可持续发展结合起来；
  - 通过环境影响评价和战略环境评价，将生态因素、生态系统和生物多样性融入到发展决策过程中；
  - 通过影响评价，把健康因素融入到可持续发展中；
  - 通过影响评价，把社区参与融入到可持续发展中。
- 需要用系统和综合的方法来处理上述五个战略关联，以实现真正的可持续发展。为了实现可持续发展的综合评价，还需要应对一系列科学技术以及制度上的挑战；
- 应该加强影响评价的政策法规，以确保所有国家都具备有效的、可行的评估系统，识别各个发展议案的主要影响，减少其负面影响，并根据可持续性目标和任务对主要的替代方案进行研究与评估；
- 对于各种类型的影响评价，在评价过程的各个阶段，促进社区的有效参与。在参与过程中，需要具备充足的信息， 为各个相关行业的参与提供机会。同时，决策制定过程中应该充分考虑受影响的个人和团体关注的问题。
- 应该通过国际和区域合作，制定影响评价培训和能力建设计划，把充足的资源投入培训和能力建设领域，并取得显著成果、实现具体目标，。

4 利用战略环境影响评价，使亚洲地区实现更为理性的增长和更为稳健的发展

如同世界其他地区，在过去几年里，亚洲的战略环境评价中已经受到了更多的关注，因为主要战略和政策带来的环境累计影响或严重环境影响产生了越来越多的问题和挑战。然而，真正实现 SEA 的实例并不多。很多经济体系仍然受限于制度、技术以及行政管理的困难，从而无法使 EIA 系统完全发挥作用。

在 2006 年 4 月，世界银行完成了一份对东亚和东南亚地区环境影响评价制度及战略环境影响评价要求的回顾报告。研究结果表明，香港特别行政区（HKSAR）、韩国、日本、中国以及越南是引入或者应用 SEA 的领先地区。HKSAR 已同时确立了 EIA 和 SEA，同时已

经包含了政策方面的 SEA。韩国的“环境优先评估系统”（Prior Environmental Review System）则是一个基于计划的 SEA 体系。在日本，随着中央政府在全国范围内引入 SEA，一些地方政府已经着手实行 SEA。其他一些国家，例如菲律宾、印尼和泰国，也开始对 SEA 产生强烈兴趣。目前，SEA 的应用有望持续保持这种发展趋势，在亚洲地区会有更多的经济体系实施 SEA。

亚洲地区并不是均衡发展的。实际上，各国经济发展、制度效能、以及政治、文化、社会和环境情况都不相同，各国的政策制定过程及规划、发展的决策过程的复杂程度和类型也千差万别。各国不同的背景条件需要采用灵活多变的方法体系实施战略环境影响评价，使其符合当地的社会和经济环境。

香港战略环境影响评价的实践表明，SEA 的有效实施具有重要作用，其中几个要素可能具有普遍的应用价值：

- 过程设计：根据实践经验，战略环境评价与传统的环境影响评价过程明显不同，战略环境评价必须适合不同类型的政策和战略，并考虑不同类型的决策制度和政治体制。然而，战略环境评价过程必须具备以下必不可少的特征：可以评价不同政策或战略替代方案及响应方案对环境影响；包括各种类型和层次的决策信息，并符合政策和战略决策的类型和层次；政策利益相关方和社会利益相关方的广泛参与，并就重要的战略环境问题进行有意义的、建设性的、广泛的讨论。
- 过程管理：与项目不同的是，战略与决策的制定涉及许多政策制定部门和政府部门，因此有必要进行客观系统的技术监督，并与主流环境制定过程适当结合。SEA 过程和决策制定过程，两者既要相互独立又要相互依赖，既要相互平行，又要相互融合，从而确保评估过程的客观性，不受其他决策因素的过分影响,并实现两者最大可能的融合；

利益相关方参与及公众参与：因为许多政策和战略高度敏感，容易受到争议，从而可能引起更大关注，因此，与项目环境影响评价相比，在 SEA 中实现利益相关方的参与和公众参与，说起来容易做起来难。在战略环境评价过程中，较晚的公众参与损害了战略环境评价的可信性，并导致缺乏重点。而太早参与则不会有足够的有价值信息和选择方案供来讨论。最理想的是，公众参与要根据不同的目的、并基于不同类型和程度的评价信息和成果，分成有意义的几个阶段。

- 纵观整个亚洲，由于各种社会经济原因，增长和发展是必然的。然而，如果要实现更为理性的增长和更为稳健的发展，亚洲地区必须通过战略环境影响评价处理目前面临的许多具体问题和挑战。举例来说，越来越多的大城市会出现，人口增长的趋势可能会持续从而带来更大的自然资源压力。目前，诸如维持生计、保持并改善公共卫生标准、提供食物、洁净的水和空气以及健康的环境等问题，已经变得越来越重要。而且，在某些条件下，这些目标难以实现。此外，诸如全球和区域性的经济低迷、越境环境问题以及全球环境问题等外部因素使上述各种问题进一步复杂化。为了将 EIA 和环境可持续性联系起来，需要慎重考虑上述各种严

重问题和挑战。同时，需要进一步努力并加强合作，从而处理和解决这些问题和挑战。因此，迫切需要在政策或战略的制定阶段，实施战略环境影响评价。

总体而言，亚洲仍然处于应用战略环境影响评价的起步阶段，其应用前景将受制于经济复苏过程中经济结构调整的类型和步伐。政策改变是经济结构调整必需的手段，其改变的幅度和步伐对战略环境影响评价的应用而言既是机遇也是挑战。为了使战略环境影响评价适合亚洲背景下的目标，其评价方法必须高度灵活，重点应该放在通过最为实际有效的方式和广泛的公众参与来实现更好的环境结果。

表 1：未来战略环境影响评价（SEA）的蓝图（摘录自 IAIA"00 会议记录）：

发达国家：

- 有很多途径可以说明 SEA 在政策制定过程中的作用，例如：通过列举各种条件下已经实施并取得了积极效果的 SEA(有时可能叫别的名称)案例(这对发展中国家也很重要)；以及提供一些 SEA 实施成功的案例。为了挑选出最好的案例研究来进行说明，我们需要一个用于衡量案例“优秀”的标准，例如，现有的 SEA 执行标准草案；
- 尽可能多的让资历较深的人士来倡导 SEA 的使用，例如，退休的高级决策者或者曾经的产业负责人；
- 在产业发展的相关案例中，需要找出那些 SEA 从根本上改善了企业竞争力的案例；
- 和其他机构合作组织讨论会，其中商界、政府和评估专家可以共同讨论如何有效使用 SEA；不能忽视简单但有效的行动，例如组织示范项目和培训；
- 此外，需要为 SEA 过程的设计者提供一个基本框架，该框架需要有足够的弹性以便使 SEA 在各种特殊情况下应用。同时，为了制定出高质量的 SEA 实施步骤，该框架需要具有明确的起点和前提条件；
- 在构建 SEA 实施过程中，需要尽可能利用现有的评价过程，将影响评价（无论它是否被称作 SEA）纳入规划制定中。这样可以尽可能地减少人们对新的运作方法的抵触；
- 评估专家应该对政策制定方式进行分析，确定谁在何时决定了什么，从而找出将 SEA 融入决策过程的最有效方法；

发展中国家：

- 提供清晰的、适于发展中国家的 SEA 案例研究，在此基础上再进行 SEA 能力的构建；
- 另外，必须明确 SEA 的概念。目前对 SEA 的定义存在着多种看法，以至于发展中国家无法明确地构建自身的 SEA 程序；
- 此外，所有国家都应具备适当的 SEA 法律和规章制度，尤其应该注重区域层面的规划；
- 各类援助机构和银行应该要求其援助的所有项目开展 SEA。不仅是这些机构本身要求开展 SEA，受援助的国家也要求对这些项目开展 SEA；
- 一个明显的问题是，不同的援助国家或机构对 SEA 的看法不同。应该努力构建一个更清晰的 SEA 概念。另一个问题是可能存在着对 SEA 应用的抵触及阻力。

表 2：国际影响评价协会 (info@iaia.org, www.iaia.org)

特别报告书系列No. 1：2002年1月

战略环境影响评价 执行标准

一个优质的战略环境影响评价（SEA）程序能够使规划者、决策者以及受影响的公众了解战略决策的可持续性，便于寻求最优方案，并能保证决策制定过程的民主化。它能增强决策的可信度，并且能低本、快速、高效的实施项目EA。鉴于此，一个优质的SEA程序应该具备如下特征：

综合性

- 为了实现可持续发展，确保对各个相应的战略决策都进行适当的环境评价
- 处理生物物理学因素、社会因素和经济因素的相互关系
- 适应各相关部门和（跨界）区域的政策，在适当的地方，还应适应项目EIA和决策制定。以可持续性为主导
- 便于在众多发展选择和替代方案中识别最具有可持续性的方案（即：有助于实现1992年地球峰会上确定并由国家具体政策和价值体系所定义的可持续发展战略）

有重点

- 为发展规划和决策的制定提供充足、可靠和有用的信息
- 集中于可持续发展的关键问题
- 进行调整从而与决策过程的特性相协调
- 具有低本、高效、有效性特征

责任明确

- 是开展战略决策的主导机构必须履行的责任
- 以专业、公平、公正且客观的态度来执行
- 受制于独立的核查和检验程序
- 说明在决策过程中如何考虑可持续性问题

参与性

- 使感兴趣或受到影响的公众以及政府机构熟悉并参与整个决策过程中
- 在文件及决策的制定中，准确定位公众及政府的关注点
- 提供清晰易懂的信息、要求，并确保有效获取所有相关信息

可重复

- 确保及早获取评价结果，及时影响决策制定过程，推动未来规划的制定；
- 就执行战略决策产生的实际影响提供充足的信息，判断是否应该修订决策，并对未来的决策奠定基础。

5 结论

当今世界上，对任何一个国家来说，增长和发展都是必需的、不可避免的。历史已经证明，传统的增长和发展模式以及传统方法已经不再适用，并且是不可持续的。世界需要理性增长和稳定发展。在当今世界激烈的竞争环境下，一个国家如果想要参与竞争，则需

要更为理性的增长和更为稳健的发展模式。战略环境影响评价，只要能够合理的加以应用，对于创造并维持更为理性的增长和更为稳健的发展模式来说，是一个有力的工具，且能提供很多机遇。具体来说，其作用主要体现在以下几个方面（a）解决不同政策间以及环境和发展间的各种问题和潜在矛盾；（b）在决策者和专家之间，提供一个富有创造性和建设性的对话平台，同时也是一个解决问题的平台；（c）创造一些通用的方法和途径，以实现政策学习、利益相关者参与、公众舆论、以及可能的双赢方案等目标。

为了实现更为理性的增长和更为稳健的发展，需要进一步加强国际及区域间的合作，制定和传播 SEA 的有效实施方法，并广泛应用。为了推动不同语言和不同地区间的 SEA 创新和经验分享，需要建立一个包括 SEA 有效实施的区域及地方中心的国际性网络，这个网络可以是基于 web 应用的虚拟网络，也可以是一个有政府、专家团体、高校以及研究机构和民间团体参与的非正式的专业化网络。这个国际性网络将会成为全球合作的一个重要催化剂。

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政策战略环评的理论与实践

Barry Sadler

加拿大国际顾问

1 简介

另文介绍了 SEA 实施过程及实践的国际趋势和进展，表明规划和计划层次上的 SEA 应用要远远比政策和立法的应用广泛。然而，认为政策层次上的 SEA 数量不多、或者并不适用于国家高层决策的论断，不再是正确无误的。在过去十年中，政策层次的 SEA 制度或类似方法的数量显著增加，实际经验要比相关文献资料中提到的内容更丰富多样。

本文旨在简单介绍政策层面 SEA 的理论和实践情况，由三部分构成：

- 回顾 SEA 的概念以及与政策制定相关的方法要素
- 总结国际范围内政策层面上 SEA 实践的现状与范围；以及
- 政策层面上 SEA 的案例分析，阐述澳大利亚和加拿大的经验，这些经验可能对中国的 SEA 实践有所帮助。

2 关于决策的 SEA

政策常被理解为层次最高的决策行为，如政府所执行的目标设定或战略目标的确定、议定的方向、立法或财政约定以及行动方案。这种类型的决定一般是指导随后的、较低层次的行动或者为其设定框架，例如为特定区域或者行业筹备规划与计划。从 SEA 的角度来讲，政策的制定过程最有机会发挥替代方案的环境优势，并有利于适时开展分层的系统评估过程（这在文献中已普遍提到，而在实际中却很少得以实现）。

在此背景下，需要解决三个极为重要而又相互联系的问题。第一，哪些类型、哪些方面的政策需要实施 SEA？对这一问题的关注主要是因为政策的形式与内容多种多样，至少在西方国家的议会系统中就是如此。第二，如何将 SEA 适用于或适合决策制定过程？这一问题表明各国家内部以及国家之间在公共政策制定方面存在差异，尤其是缺乏结构化过程。第三，认识到 SEA 的多样性，哪种 SEA 程序或者方法是最有效的？

1)可能需要实施 SEA 的政策范围很广，类型多种多样，包括总体提案或详细提案，政府范围的提案或具体行业的提案，正式提案或非正式提案，修订提案或新增提案。其中，具有重要环境意义的主要政策改革或者立法提案很快就会发挥明显的作用。需要实施 SEA 的一般政策提案或特定政策提案如框 1 所示，如政府开支优先、采购战略以及“长期”安排，这些政策可能会在毫无意识的情况下对环境造成负面影响，因此对这些政策进行审查是比较合理的解决途径。在一些情况下，SEA 法律或者指导方针如同 NEPA 中的相关规定，可以说明或者识别某些政策行为）。

2）通过理解“政治文化”，决定可行的或适用的角色、规则和关系，将 SEA 融入不

同的决策制定过程中。在此背景下，社会主义者的抉择、决策的中央集权制

系统与其它地区不同，因此 SEA 在决策制定过程中的实施需要考虑以下几个方

框 1：可能需要实施 SEA 的政策类型

政策通常包括以下几个领域或几个方面：

- *立法*包括法案草案、法规、条例和协议
- 政府通过协商缔结或建议签署的*国际协定和条约*，如贸易协定
- *政府战略*、*公文*、*备忘录或者特别声明*，用于概括政府在最高层面上制定的新政策、规划方向或者重大抉择。
- *预算*，财政拨款与开支，包括采购战略
- 规划或计划中包含的目标、指令及导则等*嵌构政策*
- 如同政策或法律一样可以执行的规范、指南、原则或者安排，其中，包括旨在推进或者允许具有潜在累积影响的发展行为的长期安排（如土地开发、栖息地改变、湿地丧失）

表 1： SEA 概念及其政策导向

范例/级别	范围以及政策特征
战略环境评价（SEA）	正如当前法律或政策中制定的；主要集中于政策、规划与计划对环境的影响（广义上还包括《SEA 议定书》中提及的对人类健康的危害）；假定政策制定是相对结构化的过程
战略环境评估（SEA）	用于政策与规划制定的非正式的、灵活的 SEA 过程（Sakler and Brooke, 1998）。专门用于英国的政策评估与环境系统；现在主要用于综合政策评估或监管影响评价（见第 10 章）
政策性环境评价（PEA）	基于政策与规划、计划不同这一前提。PEA 同时用基于 EIA 的方法和快速评估方法来确定环境影响；应该涵盖尽可能多的政策层面，并包括显性政策与内含政策（Bailey and Dixon, 1999）
政策性评价（PA）	重点关注大政方针的方案。PA 与政策审查相结合，检查“最高层次的社会目标”和影响分析的，提出任何潜在的负面影响。在审查过程中，着眼点在于“统观全局，注意细节”及“严密、细致的辨别”（Boothroyd 1994）
综合评价（IA）或可持续性评估	分析环境、经济与社会影响
可持续性影响评价（SA）	考虑启动宏观政策。SA 是在具有明确可持续性目标和标准的框架下进行的综合评价，或者说，SA 是条理清晰的综合评价和规划系统（UNEP 2004）。

表 2: SEA 程序与方法的不同形式

EIA 主体型 *（UNECE SEA 草案）*	*EIA 改进型评估* *（加拿大）*	*综合评价（英国的 RIA）*
筛选：确定方案是否具有显著影响 范围：确定报告中要包括的相关信息 环境报告：描述提案与合理的替代方案的影响 公众参与：确保提供适时有效的公众参与机会，使公众对提案草案和环境报告进行评议 向指定环境或者健康机构咨询：使其了解并向其咨询咨询提案草案与报告 决策：适当考虑报告结果以及收到的评议，并提供决策理由 监管：对“识别或减轻不可预见的负面影响产生的效果”进行监管	概述两个阶段的过程： 初步浏览：确定是否可能有重要的战略环境后果。如果有或者如果有很高的不确性或风险，实施较为详细的 SEA 分析环境影响：反复分析以下几个方面： 1） 潜在影响的范围与特性 2） 需要缓解措施 3） 剩余效应的范围与特性 4） 后续行为：包括效果监管 5） 公众与利益相关方关注的问题：供决策者参考	RIA 包括三个阶段： 初始 RIA-准备一个政策想法，通知部长，最好随附一份递呈 部分 RIA：在咨询之前筹备，包括精确的成本与效益估算与选择方案 最终 RIA： 根据分析与咨询过程中得到的最新信息筹备；阐明他们是如何影响政策的；对比每个方案的效益与成本；在编写 RIA 时，要考虑政策的所有影响。提交议会时，需要随附有关政策许可和法律的内阁函电
来源：UNECE（2003）	来源：CEAA（2004）	来源：Cabinet Office (2005)

面和问题：

- *应对可变性* 政策制定通常是不一致的、可变的、问题驱动的、对事件响应的过程，也可能会通过简单、快速的评估工具有效的用于决策过程；
- *关注现实* 在非结构化过程中，政策制定不是选择题，而是决策的筛选过程。通过筛选，制定适当的提案并对其逐步选择。
- *注意重要的相互关系* 决策提案权在一些诸如在能源、商贸及交通运输等行业决策制定具有重要的环境影响，其中包括与其它行业的交叉性问题（这些方面在一些 SEA 文献中较少提及）；

- *在实践中学习* 决策制定的“可变几何”强调运用灵活的、反复实验以及不断学习与调整等方法实施 SEA，运用适应于不同实际情况的概念与措施。

3) 上述概念反映了 SEA 实施途径的不同形式，表现为各种途径都具有其独特的程序和方法。就目前的实际应用而言，可以根据与标准 SEA 过程相差的程度或修改的程度对这几个方面进行归纳，得到三种主要的 SEA 实施方式；而用于规划与计划的标准 SEA 过程，主要以 EIA 的步骤和要素为基础。通过广泛的对比分析，并结合制度结构的主要类型，三种 SEA 实施方式存在明显的程序及方法上的差异（如表 2 所示）。运用有关 SEA 趋势与发展的另文中提到的划分类型，表 2 对三种 SEA 实施途径进行了具体分析，分别是 EIA 主体型模式、EIA 改进型模式和综合评价模式。每一种模式都有特定的工具包，这些工具包在应用过程中是相互交迭的，而不是互不相干，特别是在评价过程的早期阶段。

3 政策层面上 SEA 实践的现状与范围

据估计，当前大约有 20 到 25 国家、联邦政府或者国际组织有 SEA 或者类似 SEA 的系统用于政策层面（详见附件 1）。通过与规划、计划 SEA 比较，目前采取的政策 SEA 增加趋势更加明显，实施的随意性较大，并且在不久的将来还会保持这种态势。在政策水平上，尽管有人将《SEA 议定书》第 13 条促进政策 SEA 实施的相关规定视为“软法”，但目前还没有与《SEA 议定书》和《SEA 指令》相当的驱动因素。就《SEA 指令》而言，有关 SEA 体系中排出政策的现状一直在争论不休，可能要持续到 2009 年。此时，联合国欧洲经济委员会必须作 SEA 框架的第一个五年实施报告，还有可能提出修订意见，可能会扩展到其它领域。

框 2 《SEA 议定书》用于政策与立法

1 所有《战略环境影响评价议定书》缔约方都应努力确保将环境及健康问题适当纳入可能具有重要环境、健康影响的政策与立法提案中。
2 根据《议定书》第一节，所有缔约方都要遵循《议定书》规定的适当原则和相关要素。
3 虑及实现决策过程透明的必要性，所有缔约方需要决定将环境及健康问题纳入决策过程的实际工作安排。另外，依照《议定书》第一节确定需要综合考虑的环境及健康问题。
4 所有缔约方都要向作为《战略环境影响评价议定书》缔约方会议的《越境环境影响评估公约》缔约国大会提交报告，说明《议定书》的实施情况。

来源：SEA Protocol to the UNECE Convention on EIA in a Transboundary Context

3.1 条款类型

目前通过一系列法律与行政手段制定了政策与立法 SEA 的相关条款，这些法律与行政手段对政府机构具有不同的约束力。多数情况下，通过政策与导则中的规定启动 SEA，香港与英国的 SEA 系统就是以这种途径建立的。然而，目前非法定的 SEA 指令和规定呈现出逐渐增多的趋势，同时更多国家和地区逐渐趋向于执行基于立法的 SEA 框架。尽管出现了上述变化，立法手段与非法定手段的应用仍然存在根本区别，两者作为政策或立法

SEA 的基础，分别具有不同的效力，对各自效力的争论仍在继续。

一些 EIA 立法（例如，捷克共和国、芬兰、斯洛伐克）或综合环境保护法案（例如，美国、波兰、西澳大利亚）下制定了政策 SEA 的法律条款。其中，《捷克共和国概念环境影响评价法》（1992 年颁发，2000 年修订）只包括一项用于由中央政府审批的所列发展“概念”的条款，这些发展“概念”包括政策和战略，也包括在《捷克共和国环境影响评价法》中。《捷克共和国环境影响评价法》如同斯洛伐克和波兰的修订案，已经超越了《SEA 指令》的最小要求，将指令的相关条款导入了本国法律。《美国国家环境政策法》与《西澳大利亚环境保护法》普遍用于联邦政府的重要行为和战略提案，尽管在实际情况下，在美国政策的推介受到限制，而在西澳大利亚则可以随意选择。

通过行政命令、内阁指令或政策法令等制定政策或立法 SEA 的非法定条款（例如，丹麦、加拿大和英国）。这些条款已经用于所有 SEA 过程，特别是用于提交内阁（加拿大、香港和荷兰）或议会（如丹麦、芬兰、挪威）的政策或立法提案。尽管缺乏法律效力，这些非法定条款明确规定执行 SEA 过程。根据不同的权限，或者责令政府机构必须履行上述规定，或者由政府机构自由决定是否执行。例如，丹麦首相办公室发出的通知具有法律约束力，而加拿大内阁与荷兰内阁颁发的 SEA 行政指令则可以诠释为确定履行的职责。然而，事实上，行政手段缺乏权威性，无法确保政府机构履行相应的职责，也无法加强 SEA 实施的连续性，尤其是这种 SEA 过程仅以导则或相互沟通为基础。

3.2 涵盖范围及应用范围

尽管政策和立法 SEA 不一定通过同样的过程实施，也不一定受到同等重视，但目前约有一半的 SEA 系统涵盖了政策和立法。有些地域已经制定了不同的程序实施政策和立法 SEA（如芬兰和欧盟）。而其他国家则没有要求实施立法 SEA（如捷克共和国、波兰），或通过独立的管理影响分析或评估过程来实施立法 SEA（RIA）。通常假设 RIA 位于 SEA 的下游位置，《加拿大导则》要求 RIA 尽可能考虑 SEA 的成果。然而在英国，RIA 似乎在很大程度上已经取代并合并了以前政策评估与环境分离的过程，而荷兰 E-test 到目前为止只是用于 “行政规章制度”，还没有如起初所设想的那样移向“政策意图”的上游。

迄今为止，几乎很少有这样的实例，即将 SEA 系统在政府整体范围内用于所有可能具有重要环境影响的政策提案。原则上，NEPA 非常接近这一标准，但如上所述，NEPA 在政策方面的应用存在不足。一些 SEA 系统在指定的内阁或议会决策过程中用于所有具有重要环境意义的提案，这一决策过程分别代表最高层次的政策与法律制定，但可能会漏掉一些看似不太重要、却具有重大累计环境意义的领域没有进行适当评估。其他的 SEA 只占了捷克共和国、斯洛伐克和波兰等国在环境影响评价立法中列出的大约十个行业中的一小部分。

在这些国家中，必须强制实施评估的政策包括能源、工业、交通、农业、林业、水、废弃物与旅游业。尽管在数量上有限，但这些行业合起来涵盖了大部分具有重要环境意义的政策领域。基于同样的原因，其中许多政策在 SEA 导则中被列为优先涵盖的领域，如在丹麦、荷兰或英国的相关资料中。国际互助与贸易政策等一些新的领域也在逐步实施 SEA，特别是限制用于国外消费的国内生产过程。例如，加拿大为这一目的已经起草了独

立的导则，同时还颁发了 SEA 通用框架用于贸易协商。欧盟已经制定了一个单独过程，用于乌拉圭回合贸易商谈的可持续性影响评估（见 George and Kirkpatrick 2003）。

公共政策的一些环境意义重大的领域通常没有实施 SEA，尤其是财政政策与预算分配。表 1 列出的国家中，据说只有丹麦和挪威对这些方面的环境影响进行了评估。然而，可以证明，预算在政府真正优先考虑的问题中是特别重要的政府声明，因此反映了“最深”层次的 SEA（根据 Dover’s (2002)应用这个术语的意义）。原则上，Goodland(1998)根据美国联邦预算的初步分析，指出应该很容易确定环境友好开支与反环境开支。尽管不是严格的比较，世界银行目前正在采用类似 SEA 的工具，作为政策性贷款的部分新兴领域，将环境因素纳入预算案中，支持当事国进行结构调整。

4 SEA 在政策层面上应用的案例分析

这一部分中选取的两个案例是政策层面上 SEA 实践过程的重要创新。这两个案例都集中于最典型的政策问题，分别是加拿大近海海域油气是否应该开发以及在哪里如何开发的问题；澳大利亚应该保护多大部分的原始林，而不是开发多少原始林。此外，前者是指在制度化框架下执行 SEA 过程，而后者则是在正式框架之外实施的综合评估。

加拿大西海岸近海海域开发的延缓政策中 SEA 的实施（Sadler 2005a）

自 1972 年就实行了延缓加拿大太平洋沿海水域油气开发的联邦政策，并于 1989 年由于阿拉斯加油轮 Exxon Valdez 泄油事故对此进行了重申。去年，提到将 SEA 的应用范围扩展，用于该联邦政策的决策过程，通过独立小组进行公众评议。这一 SEA 过程的实施为加拿大 SEA、甚至国际 SEA 的发展开创了先例。

尤其是这次 SEA 过程处理的延缓政策已经存在了近 30 年，对于西部近海油气开发的风险及潜在影响问题，曾面临一系列的挑战并进行了一系列评价（对北冰洋与大西洋水域也不例外）。这次公众评议旨在最终解决延缓政策环境合理性等长期存在的问题和不确定性。这次过程的创新性还体现在广泛的区域性的评议范围，并且为资源分配、尤其是环境敏感区（一项早期评估建议设定 20 公里的沿海禁区，此间禁止油气开发与生产）的保护等问题提供了大量的选择方案。

同样重要的是，这次 SEA 实践具有显著的综合性，包括三个平行的、相互独立的评议管理过程：

- 由一个独立专家组实施的科学调查，基于防范原则评价信息或者知识缺口及其对近海油气开发的意义；
- 由一个独立评议组进行的公众听证会，就环境问题、保护区问题以社会经济问题的意见和顾虑进行讨论。
- 由第三方仲裁与原住民对话，评论对他们而言特别重要的问题，尤其是海洋资源的传统利用方式以及未来解除联邦延缓政策可能造成的侵害 。

上述三个途径取得的成果分别如下：

- 科学小组列举了如果解除延缓政策在每个发展阶段之前需要填补的信息和知识缺口，并指出这些缺口不会限制提供足够的管理制度。
- 公共评议组只就参预的信息与意见做了报告（公众主要反对撤销延缓政策），并没有对实质性的问题进行评价（因此取消加拿大环境评估组的传统作用）；
- 原住民仲裁组强调原居民的资源利用与评估权力，强调近海油气开发对他们传统谋生手段的危害以及未来活动中需要他们的同意以及参预。

在撰写此文过程中，加拿大政府仍在分析这些报告，鉴于议会中只有少数人赞同撤销延缓政策，并没有表示会很快做出重大决策。然而，目前对于延缓政策的起源及范围还存在争议，提议建立终点站管线与连结管线直至 Alberta 网格系统，将确保向中国及其它亚洲市场输出石油，但几乎可以肯定的是，在所谓的内侧航道水域也需要许多油轮运输，因此很多人相信会拒绝采纳这项提议。无论采取哪种决定，这项提议或近海海域油气开发与生产等问题肯定都会备受争议与争论。在这种情况下，尽管 SEA 有助于确定发展性清拆活动的防范基础，但仍然存在不确定性，对于是否或如何开展行动存在价值导向的意见不同是导致不确定性的根本原因。

澳大利亚“中央高地森林协议的综合区域评估”（Ashe, 2002）

《澳大利亚国家森林政策声明》（NEPS）为《综合区域评价》（CRA）做好了准备，将综合区域评价作为联邦政府与州政府缔结《区域森林协定》（RFA）的基础。澳大利亚森林资源的分配与管理在森林保持与木材生产之间存在长期的管辖权及土地利用冲突，《区域森林协定》旨在就此达成长期决议。《综合区域评价》（CRA）具有许多 SEA 的特征，但比 SEA 更具综合性，主要通过两条平行、独立的途径进行分析。其中一条途径包括环境与遗产评估，主要是有关国家土地拥有权、世界遗产、土著遗产、频危物种、生物多样性、原始林和荒地价值以及生态可持续性森林管理的环境与遗产评估。另一条途径则包括有关资源利用以及开发利用资源的发展机遇和后果的经济、社会评估。

在这个案例中，《综合区域评价》（CRA）过程主要针对维多利亚州的中央高地《区域森林协定》（RFA），这一协定涵盖的区域面积高达 110 万公顷，其中公共用地占 56%。《综合区域评价》的过程主要包括以下四个方面：

- 首先，签署了一项过渡协议，旨在保护森林，这些森林可能会用来建立尚未完成的全面的、适当的、典型的（CAR）保护区系统。目前一项评价范围协议着手安排执行《区域森林协定》（RFA）以及准备需要评价的问题。
- 其次，对这个地区的环境、文化、经济和社会问题的《综合区域评价》（CRA）花了 17 个月的时间，涵盖的问题包括生物多样性、原始森林、荒地、国家土地拥有权、世界遗产以及生态可持续性森林管理（ESFM）。综合评价报告的内容和标准可与传统的环境影响报告（EIS）比较，公开接受公众咨询。
- 第三，随着《指导报告》的出台，评价过程的综合阶段启动。《指导报告》中就全面的、适当的、典型的（CAR）保护区系统、区域生态可持续性森林管理（ESFM）与林业产业化问题等提出了相关建议，并为联邦政府与州政府之间的协商奠定了基础。
- 第四，签署了最终协议，保持 20 年的有效期，并准备通过相互协商进行修订根据

相互讨论对条款进行了修改，并准备争议解决和 5 年工作回顾。

协议的主体要素如下：

- 联邦政府确定最终协议已经履行了澳大利亚立法体系中主要法律规章的责任要求（EIA 法和频危物种法）；
- 有关区域内世界遗产提名的规定；
- 州生态可持续性森林管理（ESFM）系统、管理过程与产业发展计划的联邦签定；
- 建立区域内全面的、适当的、典型的（CAR）保护区系统。

在上述协议下，该区域的保护区系统增加至 116000 公顷（64%），并有近一半的公共用地出于国家公园或者其它保护区中。全面的、适当的、典型的（CAR）保护区系统在生物多样性、原始林与荒地等方面符合国家标准。行业效益必须保证公众对森林资源的获取与行业发展的财政动机。社会效益包括实现创造 300 个新职位的期望。

这一研究是一个创新的过程，同时还成功制定了相关政策，解决了土地利用与管辖权问题的长期争端。尤为重要的是，该研究将综合评价用于联邦政府与州政府间的森林管理协议，平衡分配分别用于保护和发展目的的资源。由于铭记要实现环境、经济以及社会利益，有些人可能看似明理的认定《区域森林协定》（RFA）就是可持续资源管理的例证。当然，这一方法似乎有很多特征与以下问题的实证分析及争议处理有关，即土地利用问题以及其它控制权的权属问题。

5 结论

该文简要介绍了政策 SEA 的概念与实践，作为决策的最高层次，政策确定了规划与计划的框架，并指导规划与计划的筹备工作。政策决策为将环境、经济和社会因素纳入国家总体目标与发展方向提供了众多良机（大部分仍然没有实现了）。与规划、计划 SEA 相比，政策 SEA 的发展更为缓慢、犹豫不决，并且没有可以比较的国际立法手段促进其实施。采用的方法模式也多种多样，反映了政策制定过程的不确定性。在此背景下，较为灵活的评估模型可能比基于 EIA 的程序与方法更加合适。然而，这一分析并不一定适用于具有集中的、结构化政策过程的国家。至于与中国 SEA 实践的关系，问题在于是否应当引入政策层面上的评价方法，如何最好地利用这些方法以及其它国家的哪些经验将有助于争论的解决。

参考文献

本文中的内容主要摘自笔者 Sadler (2005b) 中第一章 （政策 SEA 的主要观点）和第二章（用于政策和立法的 SEA 体系）的内容，案例分析分别引用 Sadler (2005a) and Ashe (2002). 上述参考文献以及其他文献如下所列：

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政府议案的战略环境评价：政府与公众的关系

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1 引言

本文是丹麦政府议案战略环境评价研究的起点。这一政策层次的 SEA 系统是一个综合系统，借此 SEA 可以实现以下功能： a) 纳入立法过程；b)与行政管理评估、微观经济评估、宏观经济影响评估等一样，成为议案综合评估体系的必要组成部分；c)它是议案评论备案的一部分。本文以丹麦城市环境区（environmental zone）为例，重点分析这一政策 SEA 系统中从政者与公众之间的关系。议案的目的是通过建立环境区(environmental zone)减少城市空气颗粒物污染。

本文将首先介绍丹麦政策层面的战略环境评价体系，然后将介绍有关城市环境区（environmental zone）议案的战略环境评价体系，尤其是其背景和内容。而后将对政治辩论和公众参与进行分析，并讨论两者之间的联系。另外，通过对议会宣读及公众评议备忘录等资料进行分析，表明政治辩论和公众参与两者之间存在明显的联系。最后阐述了 SEA 系统的优缺点以及从政者、公众与 SEA 之间的关系，并就公众参与的重要性及其相关经验进行了总结。

2 国家议案的战略环境评价是一个综合系统

丹麦从国家到地方都实施了不同层次的战略环境评价，包括政策、规划和计划的评价。丹麦有关规划和计划的 SEA 制度以欧盟指令（2001/42）为基础，因此，和其他欧盟成员国的规定类似。欧盟指令（2001/42）要求地方和市政规划、国家规划指令等所有规划和计划，都需实施 SEA，为将来审批具体项目提供确定框架（环境部，2007）。另外，丹麦将 SEA 作为立法过程的一部分，要求对议案及其他政府提案的环境影响进行评估。本文的案例就是丹麦最高层次的决策过程，也是最高层次的 SEA 制度。

1983 年丹麦的一份政府通告要求所有议会法案都要包括其经济和行政后果的评论内容 (Kørnøv and Hvidtfeldt 2003)， 作为补充，一项有关对议案及其他政府提案进行环境评价的提案于 1992 年提交丹麦议会并获批准。丹麦首相办公室于 1993 年颁布了一项有关议案及其他政府提案的新的行政命令，并于 1998 年进行了最新修订，目前还涉及到影响类别，包括宏观经济影响、微观经济影响、对商业及公众的行政管理影响、环境影响以及与欧盟法律的关系。与有关规划和计划环境评价的欧盟指令不同，丹麦有关议案的战略环境评价最终由首相事务部执行相关规定。尽管丹麦似乎可以自由选择是否实施政策性战略环境评价，但自 1994/95 年起，随附环境影响评论的提案和没有随附环境影响评论的提案之间的关系相对稳定，大约 90%的提案已经考虑了环境影响。此外，笔者对财政年 2000/2001 以来的 40 项有关 SEA 的提案进行了分析。其中，对各提案议会一读记录的研究

表明，多数情况下，从政者都会将这些信息用于议会辩论。进一步的综合调查还反映了该战略环境评价体系的优缺点，对此项调查，Elling（ 2005）作了全面评述。

根据 1993 年颁布并于 1998 修订的行政命令，如果行业部门对议案的评估结果表明议案的实施可能会产生严重的环境影响，那么议案评论部分必须包含环境评价的内容。任何部门（不仅仅是环保部门）都负有进行战略环境评价的责任，其目的是将环境因素纳入各部门决策的过程中，从而改变 “保护环境只是环保部门的责任”的传统看法。传统上，环境保护只是环境部一个部门的责任，而上述行政命令赋予每个部门实施 SEA 的责任（不仅仅是环保部），其根本原因就是将环境因素纳入目前所有部门的决策过程中这一总体目标。

SEA 是议案全面评估的必要组成部分，也是立法过程的一部分，包括 SEA 的筹备、在议案的评论部分介绍 SEA 以及议会宣读过程中的应用，具体如图 1 所示。

根据最新的议案评价导则，战略环境评价必须包括提案对环境和人类健康的影响评价（财政部等，2005）[1]。环境评价应基于一定的科学依据，并且更适合由起草提案的官员具体实施。同时，战略环境评价必须与环境现状以及环境政策目标紧密结合。为了实施评价，政府部门通过列表、重要性标准进行初步评价，确定提案是否会造成显著的环境影响，并确定SEA执行范围。

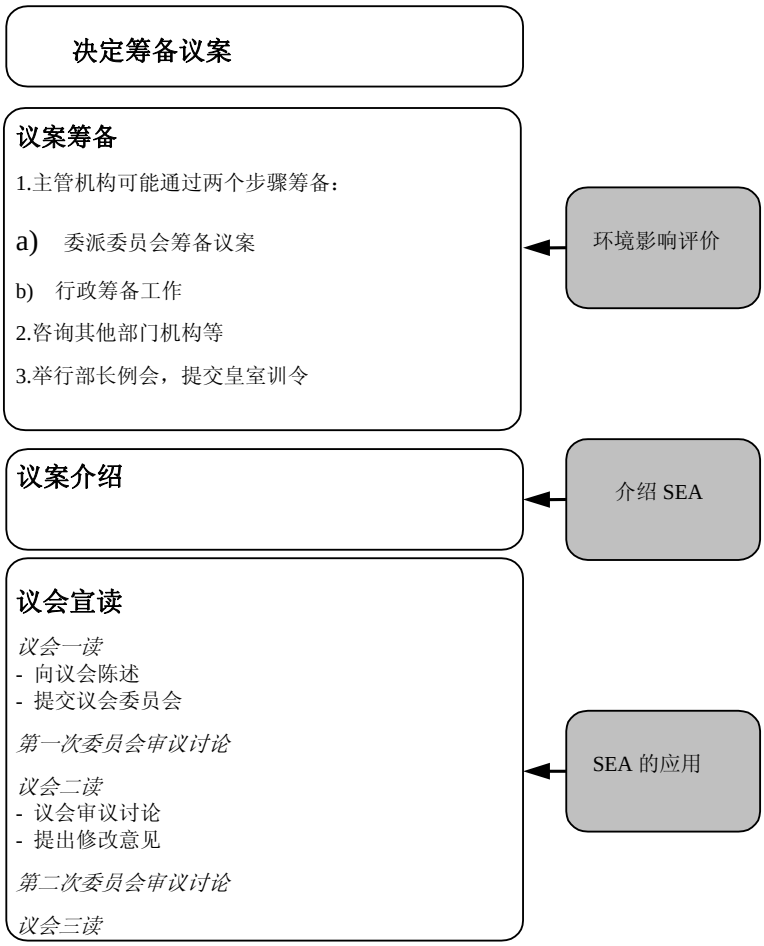

图 1　丹麦的立法过程以及 SEA 融入立法过程

概括环境和健康影响评价的内容，并纳入议案的评论注释中。而议案的评论是议会和公众参与决策的一个重要基础，因此需要详细描述环境、健康影响，便于大众理解(The Ministry of Finance et al. 2005)，同时在提交法案时，必须保证公众可以获得背景评价内容、相关报告以及科学论文。实际上，议案、议会宣读纪录、公众评议和背景资料等所有文件（包括）都放在议会网站中。

以下将进行SEA案例分析，介绍丹麦城市环境区（environmental zones）议案的战略环境评价。该案例分析主要是基于对以下相关文献的研究：议案、听证信、议会一读、二读记录、白皮书以及听证会记录等文件的研究。所有相关文献见议会网站，网址如下：(http://www.folketinget.dk/doc.aspx?/samling/20061/MENU/00000002.htm)

3 案例：丹麦城市环境区提案的 SEA（environmental zone）

如果市政局依议案建立了环境区，该议案将可能对环境和人类健康产生下列影响：

议案的要点是柴油机动车辆颗粒物的排放问题，尤其是可能导致最大健康问题的颗粒物类型。如果议案中的五个城市都建立了环境区、并充分执行相关规定，那么城市公路交通中机动车排放的颗粒物将减少 1/3 左右。

由于交通颗粒物仅占全部颗粒物的 5%左右，且重型车单靠颗粒物过滤器只能去除部分交通颗粒物，所以环境区的设立只是稍稍减少了城市本底大气的颗粒物含量。根据城市本底空气的改进情况计算的结果表明，如果五个城市都设立环境区，每年将会减少 15-20 例早死案例，患病时间、住院率及患哮喘的几率都有所降低，循环系统疾病病人也将比以往活得更久。

对于 Copenhagen/Frederiksberg 的环境区来说，从 2008 年开始，健康收益值大约是每年 9700 万丹麦克朗，而成本预计为每年 5100 万丹麦克朗。而其他城市的计算结果则表现为小额赤字。根据将引入环境区的城市数量不同，预计到 2010 年每年的健康收益还将增加 4000-6000 万丹麦克朗。总起来说，如果议案中的五个城市都引入环境区，将有望产生净收益。建立环境区除了使本底空气中颗粒物少量减少之外，还将明显减少城市中的极小微粒和街道空气中的颗粒物。然而，由于健康影响的不确定性，财政计算并没有包括这些减少量。

丹麦环保总局认为在小城市中引入环境区对健康的改善效果不明显，反而需要消耗大量的经济成本。鉴于此，建议仅在哥本哈根、菲特烈堡(郡)、奥尔胡斯、奥尔堡 and 欧登塞等五个城市中引入环境区。

图 2　议案注释中战略环境评价概要(The Minister of Environment 2007)

环境区提案的目的在于减少由于柴油车产生的颗粒物对人类健康造成的不利影响。根据提案，在丹麦五个最大的城市引入环境区概念，可能会减少环境区内颗粒物的排放量。根据提案，在 2001 年 10 月 1 日前登记注册且没有达到欧盟的排放标准的卡车和公共汽车进入环境区必须安装颗粒物过滤器，此外还必须有环境区的标志。预计环境区每年将减少 15-20 名早死案例 (The Minister of Environment 2007)，还会减少发病的时间，降低住院率和患哮喘病的机率等。另外，环境区的引入有望协助执行 1999/30/EF指令，限制SO_2、

NO_2 、NO_x、颗粒物和铅的排放量。

这项提案的目的是提高环境质量，尤其是健康质量，在提案的目标部分及提案评论的其他部分都有 SEA 内容。而其它议案通常只在环境影响部分简单、概要地描述可能的环境影响。图 2 对该战略环境评价系统进行了概述：

该议案的通过主要包括以下阶段：与其它类别的影响评价一起，开展战略环境评价；在行政机构、组织机构和企业中举行公众听证会；与受影响的市政当局和受邀机构进行会面商讨；环境与规划委员会会议 2；议会一读、二读及其政治辩论；议会三读中 110 票全票通过提案。

4 决策过程中的公众参与

在政策层面的决策过程中，公众的参与非常重要，可以以不同的方式和不同参与程度实现公众参与。城市环境区议案的公众参与方式是召开听证会，就议案情况告知政府部门、组织机构和公司并征求意见，同时环保局召开两次会议并邀请受到影响的市政局和某些商业机构等参与议案的讨论。所选择的参与方法不同决定了不同水平的参与程度，从通知公众到向公众咨询、与公众合作、最后赋予公众一定的权利等。本文案例中公众参与的程度包括“通知公众，并向公众咨询”。

表 1 给出了公众参与过程中听众的数量和类型、给与评论的听众数量以及最终反馈中写明没有意见或同意议案的听众数量。括号中的数字表示没有受邀却参加了听证会并提供意见的听众数量。除了对受邀的利益相关者公开听证之外，还使更多相关人员或机构参与听证，在公众参与的过程中具有积极的作用。

表 1 听众类型及其对议案的评论

听众的类型	听众人数	给与评论的 听众数量	表明无意见或同意法案 的人数
政府部门和国家机关	24	2	3
地方和市政	10	6 (1)	0
研究机构	5	0	0
NGO: 环境和健康	22	5 (2)	1
NGO: 商业和协会	67	17 (3)	8
公司	25	2	1
	153	32 (6)	13

对公众参与进行的分析表明听正会覆盖了相当范围内的公众。根据给与评论的数量，最活跃的听众类型是“区域与市政部门”以及“商业和协会-非政府组织”，他们也是直接受到影响的利益相关者。公众提出的 32 项意见主要涉及以下方面：

- 逐步采用的时间安排，或延迟实行或立即生效。
- 逐步采用的时间安排应与欧盟相协调
- 实施范围；需要更多的环境要求

- 实施范围；考虑更多市政局引入城市环境区的可能性
- 实施范围；环境区的定界
- 实施范围；外来车辆要与丹麦本地车辆同等分类
- 责任免除的机会
- 决议授权
- 监督和执行
- 排放物的测量
- 加强安装过滤器的补贴基金

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如上所述，听证的意见主要是关于议案实施的范围和时间，下一段有关政治辩论部分将着重介绍这方面的内容。

5 政治辩论及结果

正式的政治辩论通过议会宣读的形式进行。该议案在议会三读中全票通过。表 2 中列举了政治辩论给予意见的数量及其关注的焦点。在这次政治辩论中，9 名从政者代表丹麦议会中的 8 个政党提出相关意见，关注的焦点与公众评议部分相同，都是关于环评范围以及议案实施的时间等方面：例如，哪些城市可以引入环境区概念，哪些车辆需要安装过滤器，议案何时必须实施等一系列问题。在议会一读和二读过程中，从政人员的评论中 68% 和 78%重点探讨环境问题。但是由于本文所选用的分析方法等原因，故不能确定这种对环境问题的关注是否基于战略环境评价还是其他方面的信息。

表 2　议会一读、二读中政治辩论的作用及其关注的问题
—2006.10.12-12.12

政治辩论中关注的问题	第一次议会宣读	第二次议会宣读
环境	5	0
环境范围 & 法案实施时间	31	14
经济	1	3
法律	11	1
环境知识	0	11
其它	5	3
意见总数	53	32
重点关注环境的意见数量	36 (68 %)	25 (78 %)

议会一读就存在环境和健康问题达成了共识，另外还阐明了相关法律问题。一读之后，就议案实施的范围和时间，仍然需要进一步的政治权衡。在议会二读中，对议案实施范围和时间进行权衡时，还提出了环境知识的水平及可靠性等问题。

基于公众参与和政治辩论的结果，对提案提出了九条修订意见。其中四条由环境部长提议，五条由对立方提议修订。决议修订的内容如下：

- 环境部长：技术上和法律上的修订（简单改动）
- 对立方：更多的市政局可以引入环境区（新章节）
- 对立方：由上述第 2 条修订意见引起的技术上和法律上的修订（新章节）
- 部长：2001 年 10 月 1 日后注册的 Euro-2 型机动车也要安装过滤器（简单改动）
- 部长：2006 年 10 月 1 日后注册的 Euro-2 型机动车也要安装过滤器（简单改动）
- 部长：正确使用“退役车辆”条款（简单改动）
- 对立方：部长必须对商务车辆制定相应环境区规则（简单改动，将“可以制定”改为“必须制定”）
- 对立方：必须于 2010 年 1 月 1 日之前引入商务车辆的要求（新章节）
- 对立方：部长可以规定过滤器安装后的相关条款，如减少超微颗粒物的过滤器。（新章节）

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与听证前的议案相比，决议通过的修订意见表明修正后的议案更有利于环境和人类的健康。下面笔者将介绍政治辩论、公众评议及决策制定之间的关系。

6 政治决策、战略环境评价及公众参与之间的联系

战略环境评价的一个基本原则是公众参与决策制定过程。环境评价以一系列科学标准为基础，同时，公众参与也是重要的评估手段，可以为决策制定提供相关信息、确定评价过程中的优先权，因此“没有公众的参与，就不能有效的进行环境评价”(Elling 2003:16)。

战略环境评价是对不同的环境影响进行描述和评估的政治过程。在这个过程中，从政者要面对不同的决策信息，包括来自公众的不同意见。为公众提供评议的机会，使公众提供更多知识及其偏好信息，因此最后的决议往往是政治性决策，而不是基于科学分析和专家评价的技术专家性的决策。通过对议会宣读的备忘录进行研究，结果表明政治辩论和公众参与之间有着清晰的联系，每当从政者涉及到公众的评论时，就能证明两者之间的密切关系。下面笔者将介绍从政者与公众之间的联系。

表 3 列举了议会一读、二读中涉及公众评议的从政者提议的数量。在两次议会宣读中，有 25%的从政者提议明显涉及公众评议。案例分析表明，公众评议是从政者政治辩论过程的重要参考点。

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表 3　议会一读、二读中明显涉及公众评议的从政者意见

政治辩论中关注的问题	议会一读中涉及公众评议	议会二读中涉及公众评议
环境	1	0
议案实施时间及环境范围	11	3
经济	0	0
法律	0	0
环境知识	0	3
其它	1	2
总计	13	8

公众评议的实际应用不仅仅局限于议会中，它还有更广泛的应用。从政者也可能更为间接的应用公众评议，建立常识库、深入分析各种偏好，但本例中并没有分析从政者和公众间不明确的联系。

7 结论

本文介绍了政策层面上战略环境评价体系中的一个案例。战略环境评价和公众参与都是政府议案决策过程中的主要组成部分。政策层面战略环境评价体系的主要特征包括：

- 战略环境评价由起草议案的部门负责进行
- 战略环境评价与宏观经济影响、微观经济影响、商业和公共事务的行政管理影响、环境影响以及与欧盟法律的关系等的评价同时进行
- 战略环境评价与其它影响类别的评估都被纳入提案的注释评论中，因此战略环境评价不是一个独立的文件
- 公众参与是决策制定过程的一部分，通过公众听证备忘录进行文件备案。

本文主要讨论了从政者、战略环境评价及公众之间的关系。案例分析表明，政府极为关注环境问题和公众参与在政治辩论、决策过程的作用。政府审议讨论和决策中的重要性。从政者有 25%的议会提议采纳了公众意见，如果将不明确采用公众评议的情况考虑在内，公众参与在实际决策制定中的影响可能更广泛的多。同时，案例分析的结果还表明决议通过的修订意见符合公众的要求。另外，上述案例证实了“政治合理性主要源于公众”，即如果公众关注环境，那么战略环境评价将会影响政治辩论和决策制定。那么，如何使公众参与发挥作用？中国国家层面上的战略环境评价能从中吸取哪些经验呢？本案例指出公众参与的几个特征，对此问题尝试给出部分答案，概括如下：

适当的实际参与

由于相对应的决策情况不同，公众参与的水平和程度也就有所不同。某些情况下，需要公众广泛的参与，而另一些情况下最小程度的公众参与则更适合。然而，公众参与过程需要促进双向交流从而起到影响决策的作用。本文案例中的公众参与水平至少达到了双向交流的“参与的水平”。分析表明，当决策尚未制定的时候，才有可能实现实际参与。

有目的的、均衡的、灵活的参与方式

公众并不是一个均一的团体，而是包括很多不同的利益相关方，分别是利益不同的个人、团体和机构等。在政策层面的战略环境评价中，NGO 成为主要的相关方代表，代表不同社会团体的利益。本文的案例中，直接或间接受到提案影响的利益相关方通过听证邀请实现了有目的的公众参与。此外，听证过程中还力求协调各方利益相关者的意见，对分别受到议案积极影响和消极影响的相关方的意见进行均衡。再者，这次听证过程非常灵活，即使没有受到听证邀请的公众也可以对议案进行评论，所有的公众评议都能得到公平的回应。

对利益相关方要公开和透明

积极有效的公众参与必须保证信息和参与过程公开、透明。公众需要知道何处可以获

取信息，需要了解参与的过程、了解如何参与以及何时参与。在本例中，附带 SEA 等相关评述的议案、公众评议、对攻公众评议的回应、议会宣读记录以及相关的环境背景资料等所有的文件都放在议会的网站中。另外，对公众评议的积极响应，才能保证信息与参与过程的公开和透明。

积极回应的、可靠的参与

积极回应公众评议，仔细考虑公众意见，及时反馈公众评议的分析结果，有效提高战略环境评价中公众参与的可信度。本例中环境部对公众意见进行归纳总结，将听证记录提交给从政者并放在议会网站上。听证记录总结了参与的过程、听众的人数和姓名，并简要概述了公众评议内容。环保局对公众意见进行了分析，并说明意见被采纳或拒绝的理由，参与的公开透明和积极回应机制有助于提高参与过程以及决策过程的可信度。

8 结束语

本文重点介绍了从政者与公众共同参与决策制定的政治作用阶段，没有涉及由行政部门负责的初期筛选、范围确定、环境评估等前期阶段。行政部门、公众与从政者之间的相互作用程度不同，存在由静态到动态的联系。本文中所述的是一个动态的联系，从政人员采用了公众评议，从而加强了战略环境评价在决策制定中的作用。需要明确的是，从政者并没有受到战略环境评价的限制，而是“他们的决议是否被公众接受”这一合理性对他们起了相应的约束作用。

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[1]议案和其他政府提议的战略环评最新指导方针是由不同部门联合推出的—这有别于1995年的第一版方针（仅仅由环保部门书写出版）。

[2]环境与计划委员会是议会常设的 25 个委员会之一，其主要任务是处理议案和议会决议的反馈意见，特别是对第一次议会辩论之后的涉及某一个部门的议案

把环境因素融入中国经济——以出口贸易为例

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1 需要解决的问题

中国的经济生产没有考虑生产所带来的环境成本。本文将重点放在中国经济中一个特殊的领域—— 出口贸易，主要介绍了中国从出口的自然资源密集型产品中获得的实际经济收益，一旦考虑外部环境成本，将远远低于现在所看到的收益。在获取经济利益的过程中，商品生产将消耗社会成本。当商品需要投入大量自然资源时，或造成的环境污染严重降低环境质量时，社会收益将部分或完全被社会成本所抵消。

2 需要回答的疑问

如何通过战略环境评价（Strategic Environmental Assessment，SEA）跟踪中国出口商品的外部成本？

3 建议

在 SEA 体系中，有一种能追踪出口产品外部成本的技术称为 “虚拟转移”。“虚拟转移”技术量化在国内生产商品的自然资源输入，并绘制出口目的地的地图。定量的虚拟转移技术，不仅能使一个国家监控其环境资本的间接出口情况，还能识别出从进口的自然资源密集型商品中受益的贸易伙伴。

与中国目前正在开展的绿色核算工作相结合，中国可以计算出口商品的外部成本。现在，中国公民正在承担着污染带来的严重后果，而外国人却从消费这些出口货品中受益。外国消费者对补偿中国的污染和自然资源损耗，因为实际上很少考虑这些外部成本，也没有将其纳入出口商品的成本中。出口带来的结果是，中国事实上是在资助外国消费者对自然资源密集型产品的消费。另外，中国也从国外进口大量的原材料，因此中国同样也从外国国家这些无需补偿的环境损耗和环境退化中受益（特别是非洲）。

4 为何关注中国贸易

中国是一个全球性的经济力量，其国内生产总值（GDP）居全球第三位。它是世界上 GDP 年增长率最高的国家之一，在 1995-2005 年期间平均每年增长 9%。而人均 GDP 增长速度超过世界平均水平 3 倍以上。

中国是全球许多商品的主要生产地。它是世界上最大的水泥，钢材，养殖鱼类以及电视机的生产国，也是世界上第二大开发电力以及制造化纤纺织品的生产国。

中国也是一个主要的消费大国，随着收入的增加，中国正在逐渐增加对于高端产品的消费，如高质量的动物蛋白。据联合国粮食与农业组织统计，1990 至 2005 年期间，鸡蛋和牛奶的人均卡路里消费量增长了 3.5 倍以上，肉类的则增长了 2.5 倍（实际比例是 3.5 倍蛋类卡路里，2.5 倍肉类卡路里，3.4 倍牛奶卡路里） 。随着其财富的增长，对于等"奢侈"品的消费，中国经历了一段繁荣时期。与此同时，城市化也在改变着中国的消费和生产模式。在中国，快速的城市化是制造业和消费型产业(主要位于或邻近城区)发展的结果。据联合国预测，到 2020 年，中国城镇人口数量将达到近 50%，而汽车拥有量在 1995 年~2020 年期间可望增加 10 倍。

中国依赖贸易作为经济增长的动力，使得贸易成为环境分析中的格外受到关注的焦点。中国自 2001 年加入世贸组织后，中国的贸易额一直在稳定增长。源于贸易的经济部分在中国的经济总量中占有重要地位。贸易在 GDP 中所占比率高达 64.5%，即进口与出口总额占到 GDP 总量的 64.5%。相比而言，美国的贸易额与 GDP 总量的比率是 24.4% 。

中国商品和服务进出口增长速度已经超过经济增长速度，而出口增长又持续超过进口增长。在 1995-2005 年期间，出口增加了将近 6 倍，而进口则将近增加了 4 倍。更为重要的是，尽管其石化燃料的进口迅速增加，但中国出口增长仍然超过进口增长。中国年均出口增长率是 19%，进口增长率是 16%；与之形成对比的是，美国出口和进口增长率分别是 4%和 8%，在中国持续扩大与美国贸易顺差的同时，美国贸易逆差将持续增长。

中国的出口结构向制造业倾斜。制造业产品的生产与商业服务业相比会对环境造成更大的影响。2005 年，中国的商业服务业出口额达 740 亿美元，而其商品出口额达到 7610 亿美元。出口商品包括各种机械、办公用品、运输设备（占出口总额 46%）、服装和纺织制品（15%）、化学品（5%）、钢铁（4%）、农产品（4%）、以及燃料和矿产品（4%）。中国预计将在 2007 年成为全球第二大商品贸易国（出口及进口）。值得注意的是，电子和电气设备占到中国出口额的 23% ，而这些产品的生产行业是环境敏感行业。

尽管中国的进口少于出口，但进口量仍然很大，进口结构是环境分析的重要因素。中国的商品进口略低于商品出口（6600 亿美元），而商业服务业的进口则略高于出口（830 亿美元）。中国的进口以电子电气设备（26.5%）为主，其次是各类机械（14.6%），其中三分之一以上是计算机零部件、数据处理系统和办公用机械。另外 7.6%的进口主要是液晶器件等光学设备。此外有近 10%的进口是燃油。

5 中国贸易具有国际重要性

中国的进出口贸易是全球经济活动的重要组成部分。全球 7%以上的出口额来自中国，并有全球 6%的进口额流入中国。全球超过八分之一的电子设备和四分之一的服装来自中国，而将近三分之一的矿石、矿渣、煤灰进入到中国。事实上，如果我们以类别来检验中国的贸易平衡（即出口减去进口），就会发现在矿石、矿渣和灰分上的贸易逆差（每年 250 亿美元）仅次于与燃油相关的贸易失调（460 亿美元）。每年，燃油相关的进口额要增长

38% 。中国对大豆的需求直接消耗了全球含油种子进口量的四分之一。全球光学、摄像、技术和医疗设备的贸易额中 15%被中国的进口所占据。

6 贸易与环境之间的关系

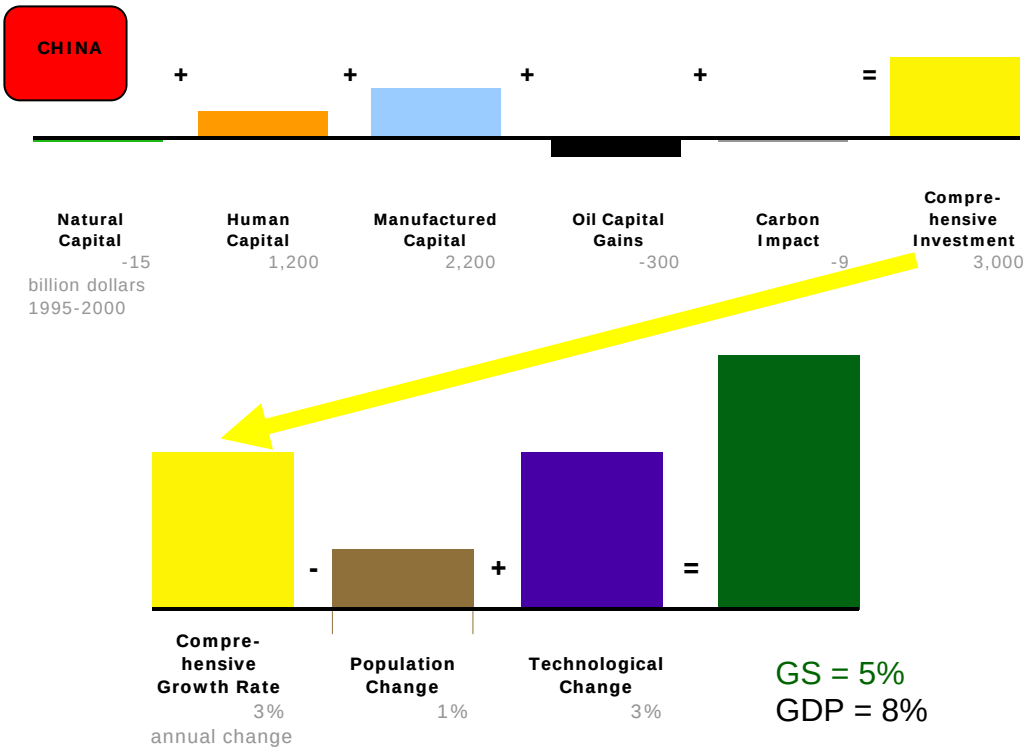
展示的总体数字显示，中国在经济生产和贸易领域的增长可观，其中却忽略了许多细节，包括环境因素。得益于外商投资带来的先进技术转移，中国一些行业(如汽车生产行业)的生产效率可以与发达国家媲美。近年来 ，中国能源强度（每 1 美元 GDP 的能源消费量）的收益在发展中国家里也是史无前例的。这就是说，在制造领域的许多产业主要依赖过时的技术，例如水泥业、造纸业和化工生产等产业。燃油价格上涨等诸多因素对技术更新换代形成了一定的阻碍，而这种情况不可能在短期内得到迅速改观。这意味着中国的生产过程将继续对环境产生重大的影响。

中国正面临着一些全球最严重的环境问题。一份研究报告列出了十二个问题，其中包括空气污染、地下水超采、河流中断、水资源短缺、农田丧失、湿地丧失、渔业资源枯竭、草地退化、废物堆积、生物入侵、生物多样性丧失以及人类诱发自然灾害持续增多等等，并指出，这些问题正在恶化，而不是改善。

出口商品的生产无疑会加剧这些环境的影响。如果环境资源损耗和退化成本能充分纳入到中国出口产品的价格里，笔者的这篇论文也就没有任何意义。目前环境资源耗减和退化成本却很少被计入出口产品价格里，所以对于环境质量或者原材料损失，中国并没有得到充分补偿。贸易活动导致了消费者和其消费决策对环境的影响这两者的分离。如果中国国民是消费这些环境成本很高的产品的受益方，似乎问题不大，但是目前涉及到出口，显然存在很大问题。在全球各地消费者享用中国制造商品的同时，环境成本的负荷却由中国国民头来承担。

从宏观经济数字来看，通过拉动生产和促进出口，中国经济获得了加速发展的动力。但一旦计入真正的产品生产成本，这些数字表达的就远远不够清楚了。下图显示了中国绿色 GDP 核算的初步结果，虽然绿色 GDP 体系中只包含了几个环境因素，但却清楚地说明，传统的宏观经济数字（表现为制造资本）所反映的情况是不全面的。用传统方法计算，中国 1995 年~2000 年期间的 GDP 增长率是 8%，但是一旦将其他成本因素计入在内的话，“真实储蓄”增长率便下降到 5%。

此外，由于对自然资源成本定价过低，中国正在以消耗有限的自然资源、破坏环境质量为代价，生产并没有带来最高社会效益的商品。对中国而言，这是双重的损失：一方面，中国正在放弃从能够带来更大收益的生产活动中获益；另一方面，一旦生产这些商品的环境成本被计入的话，中国的财富总量实际上可能会下降。



7 中国贸易具有全球性、区域性和地方性的环境影响

中国作为世界工厂，对环境的影响是全球性、区域性和地方性的。中国部分温室气体排放量可以归因于生产出口商品。2006 年，中国生产了全球 44 %的水泥，释放的二氧化碳占当年中国总排放量的 9 %。一项研究显示，中国如今（2006 年）是第一大温室气体排放国，主要来自化石燃料的消耗和水泥制造业，比美国高 8%，其中，煤炭消耗产生的二氧化碳排放量增长了 9%是主要原因。鉴于只是简单分析当前的温室气体排放状况，所有没有将历史排放量或人口因素考虑在内。需要明确的是，本文的着眼点不是讨论污染权的分配，而是想表明必须将全球气候变化的成本纳入到产品价格中。 中国的温室气体排放将会对其它国家造成损害，而中国本身也将从全球气候变化中蒙受损失。一项研究估计，全球气候变化将导致每年中国国内生产总值减少 0.2 %，这还是基于对未来中国农业生产的乐观假设而提出的保守结论。显而易见，如果生产商需要为在商品生产过程中排放温室气体造成的污染付费的话，那么他们可能会想办法将这些成本转移给商品消费者。中国将尤其可能从这一政策中获益，因为其很多温室气体是为了生产出口商品而排放的，这样一来排放成本将由贸易进口国支付。

在区域尺度，中国是最大的硫氧化物和氯氟烃排放者，而硫氧化物和氯氟烃则与空气污染和臭氧损耗有着密切关系。同样，中国的粉尘和空气污染物也正影响着远近的邻国。同样，这些环境损害的成本也很少纳入货物的价格当中。

中国的进口在全球各地产生了一系列的环境后果。中国的进口商品中有一部分转化为再出口商品，尽管如此，中国仍是一个重要的全球性消费大国。中国是热带雨林木材的主要进口国及第五大热带原木消费国，因此，当中国在自己国土上从森林覆盖率上获益时，也要为马来西亚、印度尼西亚、泰国和非洲的热带森林砍伐负部分责任。的确，中国已经取代了欧洲，成为加蓬及其他非洲国家）出口原木的主要消费国。中国拥有撒哈拉以南非洲 10%的出口额，而且中国最近正和非洲商讨进出口贸易问题，试图到 2010 年每年增加贸易额达 1000 亿美元。2006 年，中国在撒哈拉以南非洲地区的境外直接投资已增加到一年 12 亿美元。非洲向中国的出口大部分是用来满足中国对石油、矿石、金属以及农业原料（棉花，木材）的需求 。这几部分加在一起，构成了非洲对华出口的 85%。

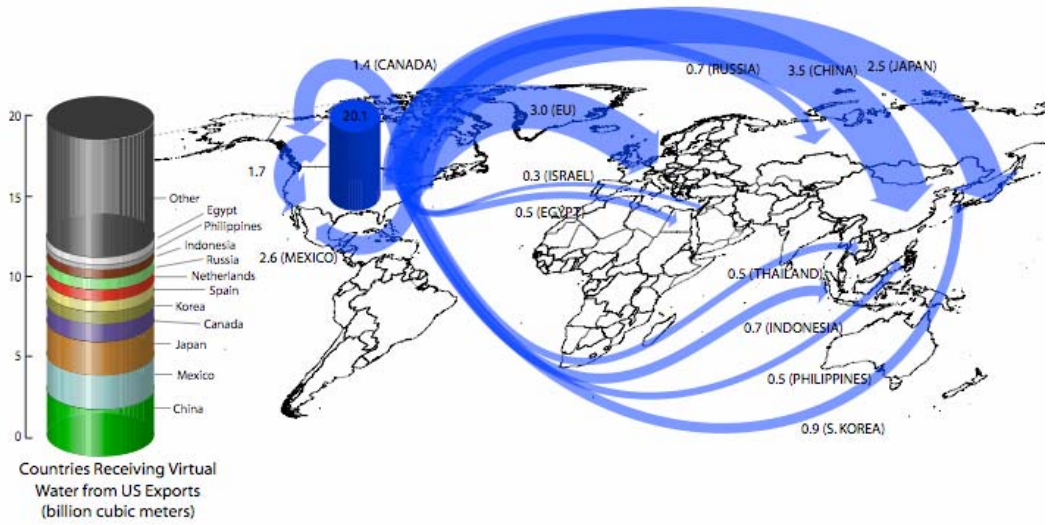
作为世界工厂，中国是一个重要的输入品消费者——例如，农药、化肥、木材——这些都可能对国内环境产生严重的影响。中国农药使用量占世界农药使用量的七分之一。这些农药的使用对中国的自然环境和人民健康都产生了影响。此外，中国并不是将它生产的所有农药都用在国内作物上——中国是农药净出口国。农药生产是一种破化环境的生产过程，但因为其环境成本往往是长期且分散的，这些环境成本很少被纳入个体农药厂家的成本中。在农业用地上过量使用化肥造成的营养污染已经严重威胁到了农业地区的水和空气质量。中国是全球最大的化肥消费国，中国 2005 年的化肥净贸易逆差达到 159 亿美元。使用化肥种植的农作物产品不仅用作国内消费，而且还供出口。最后，当中国在通过植树造林增加森林覆盖率的同时，天然林却不断地遭到砍伐。2005 年，中国生产了 150 万立方米的热带木材。

中国还从国外进口了很多废物，对中国环境产生了严重影响。，中国 2005 年的塑料贸易逆差达到 155 亿美元，其中有二十亿美元的塑料是废物。中国进口光学设备的相关数据并没有指出哪部分是废物，但这些进口产品价值中有超过 60%的是液晶显示设备及光学设备，毫无疑问，这在很大程度上是废物。对这些废物进行处置的环境成本极少受到关注。

8 追踪虚拟转移如何发挥作用？

虚拟转移追踪是一项用来连接分散的生产供应链的技术。该方法量化商品货物生产过程中所有的生产成本，并分离出那部分没有实现贸易的投入，换言之，就是那些不能转化为商品本身价值的投入。这部分成本便“留在”了生产/出口国，也就是所谓的虚拟转移。

最近开展的一项有关畜牧业生产与贸易的分析提供了一个很好的例子。巴西种植的大豆运至欧盟作为猪饲料。然后将育肥猪运到德国宰杀。接着猪肉是在中国被消费。这个供应链的虚拟转移追踪了饲料生产、动物生产和屠宰中用到的水，氮和土地投入。下图显示了笔者用虚拟转移追踪技术分析的结果。箭头代表从美国来的虚拟水转移。这些水用于种植猪和鸡的饲料，而猪和鸡都在国外被消费。所有数据都以 10 亿立方米为单位。



在我们这个国际化的时代，虚拟转移是一项有用的技术。通过定量分析与任何商品的供应链相关的“虚拟转移”，任何国家的消费在全球范围内对于环境的影响都能被跟踪查清。一个中国消费者吃猪排的决定，就会改变巴西的热带雨林，并在欧洲留下了氮废物。对于中国，这一技术可以用来追踪中国的出口商品对中国环境的影响。对于生产资源密集型产品来说，虚拟转移技术尤为重要。

虚拟转移本身只是一个有趣的概念，与政策有关的应用主要是因为很少给环境影响正确定价。也就是说，出口国没有将资源密集型商品的环境成本计算在价格当中，因此，出口国无法得到贸易伙伴的补偿。当进口国正在从不必使用自己的自然资源为原料、也不必破坏自己的自然环境的生产过程中收益的时候，出口国家却正在遭受着环境破坏。以低于社会成本价格的贸易，使消费国将其消费决策的成本费用转移到了其他国家。

出口国无法得到贸易伙伴的补偿。以低于社会成本价格从事贸易活动，使消费国将其消费决策的成本费用转嫁到了出口国。如果中国本土消费者在承担环境成本的同时也在享用这些产品的话是一回事，而如果中国正在支持其他国家对于资源密集型产品的消费，但却又没有得到这些国家对于使用自然资源环境的成本的补偿的话，则又是另外一回事了。目前，污染成本是由中国国民承担的，与此同时，外国消费者却正在从消费这些商品中获益。外国贸易伙伴并没有对中国造成的环境污染和自然资源耗减进行补偿，因为这些成本很少被计算或包括在出口成本中。出口贸易带来的结果是，中国事实上还要对外国消费者所消费的资源密集型商品进行补贴。

本文的主要观点是：中国的国内生产政策以”“经济”收益为基础；但是一旦将社会成本考虑在内，中国可能会重新考虑其鼓励出口的政策。如果中国的消费者在承担环境成本的同时也从产品中受益的话，这是一种情况；而如果中国在支持外国消费者对资源密集型产品消费的同时，又不能因生产过程中自然资源的消耗和环境退化而获得补偿的话，则完全是另外一种情况。

谁是主要的受益者？中国制成品的主要进口商是美国（21%）、欧盟（19 %）、香港（16%）、日本（11%）及南韩（5%）。必须指出的是，中国以低于社会价值的价格进口

原材料，同样也是在破坏其贸易伙伴国的环境。印度尼西亚、马来西亚、泰国及非洲等国的环境质量和自然资源基础正受到中国消费的威胁（不论是供中国国内消费还是供再出口）。

9 下一步骤

中国需要特别重视资源密集型行业。当对这些行业进行战略环境评价时，SEA 中应该包括对于投入和产出的定量分析。这些定量分析应与中国正在进行的绿色核算相结合。这些核算工作有助于突出真正的国家经济状态，因为这些工作将环境消耗成本计入在内。例如，“真实储蓄”将环境要素纳入到传统的国民储蓄核算中，这才是真正确保一个国家的福祉和可持续发展的储蓄和财富。

荷兰防洪战略环境影响评价案例研究

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1 导言

1.1 规划性质

“为河流让出空间”的规划旨在阐释必要的措施，防止荷兰现在和将来遭受莱茵河洪灾的影响。以使得在现在和将来，荷兰在莱茵河泛滥时能够得到保护。在 90 年代莱茵河已经发生了两场洪水，而随着上游的暴雨预测量的增加，在将来洪灾的危险将会变得更大。

更加具体的是，该规划针对莱茵河的三条主要支流：艾塞尔河(river IJssel)、低地莱茵河(river Neder-Rijn/Lek)和瓦耳河(river Waal) [i]，制定了一系列措施。这些措施可以归纳为以下两大类：

⑴堤坝的改进和加高（传统方法）

⑵在河流前地，或是河床上创造出更多的空间，提高河流的排泄和蓄洪能力（新方法；规划的题目“为河流让出空间”），例如，通过移除障碍物、加深河床、新建蓄水池、重新给大坝定位等方法来增加空间。

1.2 SEA 的作用

荷兰的 SEA 已经实行了十几年，有关 SEA 系统和流程的详细情况见附表。

有关这个规划，可以将其中一些措施与实现环境效益相结合，例如，创造出新的自然景观或是对现有景观进行改进。然而，这些措施往往成本更高或是安全性更差。实施的 SEA 旨在使规划者与决策者能够找出安全性、环境利益和成本三者间的最佳折衷方案。此外，由于三条支流是相互连接的，河流上游和下游分别采取的措施可能会相互影响，因此 SEA 也应该总览整个流域（参考：Project Organisation Room for Rivers, 2005）。

1.3 将 SEA 纳入规划

“为河流创造空间”的规划受《荷兰实体规划法》中所谓的“实体规划重要决议”约束，“实体规划重要决策”通过以下四个阶段制定决策：

- 第一步：由内阁发布“初步重要决策”
- 第二步：公众咨询并公布评议结果
- 第三步：内阁决策
- 第四步：议会审批

[i] 该计划也将马斯河的一小段纳入了考虑范围，但在此案例中不对其加以讨论。

整个过程中已经将 SEA 纳入其中。事实上，在第一步之前，就已经额外进行了以下几个步骤：

- 在 2002 年 3 月，发布了启动备忘录，作为评价的起点，随后就评估要求的内容开展了公众参与活动，并得到了环境评价独立委员会的建议。
- 此后，政府正式确定了评价的参照条款（TOR），并筹备评价工作，将其作为初步重要决策的必要组成部分。
- 在 2005 年 6 月发布了《参照条款》与《初步重要决策》，作为 实体规划重要决策”程序的第一步。然后就环境评价再一次展开了公众参与，并得到环境评价独立委员会的建议。在这一轮公众参与中，同时对评价的质量和政府提案进行了评议、并提出了相关意见。
- 在 2006 年末由内阁和议会进行决策

在最终规划成果里大约有 40 个项目。其中约有 30 个项目的 EIAs 已经开展或即将进行更为详细的设计和实施。

1.4 案例研究的重点

这一案例研究旨在简要回顾本次SEA中使用的方法以及SEA对决策制定的最终影响。

2 背景：历史和问题

由于该规划对人类的生命与财产安全具有潜在的重要影响，荷兰的社会团体及政界对此表示高度关注。同时，这项规划备受争议，尽管对安全问题已经达成一致，但可能采取的措施将会对不同的利益相关群体产生严重的负面影响。例如，农民们会丧失土地、自然景观会受到影响、需要巨大的投入预算、建立污泥贮存设备等。但在另一方面，经过精心设计，规划中的必要措施也可能会增加创造新的自然景观或娱乐设施的潜力。

这项规划的起点是荷兰政府早期颁布的一项决议，即新的防洪措施应尽可能地在河流两岸创造更多空间，而不是加固或加高堤坝。从长远来讲，改善河流蓄水和排水能力更具可持续性与灵活性，另外一个附带效益就是该项规划也为兼顾安全性和空间质量提高创造了可能性。

3 SEA 中应用的方法和步骤

3.1 资料汇编

为了促进规划与 SEA 相结合，成立了一个专门的统筹机构，同时负责 SEA 和规划的编制工作。尽管签约的私家顾问服务公司编写了评价的背景资料及其他部分，但 SEA 却是由该机构自行编写的。

为了设计替代方案和进行影响评价，开发了专门的计算机模型，然而从总体而言，这次 SEA 的实施主要以现有的信息工具为基础。

3.2 制定替代方案

起初采用的方法，主要用于制定一系列支配性战略，提高防洪安全，例如，强调堤坝

以内采取措施的战略与强调堤坝以外采取措施的战略。然后，在第二步制定整条河道支流的替代方案，尽可能按照选定的战略采取相应措施。然而，上述方法最终以失败而告终。实际上，支流的每一小段都有它自己的特性和局限性（例如：各地居民的偏好和各地的物理参数都不尽相同）。因此，最后决定把每条支流分割成属性相同的若干小段，然后再针对每一段分别制定替代方案，就如同小孩玩的积木一样。而最终整条支流的替代方案就由各块积木排列组合而成。

每一个替代方案的实施需要很多前提条件，其中最重要的几点有：

* 每个替代方案都应该满足法律要求，包括安全性和其他方面的要求
* 目前三条支流间的水量分配不发生改变
* 替代方案不影响河流目前的航运功能

除了上述前提条件，还定义了许多起点，例如：

- 当地政府和其他利益相关者的充分支持
- 符合当前的政府政策
- 符合防洪的国际协定
- 符合流域内现存的或是已经规划开发的项目
- 需要储存的污泥产生量应该最小化
- 采取措施的成本效益尽可能达到最高

通过上述步骤最终制定了四个替代方案：

⑴参照方案：仅仅通过加高加固和改进堤坝来实现防洪安全

⑵替代方案 1：实现防洪安全，但并没有将安全性与更好的环境、空间质量相结合[i]

⑶替代方案 2：实现防洪安全的同时，最大限度的提高空间、环境质量[ii]

⑷在对替代方案 1 和 2 评价的基础上，从两个替代方案中选出得分最高的各部分，构建所谓的“首选替代方案”。在该 SEA 过程中，三条支流的替代方案分别如下：

- 对于艾塞尔河：首选选案几乎等同于替代方案 2
- 对于低地莱茵河：首选选案是替代方案 2 和改进堤坝相结合
- 对于瓦尔河：首选选案是替代方案 2 和移除防波堤等障碍物相结合

3.3 问题和指标的选择

对于替代方案的制定和替代方案的影响评价，选取了以下问题进行分析。对于每一个问题，定义了一系列相应指标。

3.4 影响分析方法

⑴对高水位和气候变化的评价

作为替代方案制定的基础，首先需要计算近期（2020 年）的预计最高水位。计算中考虑了位于其它国家的莱茵河上游河段可能发生的水位变化（例如德国）。

然后，根据政府间气候变化专门委员会“中等预测情景”，计算出较长期（2100 年）

[i] 这里面的措施包括有河流低岬处障碍物的移除，河床的加深以及堤坝的加固等

[ii] 这里面的措施包括有在河流低岬处重新布置堤坝从而加宽河道，创造额外的河床等

的预计最高水位。在“中等预测情景”中，预计 2100 年平均气温会上升 2℃，同时海平面会上升 60cm。

⑵替代方案的评价

替代方案的影响评价通过以下过程进行。针对每一个指标，选取了适当的方法。鉴于文章篇幅所限，不可能对每个指标的使用方法都进行详细介绍。因此，下面仅对所用方法的主要特征进行概述。

首先，先要对规划区的现状进行说明，包括已决定建设或已经规划建设防洪工程等，即所谓的“自主发展情况”，在其他 SEA 案例中常被称为“0 替代方案”，将各类替代方案的影响与“0 替代方案”影响进行比较。

然后，预测河流各段的影响，即所有建议采用的措施分别对各河段综合影响。同时，要尽可能地将各种影响量化。影响分析主要着眼于持久性的影响，而土壤处理例外，需要分析土壤处理期间造成的干扰。

另外，影响分析重点考虑替代方案造成的直接影响，但对流域内新产生的“有利因素”的关注较少，例如，在未来几年内自然本身发展的潜在能力就不作考虑。鉴于此，影响评价（尤其是针对自然问题的影响评价）实际上描述的是“最坏情况”。

对各种影响进行量化估算后，在专家意见的基础上，为每项指标制定特定的方法用于评价影响。在分析过程中，需要考虑以下几个问题：影响是正面的还是负面的，非常重要的还是无足轻重的等等。判断的基本要求如下：

- 确定“0 替代方案”中的预期发展会产生正面影响还是负面影响，并分析相应的影响如何改变预期发展；
- 确定替代方案的影响是正面的还是负面的及影响程度如何；
- 分析规划区域对上述影响的敏感程度如何？

表 1：SEA 中的因子和指标

问题	*指标*
安全性管理&维护	采取的措施对降低预期高水位的影响
	对挖泥作业的需求
空间质量	区域的效用价值
	区域的感知质量（基于客观标准）
	对变化的稳定性 / 适应性
与远景规划的关系	是否符合远景规划
	适时 （很容易推迟）
	没有遗憾（如果取消也很容易）
（污染）土壤	在规划期间处理土壤的可行性
	运输
	障碍
	现有存储设备中需要的能力
	需要新的存储设备
	生产合用的原材料：粘土和沙子
	改善土壤质量：易受污染的脆弱性和现有污染点的清理

自然	对欧盟管理体系中保护区的影响
	对其它保护区和物种的影响
	对实现荷兰“生态主体结构”的作用
	自然区域的增长
	生态潜能的利用
景观	空间形态
	景观质量
文化历史	对有历史和文化价值的要素或地区的破坏
	对一个地区历史或文化结构一致性的破坏
功能	住房
	工业
	农业区的大小
	对农业的潜力、机会和风险的影响
	娱乐
	航运功能（水深）
地下水与地表水	利用地下水的饮用水生产
	对地下水管理造成的影响
	利用河水的饮用水生产
感知（基于人们的感知力）	自然和（文化）景观美的感观
	对河流动态的感知
	对娱乐机会的感知

影响的预测情况通常分为 5 个等级：非常不利、不利、中性、有利、非常有利。但对于航运和感官方面的影响，评价结果只有 3 个等级。对于每个指标，都有详细的解释来说明如何以这 5 个等级来评价影响程度。举例来说，对于安全性（表 1 中的第一个指标）而言，评价标准如下：

- 如果替代方案采用的措施能够使支流高水位降低 80%及以上或使支流高水位固定：非常有利
- 降低 60-80%：有利
- 降低 40-60%：中性
- 降低 20-40%：不利
- 降低 20%以下：非常不利

⑶成本效益分析

对于这一规划，也进行了成本效益分析，但并没有采用通过传统方法（参考：Central Planning Agency, 2005）。依照惯例，对荷兰主要基础设施的成本效益分析对所有成本和效益进行了全面评述，其中包括各种货币化的和非货币化的、定量的和定性的以及经济、社会和环境的成本和效益。然而，以该计划的尺度来说，这样的成本效益分析是不可能的，而且严格来说也是没有必要的。

鉴于此，实际上只进行了如下几项成本效益分析：

①对每个河段进行了以下两方面的评估：

- 发生洪灾的成本

- 预期采用的防洪措施成本

如果防洪的成本低于洪灾成本，那么其费效比就是一个正值

②对单一河段内所采取的每项措施而言，进行了以下两个方面的成本效益分析：

- 该措施的成本
- 该措施对安全性、自然、空间质量以及娱乐的促进或增长作用是多大

3.5 替代方案的比较方法

在 SEA 实施过程中对替代方案进行相互比较，使用的方法如下所示：

⑴单一指标：对于每个河段，SEA 通过上述的 5 个等级来比较不同替代方案在每一个单一指标上的得分。

⑵总体定型指标：通过与参照方案（即 0 选案）及其他替代方案对比，定性描述每个替代方案的主要优缺点。

⑶总体定量指标：就每个替代方案拟定的措施及其影响，给出主要的量化数字，并分别在不同的表单中给出。

⑷利用上述的 5 个等级，根据环境方面最重要的问题，分别在不同的表格中对替代方案进行相互比较，从环境角度选出最佳替代方案。其中，从环境角度看，最重要的问题如下：

- 对改善空间质量的贡献（定性）
- 自然：对保护区所产生的影响以及自然区域面积的增长情况
- 景观的改善情况（定性）
- 对历史文化的影响（定性）
- 土壤：必需的挖掘量、 土壤质量的改善情况（定性）、必定产生的新的堆积物
- 是否符合远景规划管理

敏感度分析：分别进行每个替代方案的灵敏度分析，主要分析哪些措施可能会改进替代方案的环境行为，这些措施能否从环境方面改变替代方案的等级。

3.6 公众参与

在规划的早期阶段和后期阶段都开展了公众参与活动。第一轮公众参与的主题是 SEA 应该包含的信息，如需要分析哪些替代方案以及需要对哪些影响进行评价等。在 SEA 和规划草案都准备就绪，开展了第二轮公众参与活动，讨论的重点是 SEA 的质量和规划草案中的各项提议。

这两轮公众参与活动中每一轮的组织活动都按照如下方式进行：

- 在各支流沿线的 15 个地点召开全天的会议，任何人只要愿意都可以参加。
- 会议的第一部分被称为“信息市场”，任何人都可以提问，并得到解答或获得其他的信息等等。
- 会议的第二部分为正式的“听证会”，期间任何人只要愿意都可以提出正式的评议，这些意见都会被记录在案，并在 SEA 过程或最终决策中做出回应。

此外，在规划和 SEA 的准备阶段，持续地开展了公众参与活动。在替代方案的制定

过程中，不断地向关系最密切的（当地）政府、机构和非政府组织（例如农业和环保组织）咨询。为此，还成立了两个区域性的“总体指导小组”。尽可能多地共同设计和选取相应措施。其中，地方的利益相关者最关心的似乎是污泥堆放处的选址和建造问题。

3.7 监管与追踪

根据 SEA 的要求，将在最终决策中附加有关监管和评估的计划。这一计划将指出需要进行的研究类型，以及如何把这些研究纳入监管规划。迄今为止，该计划尚未公布。

3.8 质量评审

环境评价委员对 SEA 质量的评审，是荷兰 SEA 过程中法律强制实施的步骤。该委员会是一个由政府资助的民间机构，与政府或是规划、计划制定过程中的其他利益相关者没有任何关系。 评审过程中，委员会认为该规划中实施的 SEA 总体上内容清晰且质量较高。然而，SEA 中删减的一部分内容，委员会认为是必不可少的。

着眼于所有替代方案，委员会认为所有的替代方案都十分关注于那些试图将防洪和提高空间质量两者结合起来的措施。尽管这都符合政府先前的决策，即把两者结合定为首选方案，但将两者结合存在重大的缺陷，另外，费用也相对较高：每个替代方案的总体预算都要到达 22 亿欧元左右。委员会和成本效益分析都认为，用上述费用，可以实现一个更好的替代方案。如果花费 10 亿欧元来加固堤坝，那么剩下的 12 亿就可以用来改善空间质量。总体上，这个替代方案除了能达到同样的安全效果之外，还能对流域中的例如自然、景观和娱乐等多方面发挥更大的作用。然而，这一替代方案却未出现在 SEA 的审查对象之列（参考：Netherlands Commission for Environmental Assessment, 2005; Central Planning Agency, 2005）。

4 结果与经验

4.1 对决策制定的作用

通过对替代方案 1 和替代方案 2 进行比较，结果表明替代方案 2 总体上能够实现安全性与空间质量改善的最佳结合。然而，若将替代方案 1 中的某些要素纳入替代方案 2 中，可以进一步提高替代方案 2 的成本效率比，尤其是在某些河段加固堤坝和移除障碍等。

成本效益分析表明，对于大多数河段而言，与洪水的破坏相比，防洪措施的成本是可以接受的。然而，对于许多河段而言，若是采取一系列不同的措施，成本效率可能会进一步提高。在这些河段，尤其是不要采取将安全性与空间质量改善相结合的措施，而是采用专门针对安全性（例如加固堤坝）和空间质量（例如自然和景观的改进、娱乐设施的建立等）的配套措施，这样在经济上更为合理。

根据替代方案 1 和替代方案 2、成本效益分析和地方、区域利益相关者的评议两个方面的对比，制定了一个“首选选案”，并对其进行了评价。正式的决策决定几乎完全按照这个选案执行。

对于某些污泥堆放点的选址，来自各方的阻力增加，尤其是那些并没有将自然和景观

改善考虑在内的选址。但除此之外，上述决策总体上在没有太多争议的情况下被各方所接受。

4.2 成果：SEA 的影响

SEA 产生的影响并不确定。一方面， SEA 过程中制定的替代方案最终几乎 100%的被正式采纳，表明 SEA 对决策制定的确有重大影响；而另一方面，负责规划的相关部门从一开始就采用了非常公开、透明的参与方法，制定规划。很难判断，假若缺少 SEA，是否还会选择那样的方法；而如果仍然采取了上述方法，那么仅仅依靠这个方法最终能不能达到同样的环境效果（参考：Runhaar & Driessen, IAPA, 2007）。

荷兰环境评价委员会和中央规划局（负责成本效益分析）建议，应该进一步考虑那些对空间质量的潜在作用更大的替代方案。然而政府并没有采纳，其中一个主要原因是这种替代选案不符合政府先前正式确定的方法，即防洪措施应着眼于空间的增加而不是堤坝的改进。而在规划后期制定替代方案的方法可能会对政府的威信造成影响。另一个主要问题就是因为改进堤坝的负面影响，尤其是丢自然尽管的不利影响，使得政府并不确信这种替代方案能够从总体上给空间质量带来更多益处。

4.3 本案例对中国的参考价值

与中国大部分地区一样，荷兰的人口也很密集。每个重大政策或贵划都会影响到许多人的生活，因而往往都备受争议。SEA 是解决争议的一个强有力的手段，通过它可以使政策或规划制定过程更加清晰透明；此外，它还能创造出一个对话的平台，提高决策的科学性。上述案例将成本效益分析与环境、社会评价相结合，在规划制定过程中发挥了重要作用。

但本案例的意义不只如此。其它许多 SEAs 过程尽量避免负面环境影响，而这次 SEA 过程的主要目的是实现安全性和环境质量的相互加强。特别是在战略层次上， SEA 的一个重要附加价值就是指出如何找到双赢方案。

附表：荷兰综合 SEA 的决策制定的主要步骤

步骤 1：开始流程并实行透明化

在公布的“启动文件”中，主导当局将对该战略、政策或规划的目标进行阐述。

步骤 2：早期参与和自主建议

第一轮的公众参与；在启动文件公布之后约两个月内，任何人只要愿意都可以就 SEA 和计划的所需内容提出意见。

与此同时，政府环境和自然机构，及独立的环境评价委员会将公布与 SEA 所需内容相关的意见。

在启动文件公布大约三个月之后，SEA 所需内容征集终了并将其作为正式的“指导方针”公布，作为战略、政策或计划的领导性工具。

步骤 3：评价、计划的开发和公布

SEA 以及战略、政策或计划草案的完整准备；在对 SEA 的诸多正式要求中，有一个是要求开发出“从环境角度来说最好的选案”（平行于其他选案）；一旦完成，SEA 以及战略、政策或计划草案将同时公布。

步骤 4：第二轮公众参与和自主建议

任何人只要愿意都可以对 SEA 及战略、政策或计划草案的质量提出意见。

有关 SEA 质量的意见会由环境和自然机构及独立的环境评价委员会公布

步骤 5：正式制定决策

主管当局采用（或者拒绝）此战略、政策或计划。在最终决策中必须要体现出是如何将评价、参与及建议考虑进来的。

步骤 6：监管和评估

如果该战略、政策或规划得到了批准，那么就对其执行情况进行强制性监视和评估，并将监视评价的结果进行公证后提交给独立的环境评价委员会。

4.4 结论：SEA 的有效实践经验

该例 SEA 表明，有可能会组织一个公开、参与性强的综合 SEA/规划过程，从而成功制定在一个备受争议的规划，综合考虑环境问题。同时，这一 SEA 过程已经明显地对最终采用的规划产生了重大影响。其中的一个主要原因是 SEA 和整个规划过程是交互进行的，并且不断的与各方利益相关者进行商议。另外一个原因就是各部门内部成立的“项目管理小组”，同时负责 SEA 和规划的制定，各个主要责任机构都在小组内部协同合作。

然而，由于政府主要责任部门对公众参与和环境保护所持的公开和积极态度对最终成果也起到了重大作用，所以很难确定 SEA 的影响究竟有多大。

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英格兰与威尔士环境局在洪水风险管理规划中实施战略环评的经验

Ross Marshall, Joanne Murphy & Martin Slater

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摘要：英格兰和威尔士的环境局是其水利行业的主管部门，同时也是英格兰和威尔士战略环境影响评价（SEA）系统中的责任部门、咨询部门和洪水风险管理规划SEA的倡导者。在其洪水风险管理规划及规划的准备过程中，环境局开发完成了一套它所独有的SEA方案。该方案的重点在于SEA的目标牵引方法以及EIA与后续工程的关系（分级）。

本文的第一部分探讨了环境局是如何尝试性的将SEA的原理应用到洪水风险管理规划中并加以实施的。第二部分（准备中）则针对三个与英国主要河口（泰晤士、亨伯和埃文河口）相关的、目前已经实施了的案例进行了研究。这三个地区都是重要的工业区，有巨大人口需求，是大量的洪水风险指定点的聚集地，有经验丰富的洪水风险管理基础网。

1 导言

1.1 英国的战略环境影响评价

欧盟指令2001/4 2/EC（即通常所说的“战略环境影响评价”或“SEA”指令）要求对那些可能会产生重大环境影响的规划和计划进行正式的环境影响评价。这个指令适用于2004年7月21日及以后开始筹备的规划和计划。如果相关机构筹备或采用的计划或者规划在EC指令要求的范围内，则必须先就该规划或计划可能产生的重大环境影响准备一个报告，同时咨询环境机构和公众意见，并在规划或计划的筹备过程中或采用规划、计划之前，对该报告和zixun结果进行充分的考虑。对于那些已经采用的规划和计划，相关机构则要提供有效信息，并且要说明是如何将环境影响评价纳入规划、计划之中的。欧盟指令2001/4 2/EC指令已经列出了对环境影响评价基本程序和技术要求，成员国可以在各自现有的SEA系统内有选择的加以执行。对于农业、林业、渔业、工业、交通、废物管理、水管理、电子通讯、旅游、城乡规划、土地利用等行业的规划和计划来说，必须实施环境影响评价。

此外，对于那些为今后项目审批设定发展框架的项目（不限于EIA指令所列出的项目）以及那些肯定会对环境产生重大影响的规划和计划，要求实施环境影响评价。一些特殊的规划和计划，诸如国防、民防、财政预算等，则不在该指令适用范围内。此外，政策也不包括在内。

环境局（EA）负责英格兰和威尔士的环境保护、产业调整及自然资源管理。SEA指令(2001/42/EC)指出，欧盟成员国“鉴于特殊的环境责任，”必须“指定咨询机构”。根

据相关规定，环境局（EA）是英格兰和威尔士指定的法定咨询机构，这意味着在规划制定及相应的 SEA 实施的整个过程中，在许多阶段都必须向 EA 进行咨询，试图通过这些联系影响其他行业规划或计划的战略环境结果。对于跨越国境或者部分在英格兰境内的规划或计划，必须遵循英国的 SEA 制度，结果环境局也是这类规划的法定咨询机构。

环境局（EA）作为指定机构，对于提交给它们的规划或计划，已经明确下列环境问题是它们的兴趣所在，并对这些问题的负面影响进行审查：

- 水（水质及水资源）
- 气候因素（包括战略洪水风险和气候变化）
- 空气
- 土壤（包括废物和受污染土地问题）
- 生物多样性（包括植物和动物）
- 文化遗产
- 景观
- 人类健康
- 有形资产（包括地质重要性和地质结构）

此外，环境局（EA）作为政府部门，在水管理、地下水开采、洪水和海岸风险管理、渔业以及内河航运等方面都具有调控职能，环境局（EA）自行编制的规划也必须实施 SEA 评估。

1.2 水管理及洪水风险管理中 SEA 的应用

从 17 世纪有关英国东部地区沼泽地排水的记录中可以发现，历史上英格兰和威尔士对防洪和地面排水的水管理是应农业需求而发展起来的。在 1928 年英国皇家委员会曾表示：“为了满足不断增长的人口对食物的需求，必须把那些潜在的好土地都利用到生产上，尽管它们正受洪水威胁且排水不良。”（Purseglove, 1988）。因此，土地排水的观念在英国景观及行业发展的态度上根深蒂固(Murphy & Slater, 2005)。然而，自上个世纪 90 年代中期以来，对于水管理的看法发生了根本性的转变：从洪水防御转变成对洪水风险的管理，其中的措施包括通过改善地面排水来开垦传统的洪泛区以及对河道的改良。如今的重点是，在英国范围内，设法将洪水的不利因素转化为有利的社会、环境可持续发展的效益。

公众逐步认识到气候变化的影响。在此背景下，随着公众环保意识普遍增强以及大型破坏性洪水的频次增多，在过去 5 年内已经开始采用更为合理和可靠的方法进行洪水风险管理（FRM）。对此，环境局（EA）提出了洪水风险管理规划和战略，促进 FRM 向更加可持续的方向发展。在 2004 年，英格兰和威尔士当时的战略环境影响评价（SEA）规则在法律上并不适用于这些规划和战略。对此，环境局（EA）已经制定了相应的政策，由于这类规划要求广泛意义上的战略评价，因此政策将 SEA 框架用于这类规划中。根据我们以往在泰晤士河、亨伯河和埃文河上得到的经验，可以证明 SEA 方法对于规划过程具备固有的价值，最好在 SEA 完全纳入战略规划过程之时，才开始实施规划。

在对历史背景进行简要的介绍后，本文对英格兰和威尔士 FRM 规划框架进行了概述，并分析了环境局在 FRM 规划过程中的 SEA 应用。

2 英国洪水风险管理规划的历史背景

2.1 英格兰和威尔士洪水风险管理的职责

历史上，不同类型的洪灾风险（例如河流沿岸的、沿海的、城市排水、局部排水系统）以及不同类型的河流（根据洪水风险），都是由不同的机构来管理的。Purseglove 对英格兰和威尔士的地面排水及洪水管理的历史发展做过全面分析(Purseglove, 1988)。Scrase 和 Sheate 也对地面排水和洪水管理的政策发展进行了概述(Scrase and Sheate, 2005)。在 1973 年水法颁布之前，大约有 1600 多个不同机构负责水管理。然而，目前仍处于不断的发展过程中，从而逐步实现水管理体系的合理化。如今，英国环境食品农村事务部（Defra）负责制定总体防洪政策，并监督表 1 中所列的 4 类主要执行机构。Defra 负责英格兰洪水与海岸侵蚀风险管理的总体政策，并资助环境局在英格兰的大部分 FRM 活动，同时通过项目援助的方式，资助其它洪水与海岸防御机构（见表 1）在以下方面的投资，即政府防御洪水与海岸侵蚀风险的改进项目。但 Defra 自身并不建造相关防御设施，也不会指导相关机构具体需要建设哪些项目 (Defra, 2007)。

表 1：英国洪水风险管理的责任机构

机构	主管
环境局	河流、潮汐和沿海的洪水（包括主要河流及“高危河道”的转移（COWs））
地方市政机构	在英国约有 400 个，对没有被指定为主要河流或是 COWs 的河道，并且不包括在 IDB 范围里的河道，负责防洪设施管理
内部排水委员会（IDBs）	在英格兰大约有 200 个，管理排水系统的或是与之相关的活动，包括泵站的运转等
私营水/污水公司	在英国有 26 家公司，负责管理供水及污水管网造成的洪水

1996 年 4 月 1 日，英国国家河川局、皇家污染监察署以及废弃物管理局合并组成了英国环境局（EA）。1995 年颁布的《环境法》确立了环境局在 1991 年《土地排水法》和《水资源法》下的权力和义务，对指定的河流及海域的洪水风险进行主管。在 2007 年 12 月，英国环境食品农村事务部（Defra）还将委派环境局负责一下工作，即对地方海事当局承担的海岸侵蚀研究和 FRM 工程的审批和拨款工作。环境局同时还负责洪水预警、预测，并监督与防洪相关的事务。1995 年的《环境法》声明，环境局的责任是“从总体上保护或改善环境，为了实现可持续发展的目标而努力”。在 1995 年《环境法》中同时还要求环境局对其自身的各项工作和活动所造成的影响进行评价。由于认识到保护和改善环境整体功能的需要，与 1973 年的《水资源法》相比，1995 年《环境法》赋予水机构更多的义务，要求各水利水文机构“应当关注那些保留自然美和动植物...的希望”。

2.2 英格兰和威尔士的洪水风险管理规划

洪水和侵蚀都是自然现象，因而不可能完全防止。英国环境食品农村事务部（Defra）

的国家风险资产评价报告中指出，约有 180 万居民点以及 140000 商业物业，即约有 400-500 万人口处于洪水威胁之下(Defra 2001a)。最近的国家防御需要和成本评价估算出，处于危险中的资产价值大约是 2500 亿英镑（以 2004 年物价水平）。由于洪灾而带来的年平均损失约是每年 10 亿英镑(Defra 2001b)。

英国的洪水风险管理始于几个发生在特定地点的历史事件。以 2000 年为开端，前农业、渔业与食品部门（MAFF，即现在的 Defra）对各类项目评价发布了一系列指导性文件，在洪水风险评价中引入了战略要素，其中第二个指导性文件是《洪水与沿海防御战略规划与评估（FCDPAG2）》“为流域洪灾风险区域的战略分析确定了框架，从而适当的说明问题，确定解决方案”。FCDPAG2 导则通过以下几个方面加强洪水风险管理：采取较为主动的方法、预测未来的洪水风险、一个更加综合的方法、进一步强调环境、一个更加长期的方法、引入了 50-100 年的研究时限、更具有对比性的方法、在全国范围内对各项计划按优先顺序分级。FCDPAG2 系列确定了一个新的 FRM 框架，如图 1 所述，框架中必然包含一个三级方法体系，最后在 FRM 项目或管理活动中到达顶点。本文将重点讨论河流洪水风险规划和流域洪水管理规划（CFMPs）以及洪水风险管理战略（即 PAG2 战略）。

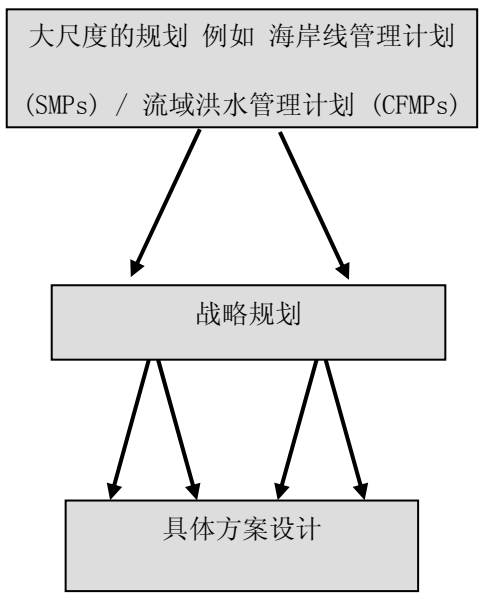

图 1：规划层次

过去 10 年里洪水风险管理中最重要的发展之一，就是引入了《流域洪水管理规划》（CFMPs），覆盖了广阔的地理区域，是上述层级结构里面的第一个规划。《流域洪水管理规划》（CFMPs）的目的是在洪水风险管理方面确定更具持续性的方案（表 2）。

CFMPs 并不是用来提供洪水问题的具体解决措施的，而是用来提供政策选案，掌控洪水风险管理中的长期决策，并阐明流域内气候变化的影响中首先需要考虑的因素。同时，CFMP 规划过程还试图与流域内的重要利益相关者以及其他决策者沟通交流。因此，在

CFMPs 规划更强调对洪水风险的理解而不是精心考虑未来的基础设施需求。原则上，需要详细说明的关键要素如下：影响洪水机制的流域活动、敏感受体的种类和位置以及上述两者之间的关系。通过使用不同的未来情景，能够模拟主要变化可能造成的影响，例如气候改变或者风暴潮等，从而预测未来的风险。

表 2：流域洪水管理规划的目标

减少洪水的风险和洪水对人以及自然、历史和人为环境的损害
尽可能使各种工作与自然过程相协调，增加由洪水风险管理带来的效益，并对可持续发展发挥有效作用
支持贯彻欧盟指令、政府政策和目标以及环境局的环境构想
促进可持续的洪水风险管理
熟悉和贯彻各规划政策、法定土地利用规划，执行欧洲水框架指令

3 影响环境局 SEA 方法的因素

1996 年环境局的成立是运用综合方法制定 FRM 规划的一个重要发展。从后知的角度来看，环境局的成立标志着一个重要的转变，从以经济、技术为基础的传统决策过程提升为融入更多环境和社会要素的流域管理措施。下文即将提到的欧盟水框架指令(European Commission, 2000)则更加强调通过更多的自然管理过程来实现洪水风险管理。水框架指令（WFD）是欧共体水法中最重要的部分，要求所有的内陆和沿海水域在 2015 年达到“优良状态”。为了实现这一目标，即将建立流域行政区体系，并为每个行政区设定基本环境目标，包括地表水生态目标。本文的第二部分将对英国环境局 FRM 规划实施方法的影响因素进行讨论，并分析这些因素是如何对环境局政策和 SEA 的实施产生基础性影响的。

3.1 战略方法的发展

早期的洪水风险管理战略方法以 MAFF（1992）导则以及 2000 年 FCDPAG 系列中所提建议为基础。FCDPAG 导则认为需要从根本上改变国家政策，从洪水防御逐渐向洪水风险管理转变，最近在《水体空间发展》 (Defra, 2004)以及《环境局战略》（环境局，2003）中也有所体现。这次政策转变的原因是复杂的(参照 Scrase and Sheate, 2005)，但总体上可概括为以下几点：

- 英国国家及欧盟环境立法的要求，例如《栖息地指令》和《欧盟水框架指令》；
- 土地利用由生产补贴到环境管理及多样性的转变，导致农业生产下滑
- 气候变化和 1998 年、2000 年及 2002 年在英国发生的一系列洪水事件
- 环保机构的关注重点从环境保护转变为大规模的恢复及改善生物栖息地
- 维护及新建传统防洪措施的成本不断增加，导致资源优先级的重新排序，即考虑重点从农田的保护转变为针对人民生命及财产的保护。
- 交通运输和土地利用规划等其他行业战略规划的发展，为洪水风险管理规划提供了很多发展思路和理念。

- FRM 相关机构的文化背景发生了根本变化，由战后的地面排水和洪水防御到当前的 FRM 规划。

英格兰和威尔士有许多私营及公共机构，在政策转变过程中发挥了重要作用，例如英国自然、威尔士乡村委员会、皇家鸟类保护协会以及地方野生动植物信托组织。在上世纪 90 年代，这些机构的关注点和政策都发生了根本性转变，从保护物种或个体的栖息地转变为重点强调通过基本的生态过程维持生物多样性。流域洪水风险管理以及保护和改善生物多样性成了这些机构以及许多其他机构（例如国民信托和河流恢复中心）最优先考虑的事。近年来英国自然协会或皇家鸟类保护协会（RSPB）等许多组织已经拥有大批土地，保护湿地生境并使其修养生息，并就此进行了广泛宣传。英国生物多样性行动计划（1995）强调以生物多样性及河流湿地恢复为主要任务的水管理工作。尽管在相关出版物中，几乎没有任何证据可以证明上述机构从根本上推动了战略环境影响评价（SEA）在洪水风险管理中的应用，但事实上他们的确发挥了重要作用，支持并说服了其他相关机构将战略性更强的方法用于洪水风险管理规划中。

3.2 战略环境影响评价指令

2001 年 7 月 21 日，欧盟战略环境评价指令（EC，2001）正式向各成员国发布。各成员国有 3 年的时间将指令中的要求导入本国的法律中。欧盟指令对于规划过程和决策的长期影响有待进一步深入分析。然而，在英国环境局的实际工作中可以看到欧盟指令的早期影响，促进了更具战略性和合理性的方法在 FRM 规划中的应用。

2004 年环境局（EA）公布了执行 SEA 的内部政策及技术导则：

“对其自身规划和计划的环境影响进行评价和管理，是环境局工作的必要部分，而且是环境局完成目标的关键，包括可持续发展目标”（环境局，2004）

该政策的重点就是要求只在以下两种情况下实施 SEA：根据法律要求必须实施；由于强烈的实际需要或是政策驱动要求实施 SEA。后者主要受英国环境食品农村事务部（Defra）相关要求的影响。英国环境食品农村事务部（Defra）一份立场声明中确定，没有法律要求必须将欧盟指令用于 PAG2 战略或 CFMPs。然而，他们（Defra）却明确表示战略可以为未来的规划设定框架，并具用重要的环境意义，需要进行广泛的协商咨询。英国环境食品农村事务部（Defra）相信，采用 SEA 方法是非常正确的，而且已经极大地推动了事务部的各项工作。(Defra 网站, 2004)。

需要遵守 SEA 指令，需要将 SEA 灵活地用于 FRM 规划框架，这两项要求是影响环境局方法选用的两个根本原因。由此，环境局在其程序导则中将 SEA 指令作为出发点，尤其要遵循有关以下几个方面的法律要求；确定评价内容和范围、公众参与、环境报告书的内容编制以及追踪监管。

另外，强调通过以下手段进行环境影响评价：设定目标；在洪水风险管理规划的等级体系中，在适当层次上对环境风险进行管理；将 SEA 纳入到规划制定过程中。洪水风险管理的分级如图 2 所示。

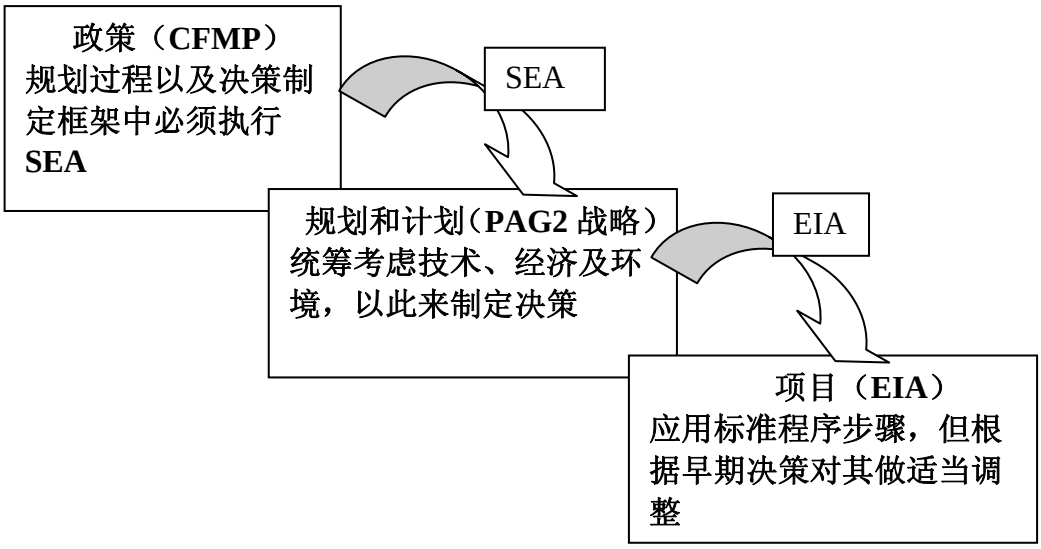

图 2　FRM 及其环境评价的分级

关于哪些规划和计划必须正式实施 SEA，英国的正式立场有所改变，英国政府将来可能会宣告 PAG2 战略将要求自那时起正式实施 SEA。

4 结论

针对中国的洪水风险管理以及气候变化的现状，本文归纳出了以下可供采纳的几点经验：

- 范例中的洪水风险管理的方法上的转变使得 SEA 过程更易实现；SEA 的引入及其背后的立法框架并没有引起这个变化，但是却会继续维持这一改变。
- 虽然已建立的洪水风险管理体制和已有的管理实例背景复杂，但是英国环境局还是试图将 SEA 的程序和技术要求融入到现在和将来的洪水风险管理计划框架中，而不是将两者分开考虑
- 洪水风险管理计划的阶段性要求 SEA 应该采用弹性的方法；而把分级的概念融入 SEA 中之后，就能够满足这个要求。
- 分级的理论可以在实践中得到执行，但这是考虑到在国内 SEA 相关法律要求和检验下，对洪水风险管理规划的需求之后才可能实现的。

总而言之，当 SEA 过程以一个相对独立但又与其他部分环环相扣的形式融入到整个计划过程中，并且集中于与洪水风险管理相关的社会和环境问题上的时候，SEA 就已经发挥了它的最大价值。通过洪水风险管理，与环境问题相关的技术难题及其解决方法已经发展到了这样的程度，以至于一个独立的环境评价框架或者是审计记录都只是徒有虚名。然而，运行中的实际经验又显示，决策者们最关心的就是维持过程的可见性，特别是涉及到需要进行判别、分析和客观的环境及社会风险评价的时候，而这在计划的报告阶段更为突出。

分级的概念在英国的洪水风险管理框架中较容易地实现了。然而，一边是四级的过程（政策——规划——计划——项目），另一边却是两级的过程（SEA——EIA），这两边

必须匹配。由此，SEA 中需要一个弹性的方案来弥补前三级，以确保问题能够在合适的阶段及合适的细节等级上被考虑。这在实际管理中是比较困难的，因为有很多计划参与者希望能看到所有环境相关主题在每一阶段都得到全面的评价。然而，环境局的经验表明，一个公开、透明且包含着清晰的 SEA 环境及社会影响分析的洪水风险管理方法，是一个有效的评价工具。通过这个工具，环境局可以划定危险水域，并确定主要河流、河口及海岸系统的洪水管理问题。此外，我们在进行管理变革时，也必须考虑到未来气候变化带来的影响。

4.1 英国洪水风险管理中的 SEA 应用对中国的参考价值

由于科学证据的不断增加，英国政府开始在全国层面上开展规划，以应对未来气候变化影响对英国造成的风险和挑战。此外，英国政府与政府间气候变化专业委员会（IPCC）相接合进行研究的的报告，指出本世纪海平面将会上升数十厘米。

英国极易受到东部海岸沿线海平面上升的影响。同时，英国错综复杂的河网所面临的洪水形势也十分严峻，这些都使得洪水事件和暴风潮对英国沿海人口和主要城市的威胁不断增加。此外，如今英国工业发展集中在海岸带地区，众多资产都直接受到暴风雨、洪水以及风暴潮的威胁。而一些脆弱的生态系统，包括防护性沙丘和保护英国海岸线的海滨系统在内，都可能遭到暴风雨、洪水及风暴潮的损害。

面对未来的气候变化，首要的战略问题便是英国如何在暴风雨和流域洪水发生频次不断增加、海平面和潮汐高度不断上升的情况下，对它的主要经济、居住地和工业中心进行保护。由于现有的税收和预算体系必须应对上述风险，英国已经努力采用基于风险的方法，确保资源都能分配在已对国家产生巨大回报的地方。应对上述风险时，会产生相应的经济风险和技术挑战。在对经济风险和技术挑战进行评价过程中，SEA 提供了社会、环境影响分析的有效手段，对决策过程起到辅助作用。同时，SEA 还能够让当地居民和战略决策者充分了解面临的问题，了解英国政府目前的政策是如何处理气候变化引起的风险的。此外，由于寄希望于全国及全球温室气体排放减少将会减缓气候变化趋势，但目前仍然需要采取必要的防范措施，对英国现有的洪水风险管理防御设施进行改进和调整。

在国家水平上实施 SEA，有助于英国政府确保在大量国家及区域规划和计划中，充分考虑气候变化问题。同样，欧盟指令（2001/42/EC）要求规划制定者确定并评价规划对大量环境问题的影响，包括对气候因素的影响，另外，要求规划者在适当时机采取有效措施使重要影响最小化，并对已经确定存在的影响作出响应措施。实践证明，引导规划制定者关注上述几个方面的国家政策和行动方案以及英国政府制定的首选适应战略是非常有益的。

5 结论

简言之，本文介绍的以下几个部分，可能对中国的洪水风险管理和气候变化的适应性调整有重要的借鉴作用：

- 洪水风险管理方法的根本转变已经促进了 SEA 过程的实施；SEA 及其立法框架的引入没有引起方法的变化，但将会支持这种改变。

- 在洪水风险管理的复杂背景下，存在大量的实践经验和实例，据此，英国环境局已经开始将 SEA 的方法和技术要求纳入目前两个新的洪水风险管理框架中，而不是采用独立的概念。
- 洪水风险管理的分级体系要求灵活地实施 SEA；作为一个综合过程，SEA 本身的分层理念能够满足这些要求。
- 根据英国有关 SEA 的规章制度分析风险管理计划的需要，从而在实践中执行分层的理论概念。

最后，当 SEA 作为一个独立却又与规划过程相互联系的部分，纳入规划制定过程时，建议将 SEA 的效益最大化，重点考虑与洪水风险管理密切相关的社会和环境风险。在洪水风险管理过程中，技术问题和措施与环境问题相互交叠，以至于独立的环境评价框架或审计跟踪成为一个人为的区分过程。

很容易将分级体系用于英国洪水风险管理框架中。然而，这一过程分为四个层次（政策-规划-计划-项目），具有两个层次的 SEA（SEA-EIA）必须适合这一过程。因此，需要采用的灵活方法实施 SEA，不足前三个层次，确保在适当的阶段、在适当的层次上考虑问题。这在实践中可能很难解决，尽管许多顾问希望看到在每个阶段全部环境主体都得的了充分评价。然而，环境局的经验表明，通过 SEA 将社会、环境因素纳入开放、透明的客观洪水风险管理过程中，的确是有效的评估手段，有助于促进环境局解决目前主要河流、河口和海滨系统面临的许多严重的水管理和洪水管理问题。面临未来气候变化引起的挑战和不确定性，必须改变管理手段，采取有效措施来应对可能出现的风险。

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法伊夫可再生能源补充规划导则战略环境评价

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摘要: 本文介绍了法伊夫参议会（英国苏格兰东部的当地权利机关）制定的两个可再生能源补充规划导则（SPG）的战略环境评价（SEA），两个导则分别是关于风能和可再生能源技术的补充规划导则。首先介绍了英格兰规划系统和SEA，然后进行案例分析，最后给出了案例研究的评价结论。

1 苏格兰规划系统介绍

苏格兰的规划系统是通过法令确定的（主要是 1997 年的《城乡规划法》（苏格兰））。苏格兰是（大不列颠）联合王国所辖的四部分（还有英格兰、威尔士和北爱尔兰）之一。苏格兰行政部门认为规划是实现政治目标的重要手段，将规划视为司法部长的责任。

多样性的需求是苏格兰规划（和苏格兰行政部门）面临的问题之一。因此，乡村地广人稀的压力不同于格拉斯哥和爱丁堡所处的中心地带（是案例研究的所在地）。

在 1996 年之前，苏格兰当地政府才建立了区域委员会和地方委员会两极政府系。那时，区域委员会通过筹备结构规划负责战略性政策，而地方委员会负责地方规划（更倾向于项目）和发展调控问题。目前只存在一个适当的单一体系，但地方权利机关却要承担一系列的责任和任务，比如，他们既要筹备结构规划又要制定地方规划（例如发展规划），这些规划包含了某地区的未来发展和土地利用政策。另外，地方委员会还针对具体规划制定补充规划导则。这样规划和导则可以涵盖很多问题，诸如住房、交通、就业、购物、休闲和农村地区保护。

1.1 苏格兰 SEA 概况

苏格兰 2005 年的《环境评价法》（EAA2005）于 2006 年 2 月 20 日开始生效。该法废除了苏格兰先前执行的 2004 年《规划和计划环境评价》（EAPP，2004）。与大多数其他欧盟成员国不同，苏格兰立法机关不仅面向计划和规划，还面向战略（即政策——包括规划导则）。2006 年 9 月，苏格兰行政院发布的 SEA 工具包中，阐述了环境报告的形式与内容导则。苏格兰行政部门每年都发布 SEA 报告总结 SEA 的进步与发展。表 1 显示了 2005 年和 2006 年实施了 SEA 的规划、计划和战略情况。

由表 1 可以看出，2006 年城乡规划和土地利用规划中实施 SEA 的比例最高，达 53%”，其次是“交通”17%。这两个部门 SEA 的实施情况合起来占到了 2006 年 SEA 实施活动的 70%。“通讯”是 2006 年唯一没有实施 SEA 的行业。对于能源部门来说，仅执行了 5%（即总共

6 个）。

1.2 苏格兰能源规划与 SEA 的背景

苏格兰行政院为苏格兰制定了许多艰巨的可再生能源任务。由此，到 2020 年，国家 40%的电力供应应该来自于可再生能源。到 2010 年，苏格兰的过渡目标为实现可再生能源供应达国家电力供应的 18%；近期行政院的一份报告显示，这一过渡目标进展顺利，有望圆满实现。要实现这一目标，部分程度上归因于苏格兰丰富的自然资源，包括风能以及潜在的海浪和潮汐能 。

表 1　进行 SEA 的规划、计划与战略（政策）

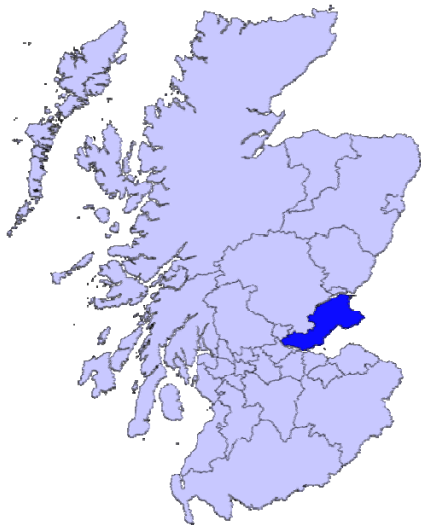
行业	从 2005 年开始执行的 PPS 数量	2006 年 PPS 的开始数量	2006 年 PPS 总数	百分比
农业	0	3	3	2.5%
林业	1	2	3	1%
渔业	1	0	1	1%
能源	1	5	6	5%
工业	0	3	3	2.5%
交通	3	18	21	17%
废物管理	1	2	3	2.5%
水资源管理	0	1	1	1%
通讯	–	–	–	–
旅游	0	1	1	1%
城乡规划与土壤利用	13	51	64	53%
其他	0	14	14	12%
总计	20	100	120	100

来源：苏格兰行政部门（2007）

2 案例研究介绍

法伊夫是苏格兰的一个行政区，位于泰河湾和福斯湾之间。苏格兰南部的法伊夫半岛与泰河湾北部、北海东部、直到福斯湾南部相接。法伊夫是苏格兰第十三大行政区，人口 35 万（见图 1）。几乎 1/3 的人口居住在登弗姆林郡、柯尔库布里郡和格兰洛斯郡。

法伊夫筹备两个可再生能源补充规划导则（SPGs），并分别实施了 SEA。其中，一个是有关风能的补充规划导则，另一个则是关于可持续能源技术的导则，不包括风能。



来源：苏格兰行政部门（2007）

图 1　法伊夫地图

2.1 法伊夫可再生能源 SPG 的 SEA

为了评价影响的性质，并分析立法规定的任何影响的可能时间尺度，相关机构以严格的框架为基础执行了 SEA 过程。并根据 SEA 条例进度表 2（6.a-e）中明确规定的评价标准（见框 1），对各种政策要素进行了评价。

框 1 苏格兰 SEA 条例中的评价指标

1. 生物多样性/植物群落/动物群落
2. 人口
3. 人类健康风险
4. 土壤
5. 水
6. 空气
7. 气候要素
8. 有形资产
9. 文化遗产（包括古文物和古建筑）
10. 景观
11. 标准 1-10 的次级、累积和/或协同效应
12. 自然 2000 站点

SEA 旨在论证，法伊夫地区实施的多种可再生能源政策，对实现可持续能源供应起着积极的作用。

2.2 SEA 程序

这一案例中的 SEA 过程如下：

(1) 筛选：苏格兰的 SPG 需要执行 SEA 过程（见 EAA 2005, EAPP 2004）。

(2) 划定范围:2007 年 1 月 31 日,苏格兰环境保护署(SEPA)、苏格兰自然遗产署(SNH)、历史苏格兰中心(HS)等三个法定咨询机构将有关 SEA 评价范围的文件提交苏格兰行政局，并对其进行了正式评议。

(3) 起草环境（SEA）报告，并进行了公众咨询（2007 年 3 月 26 日~5 月 21 日，共八周）

(4) 另外，需要对 SPG/SEA 的实施情况进行监督，这一过程将在 SPG 与地方规划相结合的基础上进行（2007~2010 年）。

2.3 SEA 的目标

SEA 的主要目标是确保补充规划导则与其他发展规划纲要共同执行期间不会带来环境负面影响。

另外，风能 SPG 的 SEA 旨在识别适于建设风电场的地点。

最后，不包括风能在内的可再生能源技术 SPG 的 SEA 过程旨在向可能的发展机构提供建议，分析能够在法伊夫地区实施的技术范围，主要包括：

1. 水电能
2. 热泵（大气/水）
3. 地热
4. 可燃植物（基于生物量）
5. 海岸沿线和近海技术（海浪和潮汐能）
6. 太阳能技术（热和光电）

2.4 评价方法

法伊夫参议会利用简单矩阵评价 SPG 的每个政策因子可能对环境的影响程度。以下图 1 示范了矩阵法和评分机制，框 2 列出了评价标准。

图 1　评价框架

政策因子	评价标准（见表 1）											
	1	2	3	4	5	6	7	8	9	10	11	1212
SS1：对策	+/−−LT	+/−− LT	+LT	+/−− LT	+/−− LT	−−	−−	+LT	+/−−	+/−−LT	+/−− LT	−−

最后，图 2 表示了如何通过对每个政策因子赋值的定量法进行打分。

根据每种政策因子（例如，风能 SPG 的风电场地点和其他 SPG 中的六种可再生能源技术）对表 1 中每种因子的可能影响打分。该方法为评价可能无法预测的影响（考虑到不确定性）提供了机会，不仅可识别出显著不利影响，也能识别出有利影响。分为长期、中期

和短期三个阶段，适时考虑影响的持续时间。还可识别影响是暂时的还持久的。之后，发展规划提出的建议与 SPG 必须一致，这是进行评价的基础。

框 2　评价矩阵符号

+	显著有利环境影响
-	显著不利环境影响
--	无显著环境影响
?	不知道
+/--	属于有利范围的影响
-/--	属于不利范围的影响
+/-/--	一系列可能影响
LT	长期
MT	中期
ST	短期
P	永久的
T	暂时的

图 2　政策/建议打分范例

规划内容	对生物多样性/ 植物群落/动物群落的影响强度	理由
政策因子 SS1: 对策	+/-- LT	政策因子要求土壤分配必须避免对自然环境特征的破坏。规划的长期性。

3 战略环境评价结果——主要结论

SEA的主要目的是确保可再生能源的发展与补充规划导则一致，不对环境产生负面影响。表3列出了各种政策因子的评价结果，表明所有政策因子不会对1（生物多样性、植物群落、动物群落）、8（原料）、9（文化遗产）、10（景观）和12（Natura 2000 sites）产生显著负面影响。另外，对于7（气候因子）的所有政策要素打分都是正值。

研究表明，SPG政策要素的主要负面环境影响与风电场建设引起的土壤扰动和土壤迁移有关，但总体上没有产生严重的负面影响。相反，SPGs的实施结果可能对当地的发展带来了一些有利影响，使当地居民的就业机会增多、温室气体排放减少和大气环境质量的改善。因此，SEA结果表明SPG可提升环境质量，但这并不意味着未来SPG不需要进行SEA，因为SEA可识别在执行SPG过程中需缓解的一些重要环境问题。

表 3　SPG 政策因子的 SEA – 概况

政策因子	指标											
	1	2	3	4	5	6	7	8	9	10	11	12
SG1:风电场(也是政策因子)R1:风涡场)	--	+/-- LT	+ LT	-/-- LT/T	-/--	+	+	--	--	--	+/--	--
SG2 :海岸线技术和着陆装置	--	--	--	-/-- LT/T	-/--	+	+	--	--	--	--	--
SG3 : 可再生能源 - 所有技术	--	--	--	-/-- LT/T	--	--	+	--	--	--	--	--
SG4 :可再生能源技术	--	--	--	-/-- LT/T	--	- -	+	--	--	--	--	--
SG5 : 联合热电共生厂	--	--	--	--	--	-	+	--	--	--	--	--
PSG1 : 近海活动	--	--	--	--	--	--	+	--	--	--	--	--

表4以评价指标“土壤”为例，总结了SPG政策因子的评价依据。

表 4　评价土壤指标的依据

政策因子	影响土壤的强度	理由和依据
SG1 : 风电场 (也是政策因子R1: 风涡场)	-/-- LT　T	由于作业分散，涡场对土壤影响较小。厂址在使用后仍可恢复。长期而不是暂时利用。
SG2 : 海岸线技术和着陆装置	-/-- LT　T	海岸线技术和着陆装置的发展可通过有条件的规划许可降低对土壤的影响。政策阻止海岸线技术和着陆装置引起的海岸线侵蚀与土壤损失。长期而不是暂时利用。
SG3 : 可再生能源 - 所有技术	-/-- LT　T	由于可再生技术使地方对于技术的需求量减小，因此对土壤影响较小。厂址使用后可恢复。长期而不是暂时利用。
SG4: 可再生能源技术	-/-- LT　T	由于需要更多技术且作业分散，可再生技术的发展对区域土壤影响较小。厂址在使用后仍可恢复。
SG5 : 与热电厂联合	--	政策促进能源的高效利用，可通过减少可燃物废物的排放来减少温室气体，净化环境。
PSG1: 近海活动	不可用	不可用

3.1 有关 SEA 范围报告的咨询意见

法定顾问公司关注的主要问题是,相对于SPG草案编制，划定SEA评价范围的过程（通常是SEA的一部分）开始得较晚。SEPA和HS深知这一点,认为：

“风能和不包括风能在内的可再生能源技术补充规划导则草案已处于编制过程的高

级阶段,而SEA仍处于确定评价内容和范围的初期。另外,SEA的目的是使决策者熟悉整个规划制定过程,从开始准备规划到规划实施;应该在规划准备期间而不是有关规划方向和内容的实质性决策已经执行后再开展SEA”.（SEPA, 2006）

确定SEA评价范围的报告应该包括更多有关可再生能源技术类型的信息（不仅仅是风能）。此外，还需要更多详细的环境基础数据,但是,这类数据相当有限。同时，确定SEA评价范围的报告要求,SEA在缺少可再生能源、无替代方案的情况下，评价当地的环境演变。

此外，建议将现存的“棕色地块”的基础数据与该区域位于棕色地块的可再生能源基础设施的比例联系起来。由于SPGs制定了在法伊夫近海水域可再生能源发展规划的政策要素和建议, SEA评价范围的报告应该适当包括法伊夫海洋环境基础数据,并分析对海洋环境、海洋设施以及特别重要的渔业、休闲和旅游区域的可能潜在环境影响。

最终，咨询机构强调，“经济发展”不应该作为SEA的主题，与环境评价也没有关系，据称，咨询机构支持基于矩阵的方法。然而，SEA评价范围的报告也应有助于说明如何监管SPGs，确保任何风能开发符合SPsG政策，并保证任何减缓措施的有效性。咨询机构认为后者是SEA过程的必要组成部分。

3.2 评价

为了重点评价法伊夫参议会两个SPG文件中的政策要素，实施了政策层面的SEA过程。对SPG中的政策因子进行了分析，并定量评估影响重要性。结果表明，SPGs中提到的政策要素对地方或区域环境没有重要的长期负面影响，另外，还发现对区域内二氧化碳排放量的减少具有长期的正面影响。

评价过程中采用的矩阵法简单、有效。根据咨询机构对确定SEA评价范围的报告作出的响应，并参照零方案，也就是法伊夫无可再生能源的发展情形，有效地改进了最终环境报告。关于法伊夫地区的可持续能源利用，普遍认为SEA非常有效的概括了主要的关注事项。随后将SPG纳入了地方区域规划，确保地方规划更好地满足环保需求，同时协调全球对可再生能源的需求，应对面临的全球变暖的困境。

3.3 对成功因素、问题、缺陷的展望与总结

三个法定咨询机构对SEA确定评价范围的报告进行了评议，极大地提升了SEA的总体质量。如果没有确定评价范围这一阶段，也没有咨询机构的意见，SEA过程的质量可能会降低。咨询机构指出一些高度相关的要点。且由于SEA的目标是配合政策（导则）的决策过程，从而主动影响政策的内容。范围界定确保了重要附加基线数据的收集，并将其写入环境报告中。

咨询机构指出，法伊夫参议会已经妥善处理了咨询人员的信息，并包括对专家要求的所有其他信息。总之，由于SEA过程确保了SPG对环境的敏感度，法伊夫计划在2007年至2010年间将SPG逐步纳入地方规划中。SEA程序的唯一不足就是相对于SPG草案编制来说，其开始进行的时间过晚，降低了SEA对SPG最终版本的影响力度。然而研究表明，可再生能源政策和战略方面的SEA是有益的，可促进更多环境导则的产生。

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