Hong Kong Strategic Environmental Assessment Manual

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Environmental Protection Department
The Government of the Hong Kong
Special Administration Region

Views on the contents of this Manual are very much welcome. Comments and suggestions could be sent to the Environmental Protection Department, Hong Kong Special Administrative Region at the following address:

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Other Guidance Materials Available

- SEA Reports
- SEA Leaflet
- SEA Study Brief
- SEA Manual

Purpose of this Manual

This manual is intended to be used by government officials, decision makers and professionals involved in the formulation of policies, plans and programs (PPPs) which might have significant environmental implications.

Strategic Environmental Assessment (SEA) is a "proactive instrument for integrating environmental considerations into spatial and sectoral policies/plans/programmes (PPP) formation for suitable development." (IAIA, 2002). As there is a wide variety of PPPs being considered under different circumstances, SEA needs to be both systematic and flexible, providing the best available environmental information and advice to decision makers to improve the environmental performance of their proposed PPPs.

This manual aims to be as practical as possible, attempting to provide a systematic, and user-friendly guidance on SEA process. Throughout the manual, examples from more than 15-year experience in implementing SEA in Hong Kong are cited to demonstrate how SEA, if properly applied during the formulation of PPPs, can contribute to more environmentally sustainable outcomes and prevention of major environmental problems.

The examples also demonstrate that SEA techniques and principles set out in this manual are practical and effective. SEA is not just an academic exercise but has been put into practice in Hong Kong and worldwide, achieving remarkable environmental outcomes. The examples accompanying the text illustrate the difficulties and challenges facing SEA and demonstrate how major issues can be resolved.

Part I

What is SEA

Part I of the manual is an introductory section. It sets out the definition of SEA, the objectives and benefits of conducting SEA, when SEA should be conducted and who has a duty or obligation to undertake SEA. The section illustrates that benefits and values would be added to the formulation of policies, plans and programmes and lead to environmentally sustainable outcomes when SEA is applied properly at the earliest possible stage, coincided with the formulation of policies, plans and programmes. The goal is to provide adequate, timely and useful environmental information when crucial decisions are made.

1. Definition and Objectives

1.1 Definition

While there are different definitions adopted in different countries, it is generally agreed that SEA is a systematic process for evaluating strategic environmental implications of proposed policies, plans and programmes (PPPs) and alternatives during the early stage of decision-making process. SEA has been widely adopted in many countries as a tool to facilitate integration of environmental considerations into PPP formulation processes and to facilitate the achievement of long term sustainability.

What is SEA ?

" A systematic process, with multi-stakeholder involvement, for analysing and evaluating environmental implications of proposed policies, plans and programmes, for assisting in strategic or planning decision-making; and for following up strategic or planning decisions. "

Source : Mr. Elvis AU , Assistant Director (Environmental Assessment and Noise), Environmental Protection Department, the Government of the Hong Kong Special Administration Region (2004)

1.2 Objectives of SEA

SEA is essential for informed decision-making. The aims of SEA are:

- To facilitate the search of sustainable development options or alternatives.
- To provide environmental information (including both adverse impacts and benefits) at the earliest stage of PPP formulation processes within a decision-making framework.
- To inform decision makers and the public about the environmental and sustainability implications of PPPs so as to improve decision making processes.
- To address cumulative environmental impacts that cannot be fully addressed by individual project Environmental Impact Assessment (EIA).

These aims assist in achieving the following objectives:

- Promoting full consideration and integration of environmental implications at the early planning stage of major strategic PPPs;
- Seizing opportunities to enhance environmental sustainability and quality; and
- Avoiding environmental problems and identifying environmentally-friendly options.

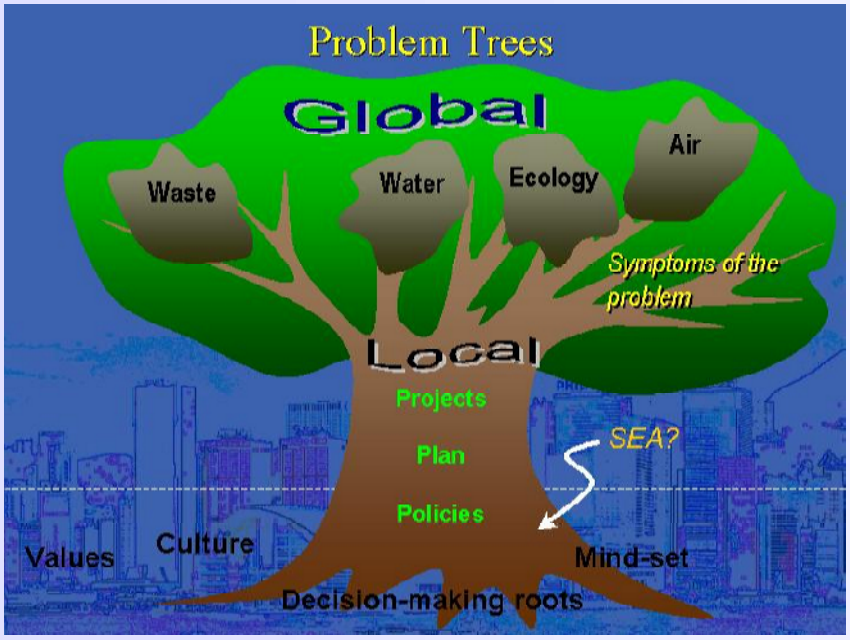
SEA addresses

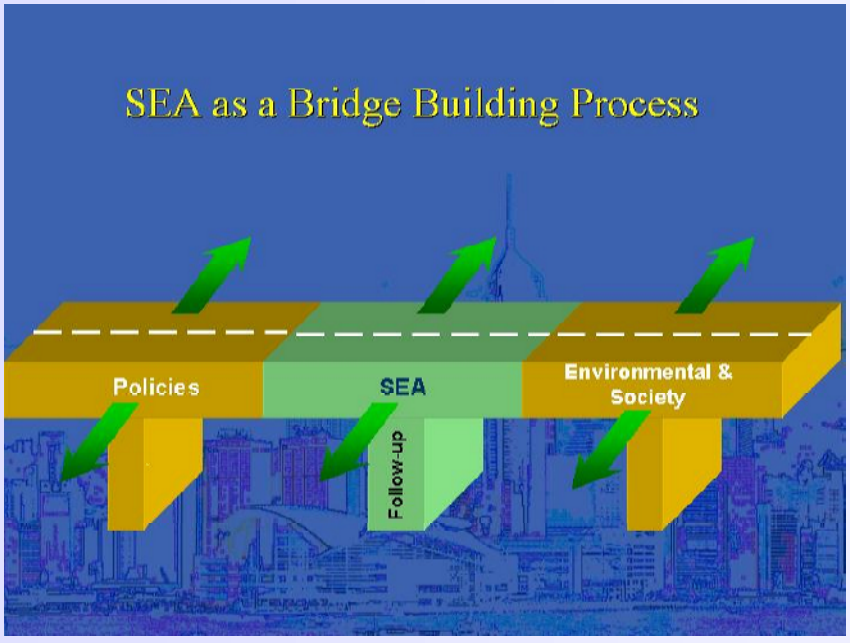
- Both environmental impacts and benefits
- Cumulative environmental implications
- Needs and alternatives
- SEA aims to integrate, not just mitigate
- Facilitate policy formulation
- Be an iterative process in most of the cases

Why is SEA Important?

- SEA serves as a vital step to achieve sustainable developments by incorporating the principles of sustainable developments into PPP and ensuring them being developed on a sustainable manner;
- SEA can test out alternatives at a policy level before proceeding with site specific projects;
- SEA can take up a pro-active role to steer developments toward environmentally "robust" areas or away from environmentally sensitive areas; and
- SEA can oversee cumulative impacts of relevant projects simultaneously at a higher level.

Why and how SEA can make a difference ?





SEA

1.3 Comparison between SEA and EIA

SEA	EIA
Usually more proactive	Depends on project proposals
Environmental impacts arising from policies, plans and programs	Environmental impacts arising from projects
Less information available, more uncertainties	More information available, less uncertainties
More solution space	Less solution space
Assess cumulative impacts and environmental benefits	Assess direct impacts
A more iterative process	Usually a more well-defined beginning and end
Under administrative process, except Schedule 3 EIA	Under statutory process

2. What are the Benefits ?

2.1 As a Tool for Achieving Sustainable Development

It is widely accepted that taking into account social, economic and environmental considerations in decision-making processes is an essential step for achieving sustainable development. SEA helps achieve this as it provides early environmental information to decision makers for considerations. The role of SEA is particularly important should decisions involve PPPs with potentially significant long-term environmental implications.

Two milestone documents - AGENDA 21 and the Rio Declaration on Environment and Development- agreed at the UN Conference on Environment and Development (also named as the "Earth Summit") in 1992 and reaffirmed at the World Summit on Sustainable Development in Johannesburg in 2002, outlining key policies toward achieving sustainable developments, have already reflected the importance of SEA on sustainability developments.

Principle 4 of the Rio Declaration states that :

> "*In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.*"

In AGENDA 21, **"***Integrating Environment and Development in Decision Making*" and "*Information for Decision-making*" are identified as a major program area and a means for sustainable development respectively. In addition, paragraphs 8.2 to 8.12 of the agenda specifically outlines the program area of "integrating environment and development at the policy, planning and management levels."

There is no doubt that SEA is becoming an important tool for integrating environmental considerations into PPP formulation processes. It provides a framework for predictions and assessments of environmental impacts and facilitates early integrations, essential for an informed decision-making.

2.2 Re-framing Issues to Facilitate Sustainable Solutions

SEA could facilitate more sustainable solutions by re-framing possible issues of PPPs from a traditional and "business as usual" approach to a perspective focusing on sustainable development. As SEA promotes early consideration of issues, it allows more rooms for devising sustainable solutions and alternatives which would enhance long term environmental

quality. On the contrary, if environmental assessments are carried out only after major decisions are made, solution spaces would be largely constrained and would usually end up in focusing on mitigation, rather than on sustainable outcomes, thus resulting in residual impacts which add together over a certain period of time would pose major threats to sustainability.

2.3 Early Consideration of Alternatives

Since SEA is conducted at an early stage of a decision making process, it allows early evaluation of the needs and comparison of different options including a broad range of alternatives well before any irrevocable decision is made. The early consideration of needs and alternatives can improve efficiency by avoiding or reducing the need for remedial measures at later stages particularly when alternatives are limited at a project level.

2.4 Avoid Major Environmental Problems and Minimize Cumulative Impacts

Certain PPPs would have the potential to cause tremendous and long-term environmental implications. If decision is made without sufficient consideration of their environmental implications, the community might suffer, which in fact could be avoided by adopting SEA.

After the formulation of PPPs and to put them into implementation, a group of projects would usually be followed. Project EIA could address and mitigate environmental impacts arising from the project itself but there might be difficulties at a project level to address the cumulative impacts arising from projects. SEA, however, can help avoid or reduce cumulative impacts by comprehensive assessment at a strategic level during PPP formulation.

2.5 Maximize Environmental Benefits

PPPs might have both positive (benefits) and negative (impacts) environmental implications. If decision is made with proper consideration of environmental implications through SEA, there exist opportunities for facilitating sustainability and significantly improving the environmental quality.

Example - Second Railway Development Study (RDS2)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/second_railway.html

The SEA fully considered the hidden environmental benefits and costs between rail and road transport and confirmed the advantages of railway over road options from a strategic environmental perspective. Decision-makers, after taking into consideration the SEA findings, decided to adopt a "priority to railway" policy. Significant environmental improvements have been achieved as a result, for example, reducing air pollutants from vehicle emissions of about 600 tonnes of NOx and RSP and about 160,000 tonnes of CO_2 per year.

2.6 Facilitate Discussions among Stakeholders

One of the major steps in conducting SEA is the continuous interaction among stakeholders and the members of the public so SEA provides opportunities for the project proponents, the stakeholders and the public to discuss the PPPs starting from the very beginning of the decision-making process. Discussions or public consultations permit a viable PPP with better environmental outcomes to be devised which can cater to the best interests of all and to be acceptable by the society, avoiding unnecessary objections and dispute over the PPP during the future implementation stages.

3. When should SEA be Conducted ?

To tie in with the Critical Juncture of Decision Making

To achieve sustainable environmental outcomes rather than being just an academic exercise, SEA should be carried out at the earliest possible stage and should tie in with the critical decision-making stages of PPPs being considered.

To collect appropriate environmental information and to provide timely environmental advice, it is necessary to understand the institutional arrangements of the jurisdiction under consideration, and more specifically the decision-making process of the relevant PPPs being formulated. If the findings are made available too late to make any changes to improve the environmental performance, the major decisions might have already been made. Timing is crucial.

Example - Territorial Development Strategy Review (TDSR)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/territorial_dept.html

The SEA, as part of the review study, provides timely inputs to the main study to ensure environmental considerations are properly considered and integrated. To achieve this, the SEA was divided into different stages to tie in with the critical junctures of the decision-making processes. Below is a simplified flowchart showing the inter-relationship between the SEA and the main study (Figure 1).

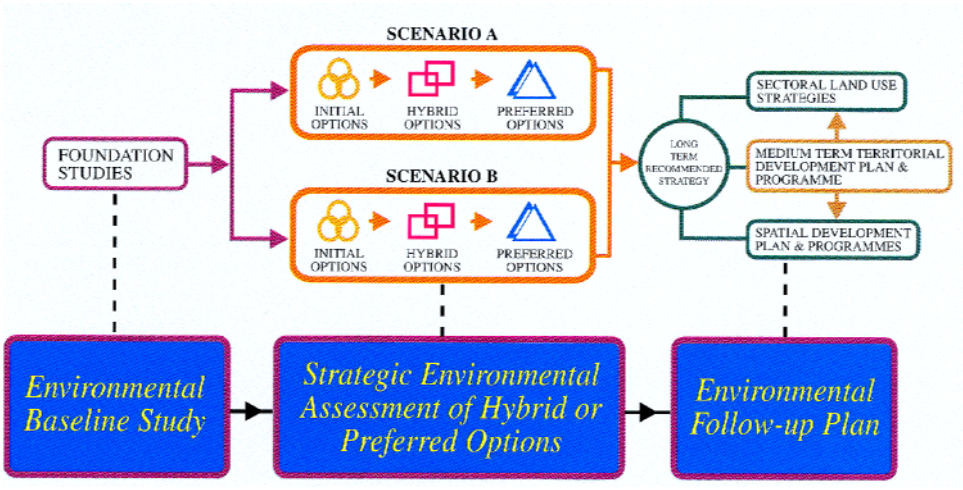


Figure 1 Strategic Environmental Assessment Process in Territorial Development Strategy Review

4. Who Should Undertake SEA ?

For submission of PPP to a decision-making body, the proponent has a duty and obligation to complete a SEA and submit the SEA as an integral part of the PPP for decision making.

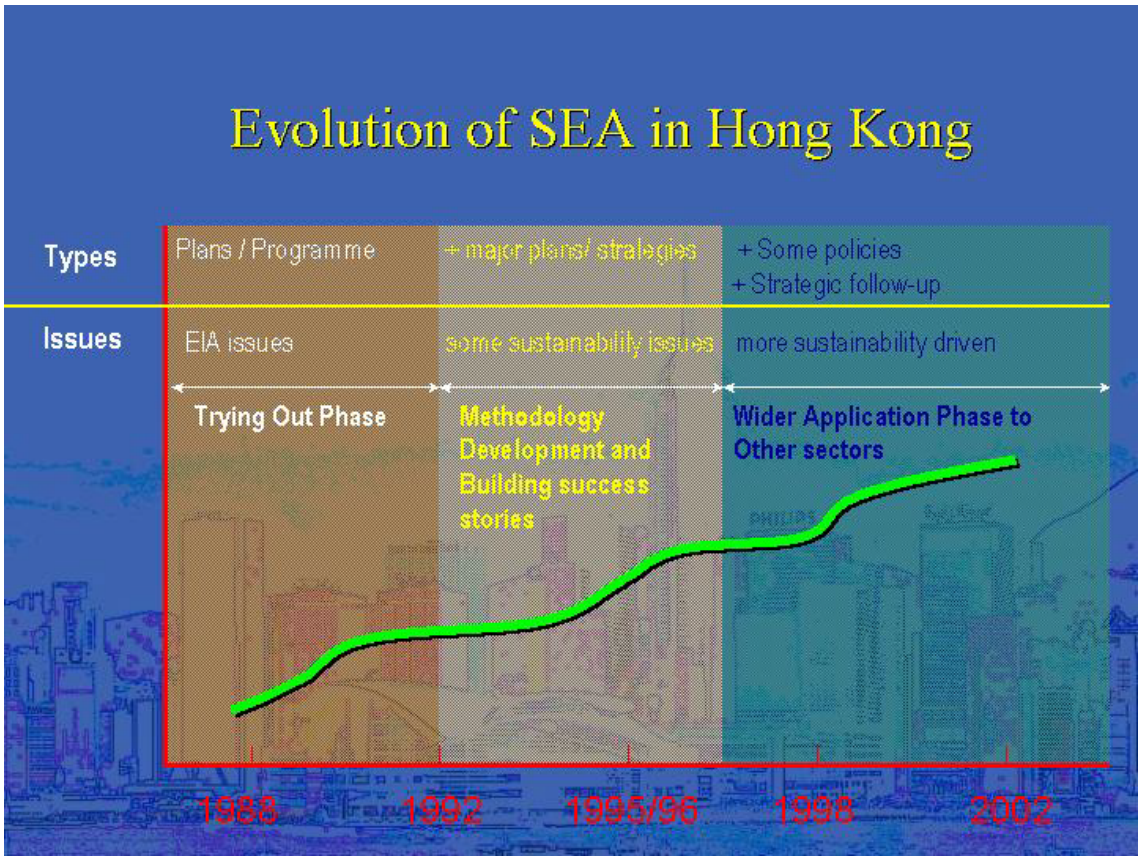
When detailed assessments are required for complicated PPPs, the proponent might employ environmental professionals to conduct SEA. But under such circumstances, the proponent would still need to own the responsibility to ensure full integration of environmental considerations into the PPPs under consideration.

Part II

SEA Mechanisms in Hong Kong

5. Evolution of SEA

The evolution of SEA in Hong Kong can in general be divided into 3 stages starting from the late 1980's. During the evolution process, SEA has been developed from applying merely to plans/programs towards wider applications to strategies and policies. SEA also covers strategic follow-up. The whole evolution process is presented below.



6. Different Forms and Approaches of SEA

As mentioned in the previous sections, SEA is to collect and evaluate strategic environmental information with an aim to enhancing the environmental performance of PPPs. To better achieve this aim, various forms of SEA are adopted in different circumstances trying to fit in with every institutional and jurisdictional decision-making framework. Forms of SEA adopted in Hong Kong basically fall under the following categories :

- Comprehensive, quantified SEA to fully inform decision makers, stakeholders and the public on the environmental implications of various PPPs, what follow up actions to be required, and how environmental considerations to be integrated for achieving a sustainable solution. This form of SEA is usually applied in large-scale and long-term land use planning processes.
- Consideration of strategic environmental issues as part of an overall study to facilitate integration of environmental considerations when PPPs are formulated at an early stage of the study process. This form of SEA is used largely in transport and broad infrastructure planning to assess alternatives.
- A relatively simplified SEA designed for quick PPP decision making. Such SEA are carried out in a way similar to environmental appraisals in which environmental considerations are included as part of an internal appraisal process to facilitate decision makers to make decisions. This form of SEA is mainly applied to PPPs with decisions that have to be made within a short time frame.

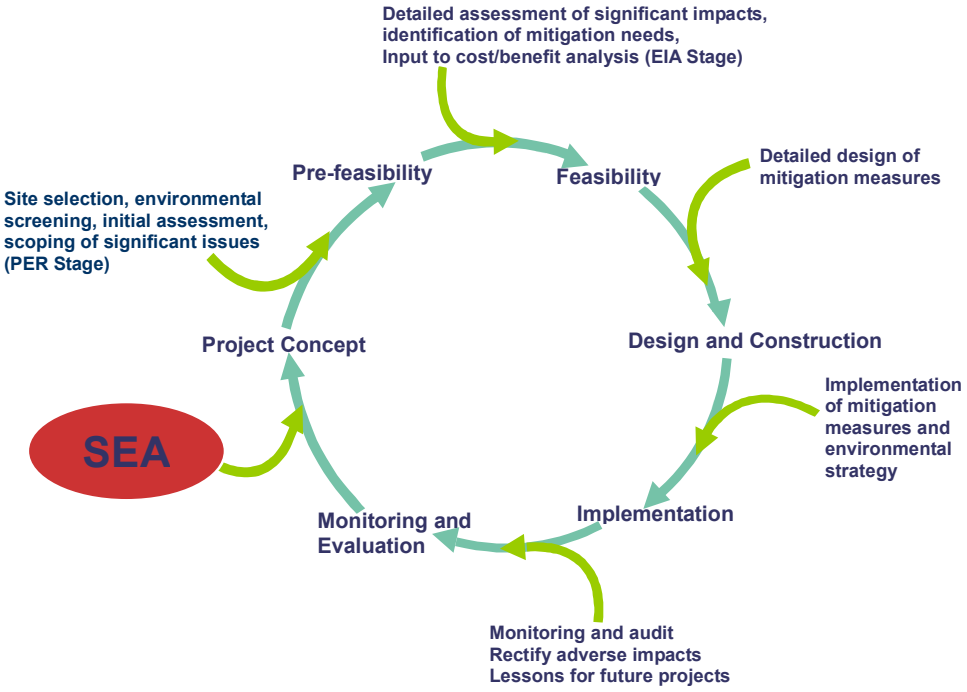


Figure 2 Relationship Between SEA and a Project Life Cycle

Source : "EIA Training and Capacity Building Program for Government Works Departments – EIA Training Manual" , Environmental Resources Management and Environmental Protection Department (March 2003)

These forms of SEA are not mutually exclusive. They could be undertaken at different stages of a project life cycle along with decision-making processes in a bid to facilitate appropriate integration of environmental information. Figure 2 shows the relationship between SEA and a project life cycle and Figure 3 illustrates the relationship between planning, SEA and Project level EIA in Hong Kong.

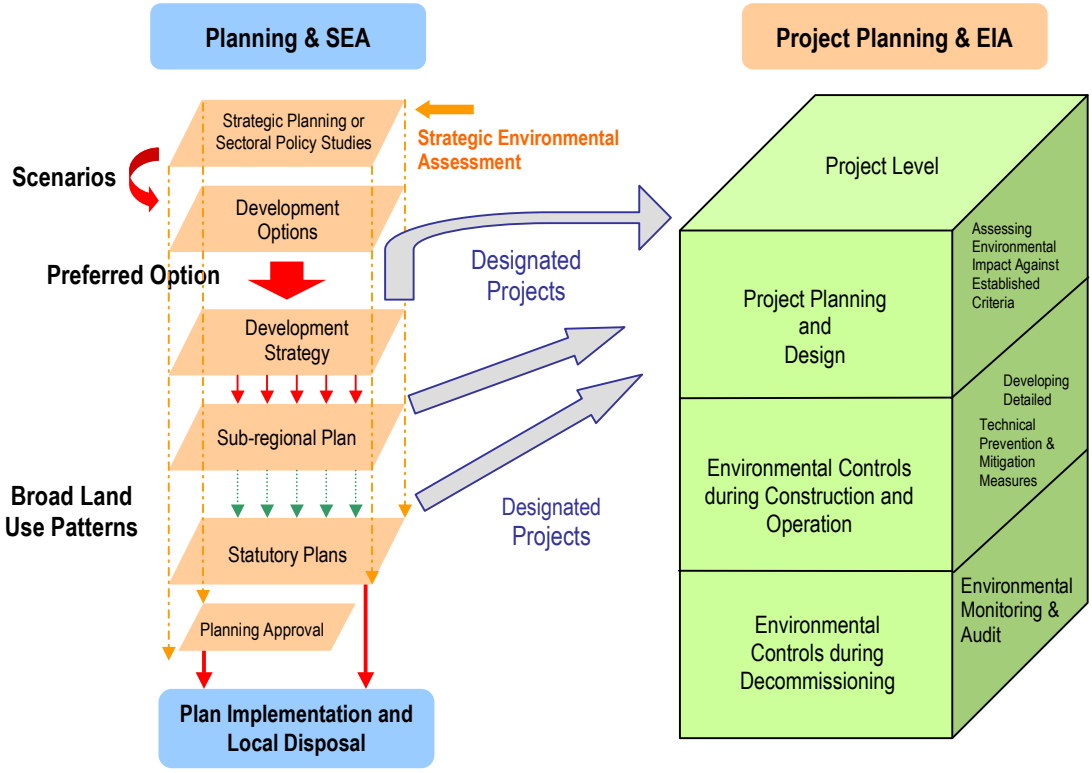


Figure 3 Relationship Between Planning, SEA and EIA in Hong Kong

Source : "EIA Training and Capacity Building Program for Government Works Departments – EIA Training Manual" , Environmental Resources Management and Environmental Protection Department (March 2003)

Approaches of SEA – Way Forward

- Empowerment of the community and stakeholders on environmental choices, environmental knowledge and environmentally responsible decision making;
- Internalizing environmental sustainability into each and every major strategy or policy ;
- Paradigm shift on evaluating the legitimacy of 'needs';
- Paradigm shift on evaluating financial viability of environmentally better choices;
- Interactive, continuous public involvement and engagement, including the traditional means and modern communication and information technologies (3-D virtual reality with instantaneous engagement process)

7. Administrative Requirements

A revised administrative circular on the Environmental Review of Major Development Project, issued by the Hong Kong Government in 1988, requires new town developments and major land use/ development projects to conduct EIA and this represents the first application of SEA for spatial planning in Hong Kong.

A policy initiative promulgated in the 1992's Governor's Policy Address further extended the application of SEA to cover policies and strategies. Under the initiative, papers on major policies to be submitted to the Executive Council (the highest decision making body in Hong Kong) have to contain an environmental implication section setting out clearly the likely environmental costs and benefits arising from the followings[1]:

- proposals for new policies or strategies;
- amendments to existing ones;
- specific matters that involve environmental issues;
- proposals or projects for which suitable EIAs have already been carried out; and
- environmental strategies, policies and proposals.

1992 Policy Address

Submissions to Executive Council

"….with immediate effect is for an environmental impact assessment to be included in papers submitted to the Executive Council. Currently this rule applies only to major development projects, From now on, I want this practice to be extended to all policy proposals where there is likely to be a significant cost or benefit to the environment."

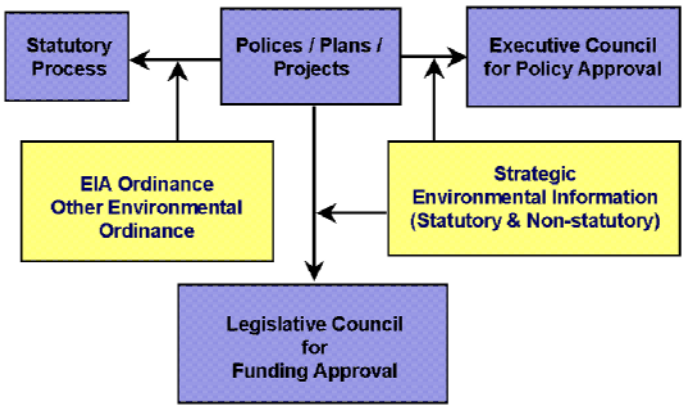


Figure 4 Key Decision Making System

[1] Para 62 to 72, Works Bureau Technical Circular No. 18/98 & Planning, Environment and Lands Bureau Technical Circular No. 10/98, HKSAR Government

With this provision, decision makers could take into account environmental factors, along with other issues, such as economic and financial implications, and consultation responses to assist decision and policy making. Since 2002, "Sustainability Implication" section is also required to be included in the submissions to the Executive Council.

SEA in Hong Kong

Administration Requirements

- In 1988, the Government revised & issued a circular on environmental assessments for large scale development project including new town developments.
- Since 1992, environmental implications arising from the proposals should be stated clearly in all submissions to Executive Council.
- The 1999 Policy Address requires all Policy Bureaus to carry out Sustainability Impact Assessment for major policy proposals.
- Requiring "Sustainability Assessment" and "Sustainability Implications" for major proposals since April 2002.

In order to provide environmental information appropriate for decision makers to make an informed decision, project proponents would normally carry out SEA for PPPs that might have potentially substantial environmental or sustainability implications.

8. Statutory Requirements

To formalize the administrative EIA system, the EIA Ordinance was enacted in 1997 and became operational since April 1998. The Ordinance requires a list of Designated Projects, including major urban development and redevelopment projects, to conduct mandatory documentation and public consultation. These major development and redevelopment projects are listed under Schedule 3 of the EIA Ordinance and they are regarded as SEA in many developed countries. Details of the EIA Ordinance is posted on EPD's website *http://www.info.gov.hk/epd/eia*.

Schedule 3 of the EIA Ordinance

Major Designated Projects Requiring Environmental Impact Assessment Reports

1. Engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100,000.

2. Engineering feasibility study of redevelopment projects with a study area covering more than 100,000 existing or new population.

Examples of EIA Reports for Development Plans under the EIA Ordinance Since 1998

http://www.epd.gov.hk/eia/english/register/aeiara/all.html

Project	Date of Approval
Pak Shek Kok Development	Aug 1998
Tsuen Wan Bay Further Reclamation - Area 35	Nov 1998
Planning & Engineering Feasibility Study for Development of Anderson Road	Mar 1999
Planning & Engineering Feasibility Study for Development near Choi Wan Road and Jordan Valley	Apr 1999
Planning & Development Study of Potential Housing Site in Area 54 Tuen Mun	Sep 1999
Northshore Lantau Development Feasibility Study	Apr 2000
Comprehensive Feasibility Study for the Revised Scheme of the South East Kowloon Development	Sep 2001
Yau Tong Bay Development Engineering Feasibility Study for the Comprehensive at Yau Tong	April 2002
Feasibility Study for Housing Development at Whitehead & Lee On in Ma On Shan, Shatin	Dec 2002

Part III

How to Conduct SEA

9. A Generic SEA Process

9.1 An Iterative Process

SEA, by its nature, is not a one-way process. In the course of the SEA, certain steps might have to be proceeded iteratively to ensure environmentally unfriendly components are discarded and environmentally friendly components are brought forward to the next round of evaluations. Because of this nature, both the SEA process and its assessment results are equally important. SEA processes allow project proponents or decision makers to have a better and more thorough understanding of the objectives of their PPPs and the consequential environmental implications. When evaluating various considerations or factors, project proponents or decision makers always have opportunities to shift their mindsets and in turn change the objectives of the PPPs, with a view enhancing environmental performance. Both SEA processes and results are important in achieving environmental sustainability outcomes.

Figure 5: SEA Study Process in Hong Kong

9.2 Tasks of Different Parties in the Process

Basically, SEA is conducted in three phases with different tasks conducted by relevant parties – project proponents, decision makers or environmental authorities and other stakeholders :

Table 1 Tasks of different parties in the SEA process

Phase of SEA	Proponent	Decision Maker or Environmental Authority	Other Stakeholders (if applicable)
Alternative and Screening/Scoping Phase	● Needs of policies/plans; ● Alternatives; ● Initial budget / programme; ● Baseline study	● Design SEA process; ● Initial screening and scoping	● Alternative ideas; ● Possible key issues
Initial Assessment Phase	● Baseline study (continue); ● Framing options; ● Identify key issues	● Formulate yardsticks; ● Initiate a review process	● Early feedback on options and key issues; ● Start dialogues
Final Assessment Phase	● Detailed assessment & interactions ● Selection of preferred PPP	● Conduct detailed reviews; ● Decision-making	● Detailed feedback; ● Follow-up

9.3 Generic Steps of SEA

In order for SEA to be effective, it is essential to develop an agreed framework for SEA to tie in with the main study of the PPPs and the PPP decision making mechanism. There are no standard SEA processes that can be applied to all types of PPPs and processes vary depending on the nature and needs of the PPP itself. Some generic steps, however, as elaborated below, can be referred to as a basic framework for SEA. Figure 6 is a flowchart showing the generic steps of a systematic SEA process.

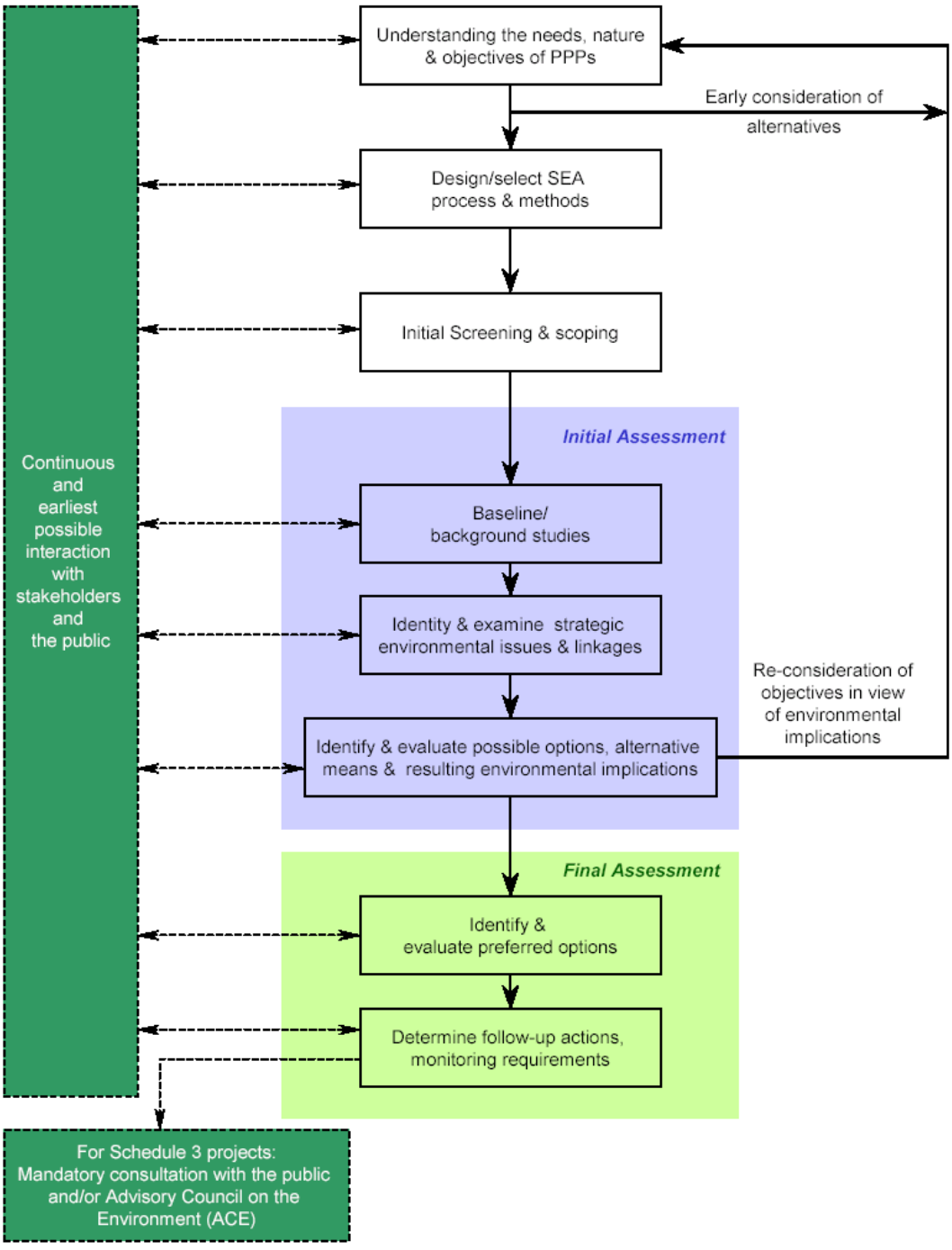


Figure 6 Generic Steps of a Systematic SEA Process

Step 1 : Understanding the Need, Nature and the Objectives of the PPPs

SEA methods and techniques may vary depending on the nature and the objectives of the PPPs. Hence, it is imperative to understand the decision-making needs, and the nature and objectives of the PPPs before deciding which methods should be adopted in a SEA.

Step 2 : Designing or Selecting Suitable Process and Methods

According to the nature and objectives of the PPPs, the whole SEA processes along with major steps should be designed or selected in light of specific circumstances to fit in with the PPP decision mechanism and the timeframes of other associated studies. The aim is to provide environmental inputs at critical stages. As far as possible, a scientifically robust SEA should be carried out. However, in extreme situations where a decision on a PPP is required to be made within a short timeframe, the SEA processes and methods should be relatively fast tracked and professional judgments and/or precedents might be employed to save time and efforts. However, decision makers must be alerted of the risks involved and the associated uncertainties as a result of a simple and fast tracked assessment process.

Example – Hong Kong 2030 : Planning Vision and Strategy (HK2030)

http://www.info.gov.hk/hk2030/hk2030content/news/cover.htm

The SEA was divided into four stages coincided with the major study, providing environmental inputs at every critical time juncture.

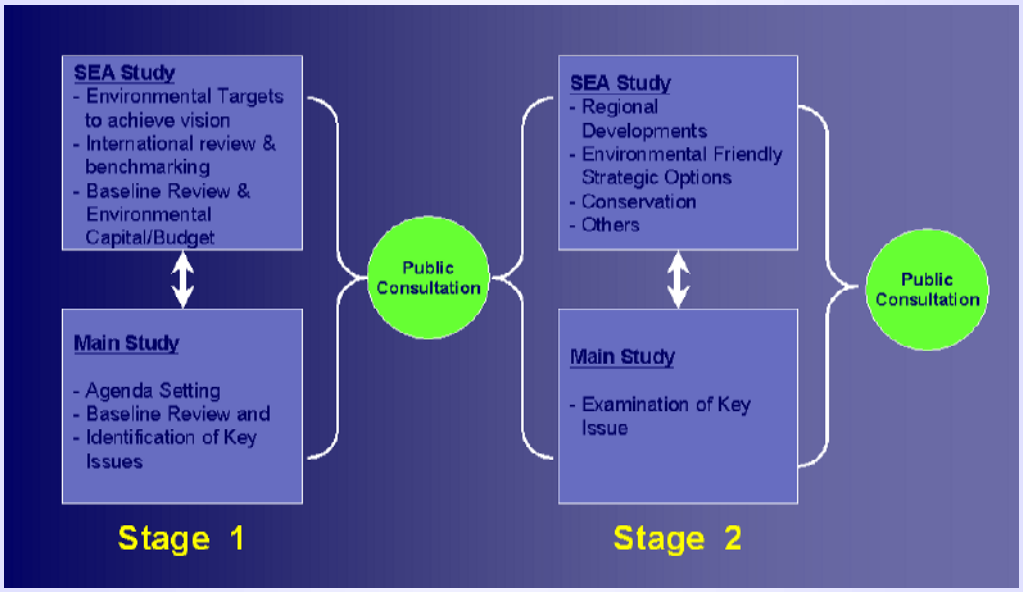


Figure 7a Strategic Environmental Assessment Process HK2030 : Planning Vision and Strategy

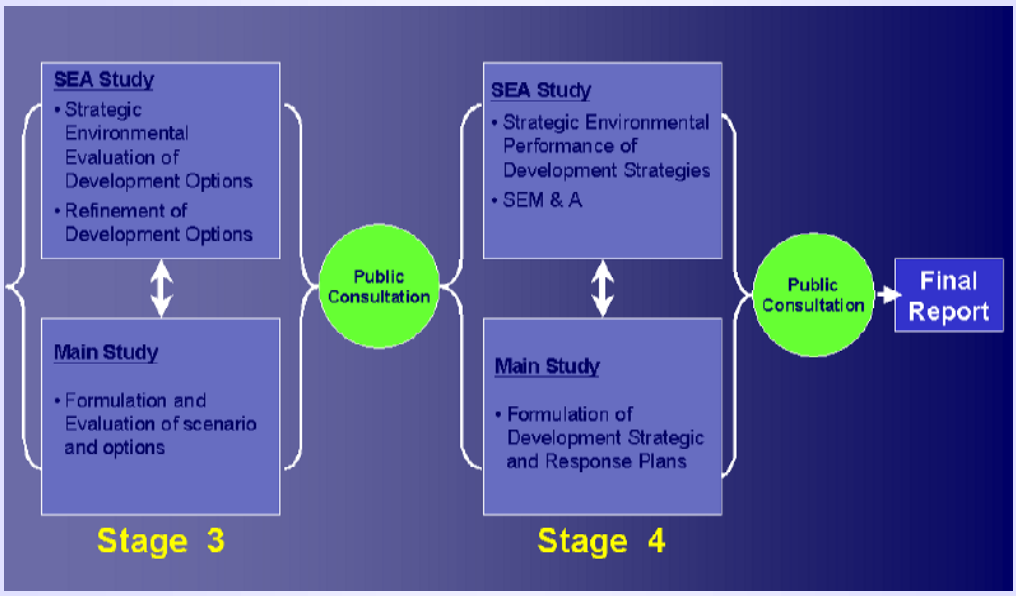


Figure 7b Strategic Environmental Assessment Process HK2030 : Planning Vision and Strategy

Appropriate strategic performance indicators, criteria and evaluation methodologies should be established. Experiences showed that if the performance indicators and criteria are linked at the early stage to sustainability, as well as the environmental carrying capacity, the chance of having a sustainable PPP at the end of the SEA would be much higher. The key concerns, the resultant environmental implications and the performance comparison should be clearly described and quantified where appropriate to enhance the reliability of the findings. If quantification cannot be undertaken, the reasonings, the basis and assumptions behind qualitative judgment should be described and explained in greater details.

Step 3 : Screening and Scoping

This step is to screen areas or issues required for SEA and what aspects of the areas need to be studied.

- ***Screening***

The main purpose of screening is to identify areas or aspects of PPPs having potentially significant sustainability and environmental implications and to decide whether SEA is required and if so, the type and level of SEA that might be required.

There are various methods available for screening such as the use of checklists, inclusion lists, exclusion lists, initial environmental evaluations, seeking professional advices from competent authorities and so on.

How Policy Screening is carried out in Hong Kong

Screening – To help proponents identify areas of PPPs worth for SEA, a one-page checklist was issued in 1998 as part of a government circular. The checklist aims to help proponents, who generally do not have much environmental knowledge, to identify environmental concerns in a structured and systematic manner, and to establish connections between PPPs and environmental implications. For instance, the checklist can prompt the users to check whether their PPPs would link to any environmental policies or issues such as transportation, power supply and consumption, major land use and infrastructure developments, ecologically sensitive areas, or whether there had been relevant environmental comments or views raised by the public. The checklist is shown in Figure 8.

Policy Bureau :	Policy Title :
Scope of Policy or Strategy :	

Screening of Policy Scope	Previous Environmental Issues Raised by the Public, LegCo or ACE	Linkage with Environmental Initiative in CE's Address and Environmental White Paper and the HKSAR's International Environmental Commitments	Previous Environmental Studies or Consultation	Changes associated with the Policy	Interaction with the Environment	Environmental Management
1. Is the policy or strategy ☐ a new one ? ☐ an amendment to an existing policy ? 2. Will the policy eventually involve physical infrastructure development ? ☐ no ☐ yes What are they ? _____ _____ 3. Is it possible that the policy or strategy may lead to changes in environmental policies or initiatives ? ☐ yes ☐ no ☐ not sure at the stage	4. Has there been any complaints from the public or the Ombudsman on the environmental issues associated with the policy or strategy ? ☐ yes ☐ no If yes, what are the environmental concerns ? _____ _____ 5. Has the policy matter been the subject of discussion in the Environmental Affairs Panel of the Legislative Council or the ACE ? ☐ yes ☐ no If yes, what are the environmental concerns ? _____ _____ 6. Has the policy matter or the strategy been the subject of the discussion at the District Boards or Urban/ Regional Councils in respect of the previous matter cases ? ☐ yes ☐ no If yes, what are the environmental concerns ? _____ _____	7. Does the subject matter of the policy or strategy relate to any environmental goals set out in the Chief Executive's Policy Address ? ☐ yes ☐ no If yes, would the policy or strategy enhance or contradict the environ-mental goals and initiative and in what ways ? Please describe. _____ _____ _____ _____ 8. Does the subject matter of the policy or strategy relate to any environmental initiative or actions set out in the White Paper on pollution and its subsequent review ? ☐ yes ☐ no If yes, what are they ? _____ _____ 9. Would the policy or strategy relate to any environmental commitments made by HKSAR under the Hong Kong Guangdong Environmental Protection Liaison Group, APEC and other international agreements ? ☐ yes ☐ no If yes, what are they ? _____ _____	10. Has the subject matter been the subject of any previous studies ? ☐ yes ☐ no If yes, when was the study undertaken ? What are the key environ-mental concerns or solution identified ? _____ _____ _____ _____ 11. Has the policy or strategy been the subject of consultation with the ACE ? ☐ yes ☐ no 12. Have any other studies covered the environmental aspects of the policy or strategy in question ? ☐ yes ☐ no If yes, please state the environmental conclusions or findings. _____ _____ _____ _____ 13. Has ExCo previously stipulated any environmental issues that need to be studied or any environmental conditions for the policy or strategy ? ☐ yes ☐ no If yes, what are they ? _____ _____ _____ _____ _____	14. The Policy may lead to changes in : ☐ land uses/housing supply/ redevelopment ☐ industrial structure (size, type, location, changes in technology) ☐ the planning of infrastructures such as roads, railways & reclamation ☐ choice of transport modes and routes for passengers, or goods vehicles or containers ☐ the loss of or impairment to ecologically sensitive areas or fishery resources ☐ sewage collection, treatment and disposal facilities ☐ wastes & refuse collected (e.g. domestic, chemical, livestock, construction, clinical and radioactive wastes) ☐ waste collection & disposal facilities (e.g. landfills, marine dumping & incineration) ☐ *production / import / export of chemical & refuse or other wastes ☐ power supply and fuel options (e.g. gas Vs coal fired) ☐ energy consumption or demand side management ☐ potentially hazardous installations ☐ none of the above, please describe : _____ _____ _____ _____ _____	15. Changes initiated from the policy may result in : ☐ incompatible land uses (housing estates/schools next to polluting uses, such as factories & highways) resulting from land use changes ☐ change in the transport pattern (e.g. traffic volume / composition / routes) due to land use and transport planning that lead to environmental impacts ☐ change in the quality of marine waters, inland and potable waters resulting from discharge or reclamation ☐ change in the population exposed to *traffic / railway / aircraft noise from transport routes ☐ change in the population exposed to aerial emissions from vehicles and other industrial sources ☐ change in the waste disposal facilities such as landfills, public dumps and incinerators ☐ disturbance of ecologically sensitive areas or causing a loss of flora and fauna, wildlife, aquatic & marine environment ☐ degradation / improvement in energy efficiency ☐ global climate & atmospheric changes due to emissions of greenhouse gases such as carbon dioxide ☐ environmental impacts outside of Hong Kong or in a regional context ☐ none of the above, please describe :	16. The Policy has included or will include : ☐ strategic environmental assessment or EIA or other environment study nature & likely timing of the study _____ _____ ☐ inclusion of environmental initiative in the policy . They are : _____ _____ ☐ provision of environmental infrastructure ☐ provision of measures to mitigate adverse environmental impacts during the detailed planning and design ☐ monitoring and audit programme ☐ corporate environmental management programme ☐ funding for environmental studies or measures ☐ matters regulated by the EIAO ☐ none of the above ☐ not applicable 17. Checklist completed by Name : _____ Post : _____ Tel. No. : _____ Fax No. : _____

Figure 8 Checklist for Environmental Appraisal of Policy or Strategy Submitted to the Executive Council

Source : The former Planning Environmental and Lands Bureau's Technical Circular No. 10/98

- ***Scoping***

Scoping helps define environmental issues to be assessed, to what level of details and by what kind of methodologies during each stage of the SEA. In deciding the level of assessments and types of methodologies, considerations such as funding issues, time allowed for the SEA should

be evaluated. The breadth and depth of the assessment should tally with the level of decision and should at least help to confirm the environmental acceptability and preference of options considered.

If a SEA is to be completed within a tight schedule and only preliminary data and findings are available but with much uncertainty, one of the most important steps is to inform the decision makers of the real situation and limitations so that a conscious decision could be made.

Approaches and methodologies for SEA may vary remarkably ranging from comprehensive to very simple methods. Project proponents should seek assistance from relevant authorities or professionals specializing in SEA at the earliest possible stage to ensure a timely completion of SEA and to avoid late focus of major environmental issues. Early consultations with the Environmental Protection Department (EPD) are recommended.

How Policy Scoping is carried out in Hong Kong

Scoping – To help project proponents to scope relevant environmental issues to be studied in SEA, EPD would work closely with proponents to draft a tailor-made study brief for each SEA (the link to get access to key SEA Briefs is in Appendix 3). Meanwhile, considering that new issues might emerge in the course of SEA, which is a common problem for strategic studies, an Environmental Study Management Group chaired by a directorate officer of EPD, would be formed to manage the SEA study. This also helps facilitate an early dialogue on major issues, and a better coordination and arrangement. It also helps ensure that environmental issues are assessed in a professional and focused manner, maximizing the opportunities for more sustainable outcomes.

Step 4 : Assembling Relevant Baseline or Background Studies

Studies of environmental baseline information allow us to have a better understanding on the existing environment which could in turn facilitate the SEA processes. A good and professional baseline study would help identify environmental issues and opportunities and facilitate a proper screening and scoping exercise.

The baseline conditions should be established using appropriate strategic parameters to such a level of details that further details would not alter the conclusions on the environmental acceptability and preference of the strategic options under consideration. The information should also be able to provide a foundation for assessing the nature and extent of potential implications which could arise from different options being considered.

However, collecting baseline data is a costly and time-consuming exercise. If existing baseline

data are available, and if they are still valid, maximizing the use of existing data is recommended.

Example – Territorial Development Strategy Review (TDSR)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/territorial_dept.html

TDSR's environmental baseline study identified a range of environmental constraints. Among them, environmentally sensitive areas within the territory were identified and their conservation values were recognized, leading to the protection of these areas free from developments (Figure 9).

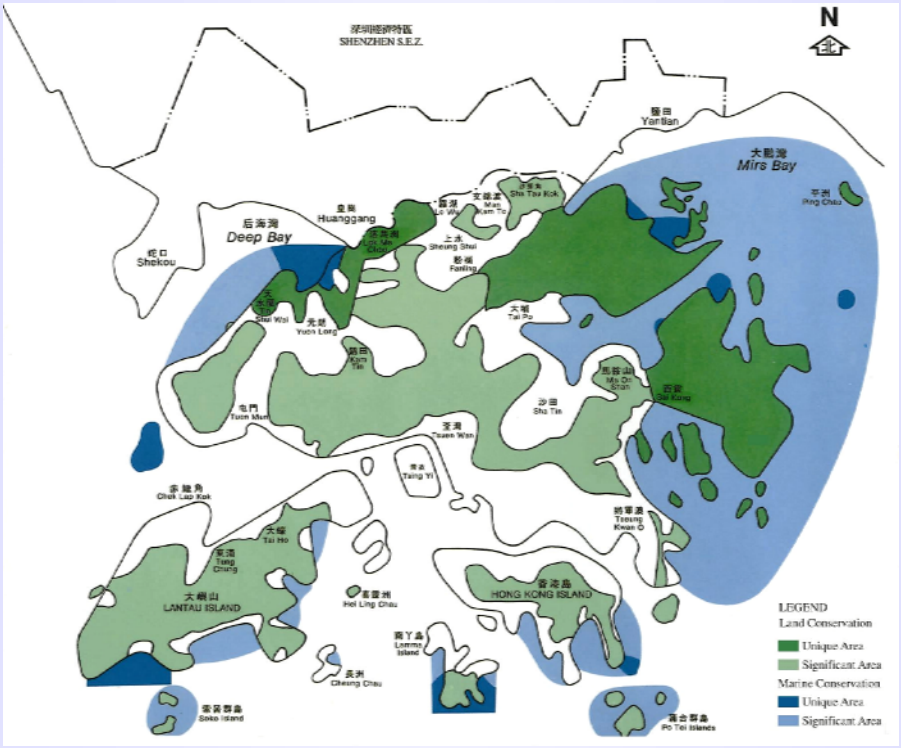


Figure 9 The baseline study of TDSR helped identify environmentally sensitive areas, protecting them free from developments

Example – Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.html

The results of the baseline study were presented in a form of constraint maps on which "Areas of Absolute Exclusion", environmental, ecological and conservation areas across the territory were identified. With other environmental considerations, areas finally identified for exclusion of landfill developments included existing and proposed Country Parks, Marine Parks, Marine Reserves, Sites of Special Scientific Interest; Ramsar sites, water gathering grounds, etc.

Step 5 : Identification & Examination of Relevant Strategic Environmental Issues and Linkages

Based on the findings assembled in Step 4, environmental constraints, issues, opportunities as well as their linkages should be identified and examined, providing inputs to the next step where appropriate. In the identification and examination process, both the characteristics of impact generators and impacts receivers should be taken into account. For instance, in RDS2, the impact generators (i.e. railway networks' and developments' characteristics) and the impact receivers (i.e. the characteristics on environment and sensitive land uses) should be fully considered.

Example – Hong Kong 2030 : Planning Vision and Strategy (HK2030)

http://www.info.gov.hk/hk2030/hk2030content/news/cover.htm

During the Study, the following environmental constraints and their possible opportunities were identified and examined in a systematic manner :

Noise Constraints :

- Traffic noise due to increasing transportation pressure between Hong Kong and the Mainland
- Industrial/Residential interface problem

Possible Opportunities :

- Comprehensive urban renewal
- Requirement for thick glazing, lockable windows and split air-conditioning system
- Noise control at source through the incorporation of new technologies and engineering design

Air Constraints :

- Air movement restricted within many urban areas due to high-rise buildings
- Trans-boundary air pollution

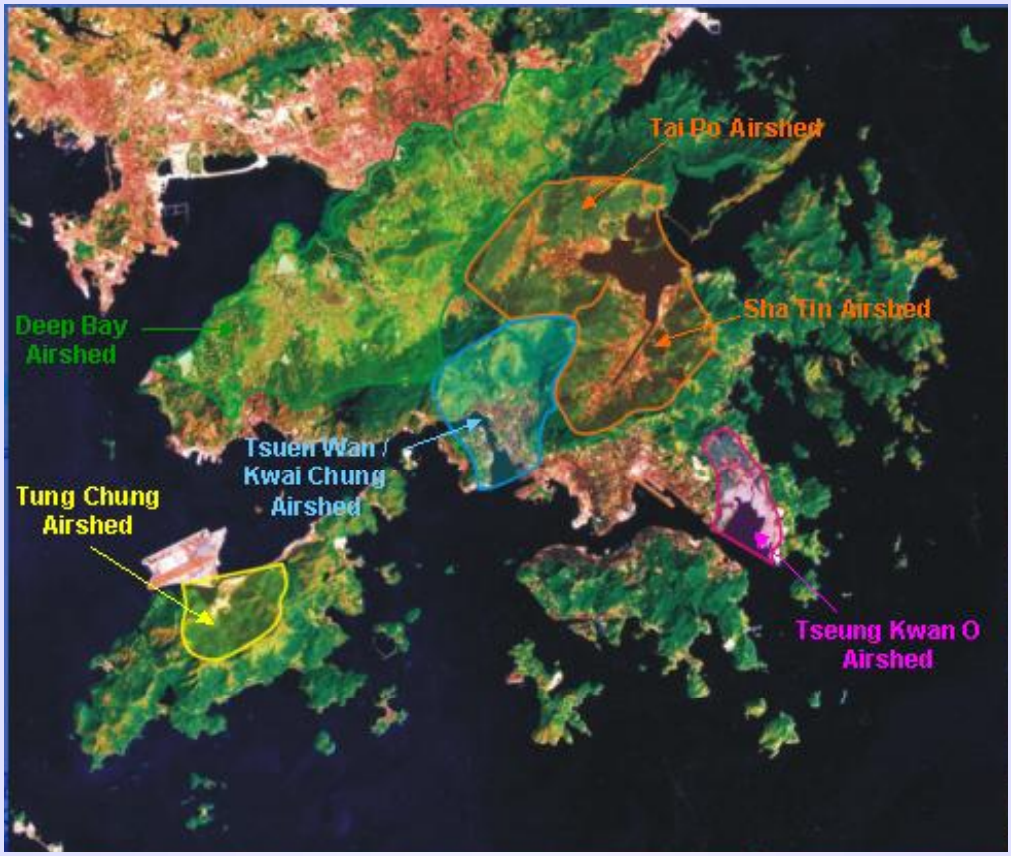


Figure 10 Confined Airsheds identified in HK 2030 : Planning Vision and Strategy

Possible Opportunities :

- Cleaner technology, cleaner fuels,
- Better integration of environmental protection into transport and energy policies and planning.

Water Quality - Significant cross border constraints :

- The pollution discharges from HK's neighbouring area
- The increasing urban population within the Guangdong Province

Figure 11 Territorial Water Quality Constraints identified in HK 2030 : Planning Vision and Strategy

Possible Opportunities :

- Underground and cavern options for possible future sewage treatment plants
- Cooperation with Mainland authorities in avoiding water pollution from new major developments

Waste Constraints :

- Inadequate landfill sites

Waste Opportunities :

- Reuse and recycling of materials required, e.g. via integrated waste management facilities

Energy and Natural Resources :

- Space for facilities for generation of wind energy, biomass, wave or hydroelectric power is a major constraint when identifying viable options for Hong Kong

Energy Opportunities :

- Use of renewable energy
- Enhancing the energy performance or efficiency of buildings

Greenhouse Gas :

- Changes to seasonal ambient temperature, ambient CO2 and alterations to rainfall patterns and intensity may put pressure on some of Hong Kong's native species, reducing the ecosystem's ability to respond to the predicted environmental changes.

Possible Opportunities :

- All opportunities to maintain biodiversity, increase vegetated areas and minimise the release of greenhouse gases must be considered

Risk Constraints :

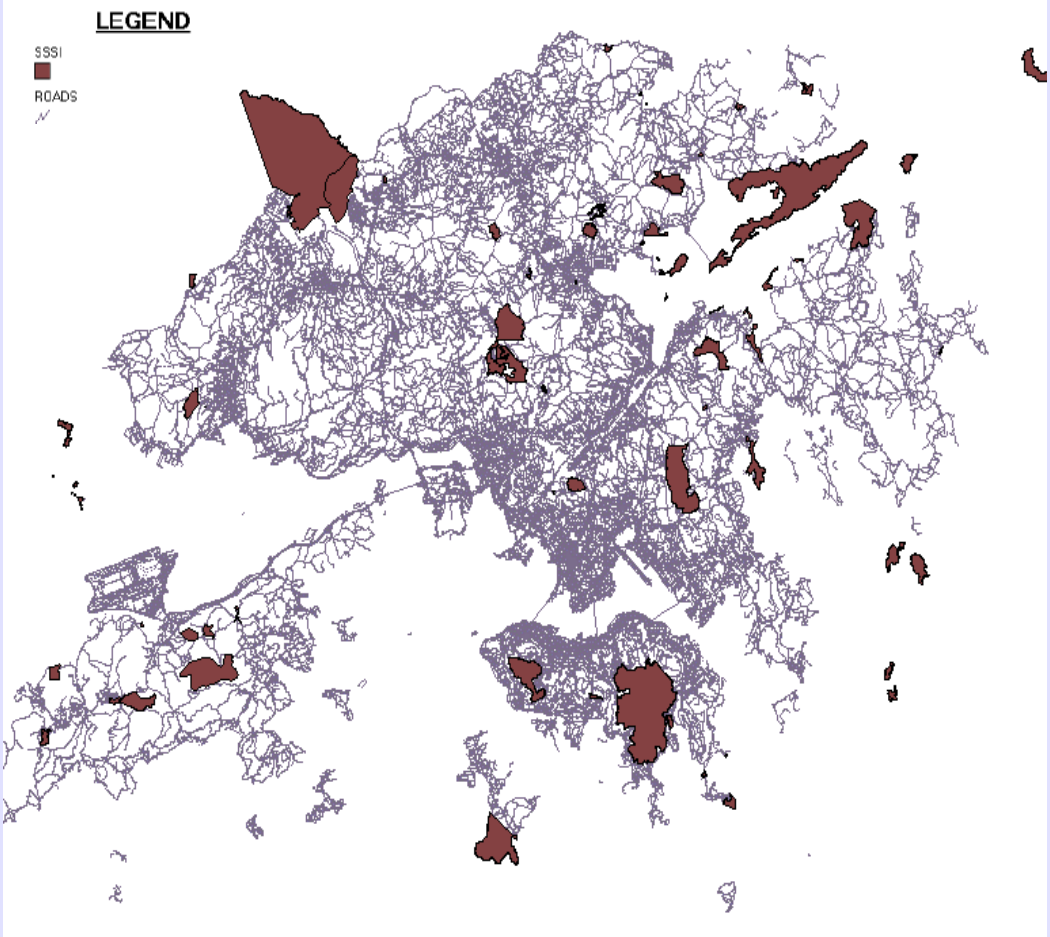
- The existing Potential Hazardous Installations (PHIs) and certain other potentially hazardous linear infrastructure, act as a constraint in terms of the location of future development.

Risk Opportunities :

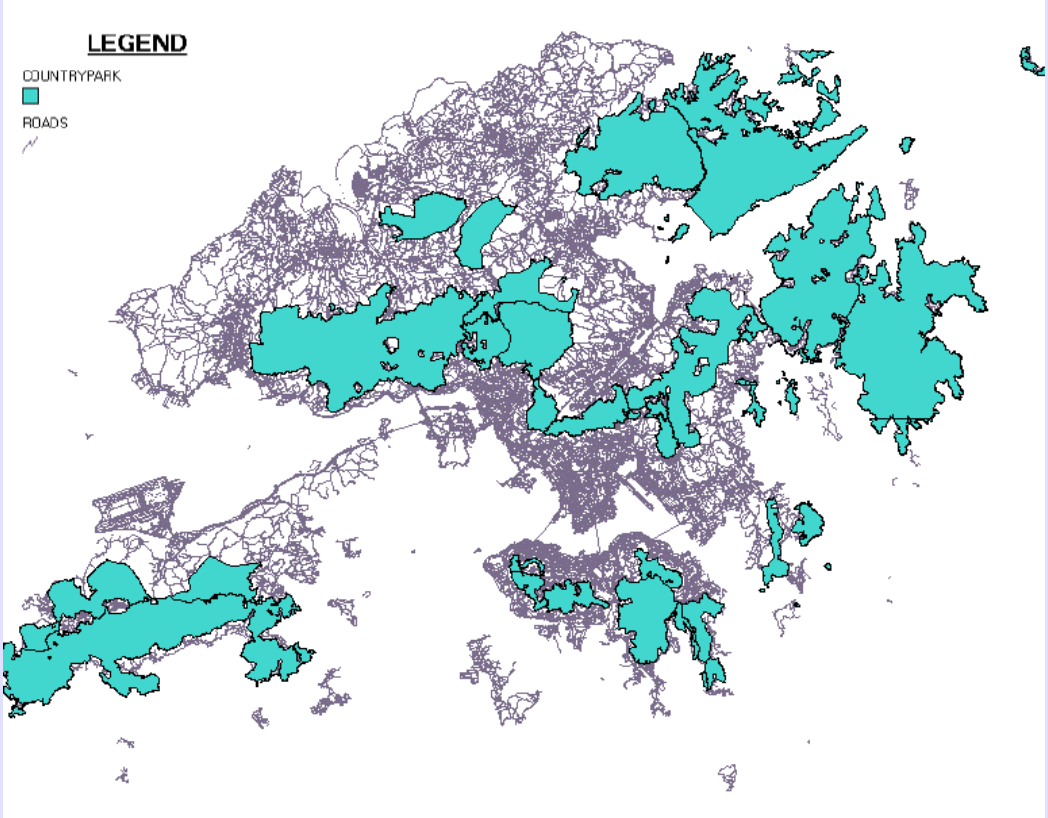
- Cost effective risk mitigation measures, e.g.
  - reduction of hazardous material inventories;
  - provision of plant safety systems;
  - control of residential development near PHIs; and
  - PHI relocation from urban sites to sites in less populated areas.

Besides, the following environmentally sensitive areas were identified and examined :

- Territorial Locations of “Site of Special Scientific Interest”



- Territorial Locations of Country Parks



- Territorial Locations of Marine Parks

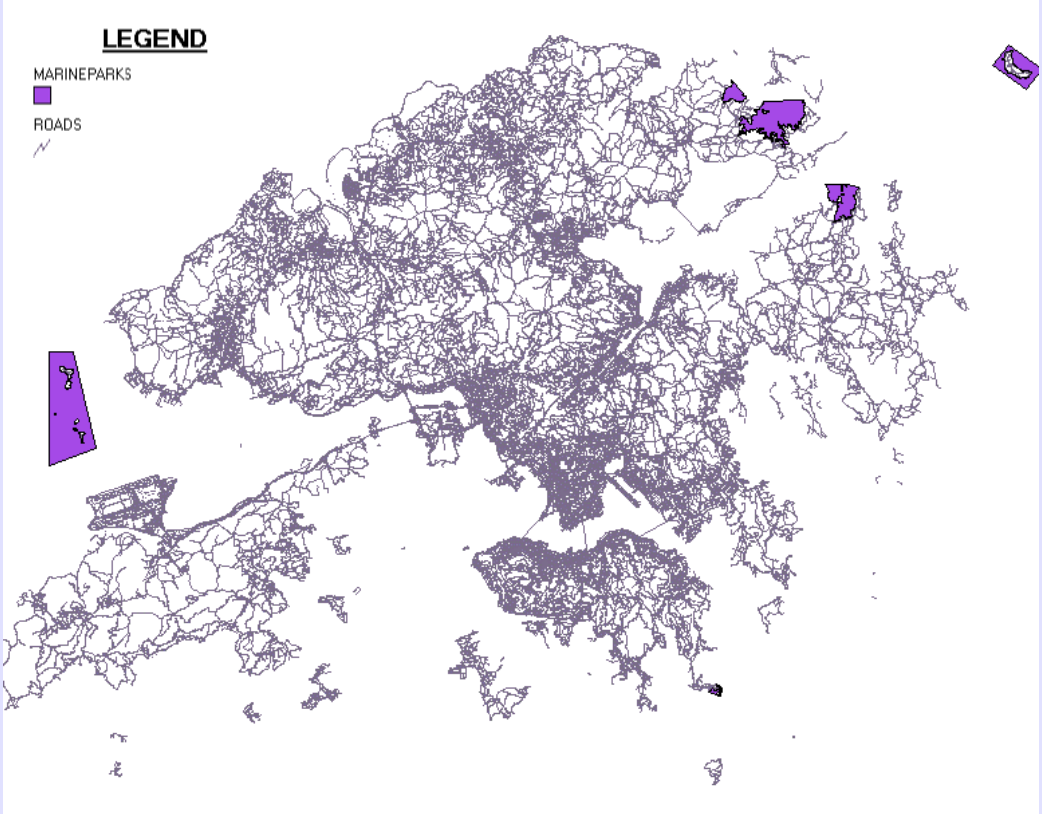


Figure 12 Environmentally sensitive areas identified in HK 2030 : Planning Vision and Strategy

Step 6 : Identification & Evaluation of Possible Options , Alternative Means and their Environmental Implications

With information from the previous steps, all possible options and alternative means for the PPPs should be listed out for preliminary consideration, refinement and evaluation.

In the evaluation process, key environmental implications of the options and alternatives under different scenarios, in particular the "worst-case" scenario should be identified and examined. The issues and consequences of the 'do-nothing' scenario should also be identified, serving as a benchmark for evaluation. Those options and alternatives found to be environmentally infeasible or unacceptable should then be eliminated.

Example – The Second Railway Development Study (RDS2)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/second_railway.html

In the SEA study, environmental unfriendly railway corridors were eliminated in view of their potential adverse impacts on environmentally sensitive areas.

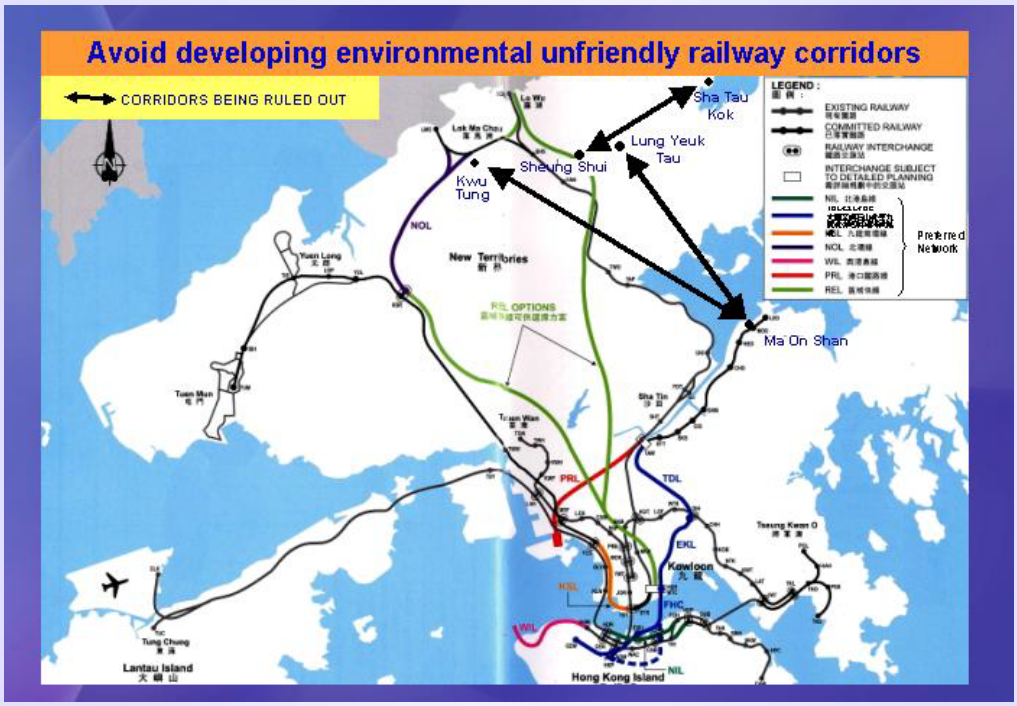


Figure 13 Environmental unfriendly railway corridors identified in the Second Railway Development Study

Environmental implications cover both direct and indirect, as well as cumulative impacts on the environment and environmental sustainability issues. Specific environmental concerns such as

environmentally undesirable features and problematic areas should be highlighted. Depending on the scope of the PPPs, considerations might include economic and social sustainability.

After the evaluation, the environmental performance of the options and/ or alternatives should be presented clearly to illustrate the possible extent and scale of their impacts. The objective is to discard options with environmental demerits and bring forward those options with merits.

The objectives of the PPPs as set out in Step 1 should be constantly reviewed. The purpose is to see whether the objectives should be adjusted to achieve better environmental performance of the options and/ or alternatives. The assumptions set behind the objectives of the PPPs should also be re-evaluated to ascertain they are reasonable and valid. If this is not the case, adjustments have to be made to avoid causing environmental damages as a result of implementing a PPP with unrealistic objectives and policy assumptions. In the event that the objectives or assumptions are changed, the previous SEA steps taken should be reviewed to determine if corresponding changes are required.

It is important to bear in mind that alternative identifications should not be limited by the existing policies (e.g. the existing land-use policies). If necessary, it is possible to identify and highlight new policies required along with options identified to substantiate that long-term impacts resulting from the options are preferable. After all, SEA would help to facilitate the formulation of balanced policies and at PPP level, very often the mitigation measures are indeed policy actions such as a new environmental policy to counteract the potential adverse impacts as a result of the implementation of the proposed PPP.

Example – Territorial Development Strategy Review (TDSR)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/territorial_dept.html

"The predicted environmental impacts ..... highlight concerns on the long-term sustainability. The many environmental issues brought out by the SEA clearly point to the need to develop a strategic sustainability framework ....."

(Page 91, TDSR Final Executive Report)

"The Strategic Environmental Assessment Study ..... reinforces the need to pursue a range of policy issues to reduce or avoid adverse environmental impacts, and re-examine ..... the present development strategies....."

ACE Paper July 1996

Learning Points :

- Unacceptable options discarded at early stage
- Focus on cumulative impacts and tiers of sustainability issues
- Identify areas requiring policy change & linkages with other sectoral policies

Example – Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.html

Following the elimination of "Areas of Absolute Exclusion" and other ecologically sensitive areas, a long list of potentially available sites in Hong Kong of the required size were identified which include extension of existing landfills, new marine-based and land-based sites. The long-listed sites were then assessed at a broad-brush level against a number of strategic evaluation criteria including water quality, visual impacts, ecology, air and noise etc; and after the assessment, 15 sites were short listed for further study.

As mentioned before, SEA is not a one-way process so the option identification process is not just aimed at identifying possible options following the procedures described above but also makes considerations to the following areas :

- Justifications on the needs of the project, including forecasts for waste quantities
- Information on the overall waste planning, waste reduction and disposal strategies
- Consideration of different landfill technologies, handling alternatives etc.

Step 7 : Identification and Evaluation of Preferred Options

With refined development options selected in Step 6, their net residual environmental implications upon implementation of mitigation measures should be identified and evaluated. The extent of uncertainties on the prediction of environmental implications and major assumptions due to such factors as long time frame should be stated.

Preferred option(s) should then be determined with their major pros and cons highlighted. If options with the best environmental performance are not selected, justifications or rationale behind the recommendation should be singled out and stated clearly for proper deliberation by concerned stakeholders.

Example – Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.html

Following Step 6, environmental assessments of 15 short-listed sites were carried out in which their net environmental implications were thoroughly discussed and compared. For example, a comprehensive water quality assessment was conducted on the basis of potential sediment contaminant releases; watercourse diversions required, potential impacts on water sensitive receivers; hydrodynamic changes due to reclamations; potential impacts on groundwater and cumulative water quality impacts etc.

The process ultimately identified 5 suitable sites in Hong Kong for further detailed feasibility study with key environmental implications, potential problems, the pros and cons of different options transparently presented to the stakeholders.

Step 8 : Determination of Follow-Up Actions and Monitoring Requirements

To ensure that SEA can make real contributions, it is important to determine environmental issues and mitigation measures of the preferred option(s) and major assumptions of the SEA study that require future audit and follow-up actions.

To be organized, a strategic follow-up plan - Strategic Environmental Monitoring, Audit and Review (SEM&A) is required. Instead of just monitoring the environmental performance, the number one objective of a SEM&A programme is to audit if the assumptions behind the PPP are realistic and materialized or not. A complete implementation of a PPP together with all the associated policy assumptions is very rare in reality. Therefore, it is important to keep track of the actual implementation of the PPP and associated policy assumptions. Once a deviation is identified, appropriate remedial policy actions should be undertaken to ensure sustainability and long term environmental performance.

SEM&A of course also ensures environmental issues arising from the PPP implementation are monitored/ tackled, the associated recommended mitigation measures are implemented as scheduled and in case deviation of assumptions arises, it would trigger a SEA review or further assessments to update the SEA information. SEM&A also allows recommendations of additional measures in view of current situations and provides the most updated information to the relevant on-going studies.

EM&A include action plans setting out clearly that who, when, why and how to facilitate future follow-up actions under different scenarios. The plans are to translate the commitments made in SEA into concrete policies or actions and they normally contain the following items :

- Further studies on environmental acceptability and feasibility of PPPs required before implementations
- Timing and extents on the implementations of PPPs. This is particularly important for controversial actions, for example, restraining the growth or usage of vehicles in which prevailing circumstances and the public's acceptance levels have to be considered.
- Design issues to be pursued during the development of the PPPs particularly strategic PPPs so as to minimize the resulting environmental impacts.

In sum, a EM&A system should include the following requirements:

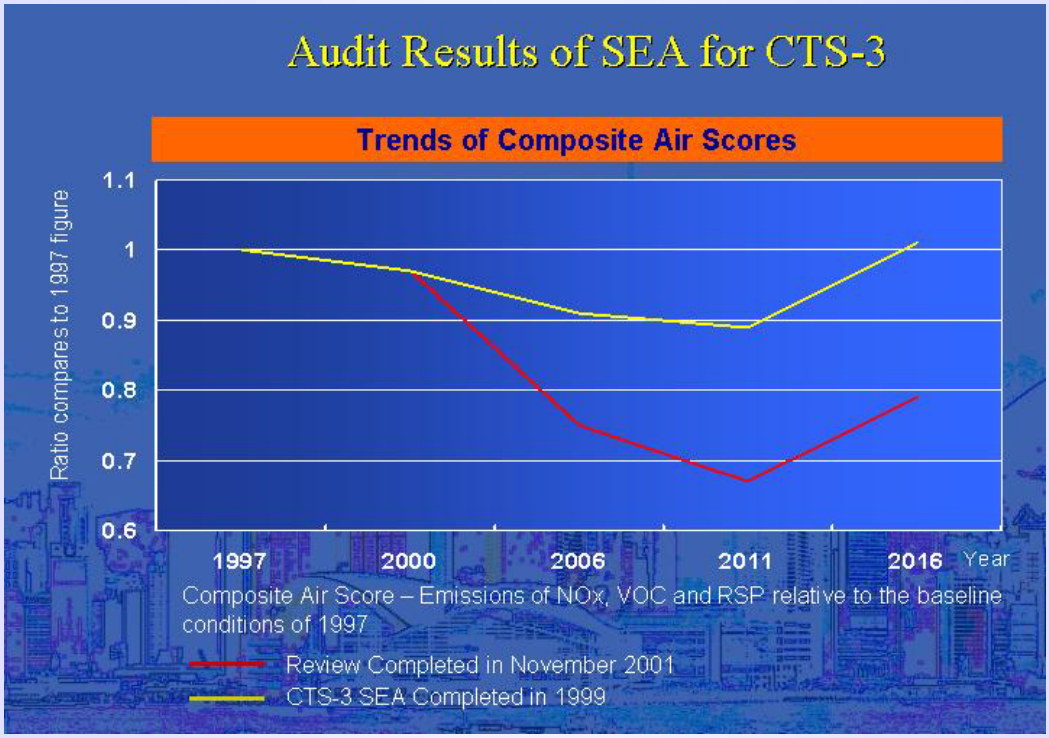
1. Checking of assumptions
2. Monitoring the progress of measures recommended in SEA ensuring their implementation
3. Defining additional measures if necessary based on updated information
4. Allowing provision of feedbacks to higher levels, such as the Strategic Highway Project Review
5. Ensuring reviews or further assessments be triggered if real situations significantly different from previous assumptions adopted

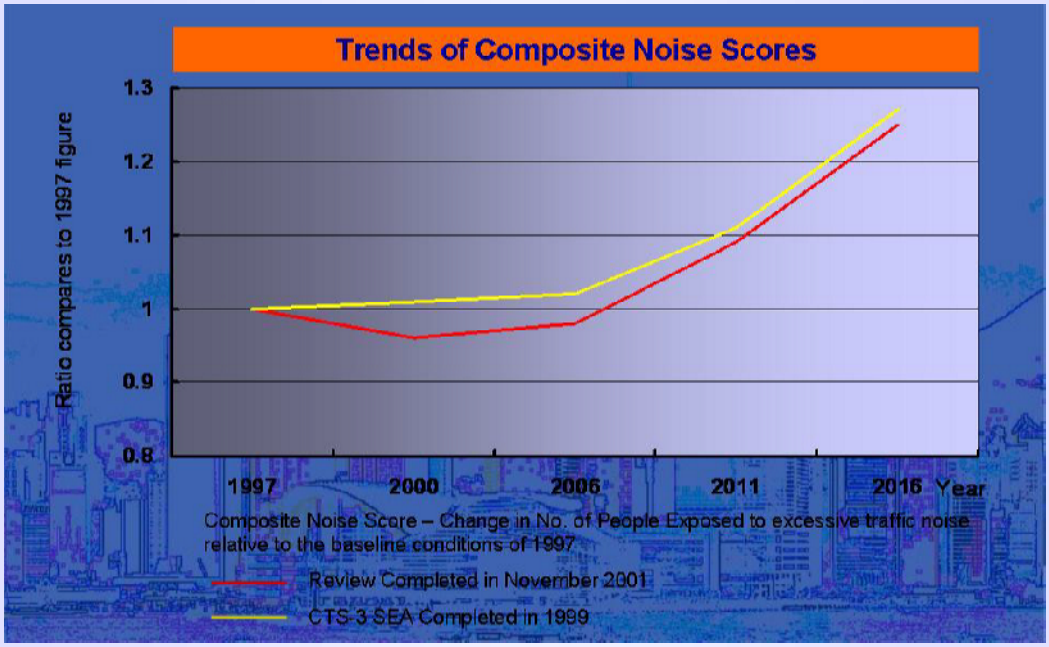
Example – Third Comprehensive Transport Study (CTS3)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/third_comp.html

In preparing the EM&A, a Government Inter-departmental Working Group was set up and working level meetings were convened so as to reach agreements on the objectives and scopes of the SEM&A works well before the commencement of the EM&A.

Under the EM&A system of the study, there was an annual review of the Composite Noise/Air scores providing an up-to-date account of the vehicle emission and noise conditions for the current years.





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Meanwhile, there was an annual update taking into account the latest available projection figures on policy assumptions such as population, land use, social, economic and effects of various control measures etc. and thus updating the forecast on the Composite Air/Noise Scores. The results would be used to compare against the 1997 original projections conducted in the SEA so as to identify any trends of possible environmental degradations over time.

All the proposed mitigation measures including: i) Policy Initiatives (i.e. more extensive network of rail service; putting new roads underground); ii) Engineering Measures (i.e. more stringent vehicle emission standards; trolley buses; iii) Near or at source measures (i.e. more extensive use of low noise surface; retrofitting of noise barriers to existing roads) and iv) Management possibilities (i.e. traffic management or speed regulations) were also monitored under the EM&A programme and the status of the implementation were reported to the Inter-departmental Working Group. The process ultimately identified 5 suitable sites in Hong Kong for further detailed feasibility study with key environmental implications, potential problems, the pros and cons of different options transparently presented to the stakeholders.

Key Points of the SEM&A

Review of Input Assumptions

- Assumptions updated based on the best available information
- Consistent with the Strategic Highway Project Review

Findings

- Major assumption (e.g. GDP, vehicle fleet size, cross-boundary vehicle traffic) are lower than the Medium Growth Scenario under CTS3
- Vehicle-km-travelled also lower than the Medium Growth Scenario
- Latest sets of emission factors

Monitoring of Recommended Mitigation Measures

- Report on each recommended measures
- Majority of the mitigation measures progressing well

Identification of new measures

- Reduction in no. of buses in Central Business District (CBD)
- Limiting the period of loading/unloading activities of goods vehicles at CBD to night time
- Park-and-Ride Facilities at newly designed rail stations (e.g. along West Rail)
- Comprehensive footbridge System in CBD (e.g. linking Central / Admiralty and Wan Chai)

Example – The Second Railway Development Study (RDS2)

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/second_railway.html

The EM&A system suggested some guiding principles for future reference and follow-up actions. Principles include provision of appropriate facilities at railway stations to facilitate railway usage, general environmental preference of the underground railway option, promotions of better integration of transport and land use planning to optimize environmental benefits and avoid adverse impacts etc.

Aspects to be monitored under the EM&A system include :

Figure 14 Aspects to be monitored under the EM&A system of the Second Railway Development Study

Example – Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.html

The SEM&A recommended a list of strategic follow-up actions for the extensions and the new landfill site developments. Experiences have proved that with the SEM&A in place, the SEA can make real contributions instead of just being a paperwork left unattended. The major follow-up actions contained in the SEM&A include :

- To explore interface with complimentary waste management projects –

As the two projects progress, it is recommended to draw up a co-ordinated approach to maximize the strategic environmental benefits of utilizing the construction and demolition materials, thus reducing the needs on landfill;

- To maximize afteruse development opportunities during strategic planning of new marine based landfill sites –

Since the new marine based landfill sites proposed in the study are located at remote locations which might be suitable for the afteruse developments, opportunities on this aspect should be explored.

- To review waste management plans and refine projections of municipal solid waste arisings and construction and demolition materials arisings –

As predictions of materials arisings are based on a variety of assumptions subject to external influences, waste management plans should be reviewed and the projections should be refined to facilitate the planning and implementation of the landfill extensions and the development of new sites.

A Continuous Step throughout the SEA Process : Interactions with Stakeholders

Interactions with stakeholders is in line with the spirit of free press and freedom of information enshrined in Hong Kong's Basic Law and is becoming an important step in a SEA. Project proponents should take initiative to communicate with their stakeholders in an attempt to achieve a "win-win" situation.

Project proponents should well communicate with relevant environmental authorities so as to improve the quality, accuracy, and adequacy of the SEA before being finalized and for the sake of effectiveness and efficiency, early communications at all possible stages with all levels are essential.

To facilitate interactions with stakeholders, objective documentation of SEA findings is crucial. As the SEA process is equally important, the entire evaluation should be documented in addition to the final SEA recommendations. SEA analysis and results must be presented and able to be discussed at multi-constituency levels with people from different backgrounds.

For those SEA categorized as Schedule 3 projects under the EIA Ordinance, interactions with stakeholders and members of the public have to be made during the mandatory public consultation period during which EIA reports would make available for public inspection and comments. To facilitate a fruitful and informed public consultation, environmental information of the PPPs should be provided in an user-friendly style easily understood by the public.

For other SEA projects, interactions with stakeholders should be conducted in a form of intra-departmental consultations following relevant Technical Circulars, administrative procedures and guidelines.

The setting up of the Advisory Council on Environment (ACE) also helps enhance the interactions as any SEA selected for submissions to ACE would be considered and discussed thoughtfully by ACE or its sub-committee members before giving advice to DEP for consideration in endorsing the SEA reports.

Example – Hong Kong 2030 : Planning Vision and Strategy (HK2030)

http://www.info.gov.hk/hk2030/hk2030content/news/cover.htm

The study performs a good practice in which SEA was designed to be interlocked with the main study and both are subject to various stages of public consultation.

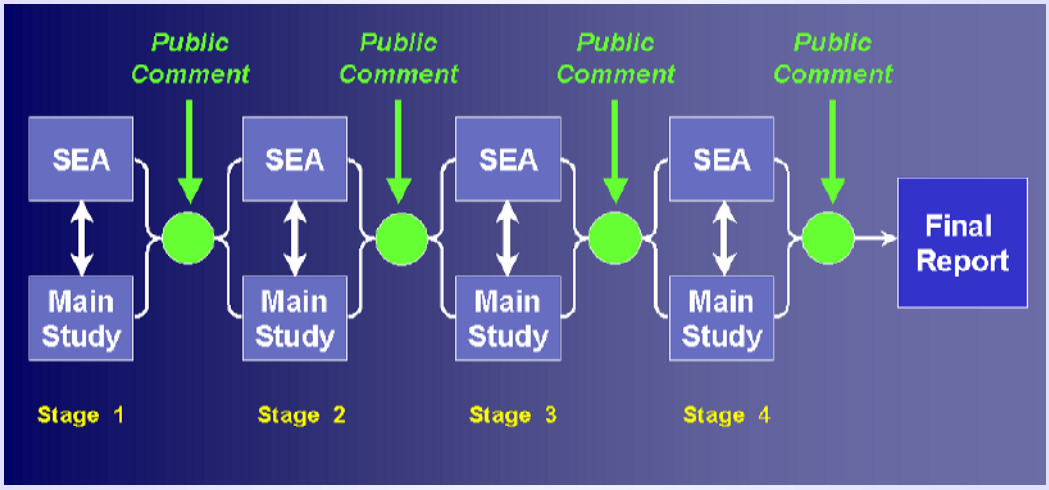


Figure 15 SEA process interlocking with the main study in HK2030 : Planning Vision and Strategy

Public involvements were conducted in many ways which include view sharing workshops involving specialist advisors, major stakeholders and community groups. Besides, interim SEA reports and papers are made public on internet throughout the whole SEA process.

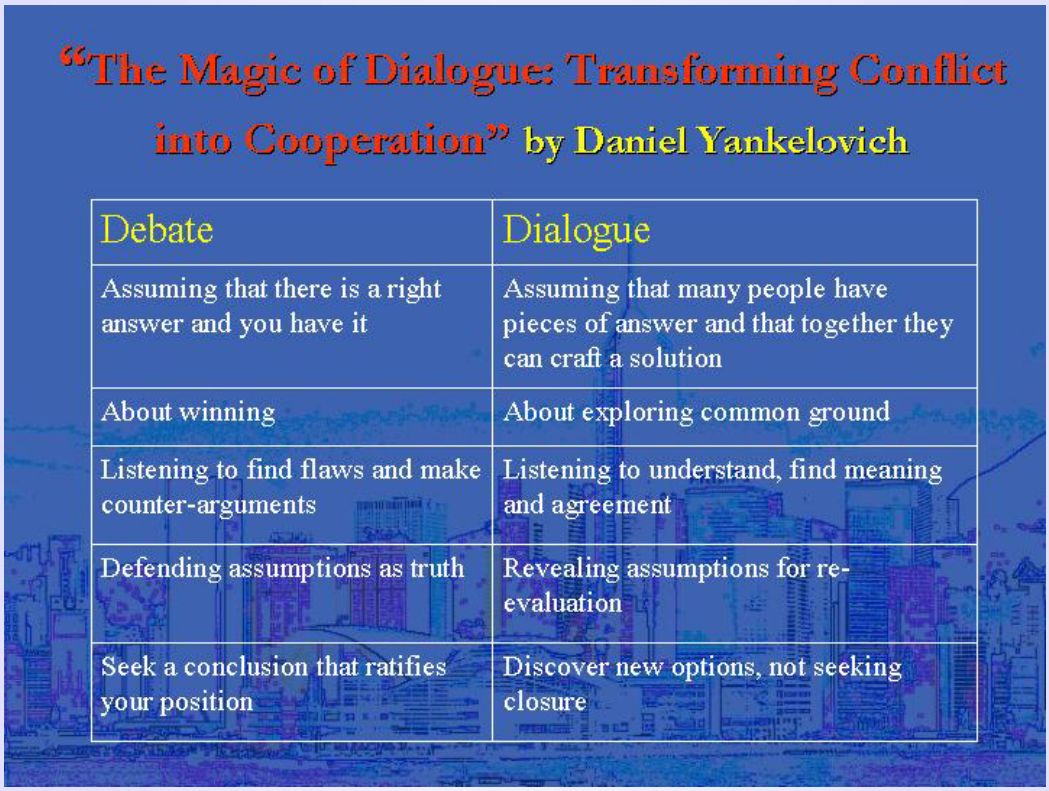
Figure 16 Wide public consultation in HK2030 : Planning Vision and Strategy

View Sharing Workshops in HK 2030 : Planning Vision and Strategy – Key Points

- View Sharing Workshop focusing on environmental friendly options to be incorporated in the strategy.
- Stakeholders as specialist advisors to the Environmental Study Management Group
- Major stakeholders :
  - ACE members
  - professional institute
  - academics
  - business sector
  - Community groups

Activities during each public consultation stage in HK 2030 : Planning Vision and Strategy

- Press Conference;
- Public Forum;
- Roving Exhibitions
- Prizes Presentation to Design Winners
- Briefings to Statutory/Advisory/Students;
- Focus Group Meetings/ Workshops


"The Magic of Dialogue: Transforming Conflict into Cooperation" by Daniel Yankelovich
Debate
Dialogue
Assuming that there is a right answer and you have it
Assuming that many people have pieces of answer and that together they can craft a solution
About winning
About exploring common ground
Listening to find flaws and make counter-arguments
Listening to understand, find meaning and agreement
Defending assumptions as truth
Revealing assumptions for re-evaluation
Seek a conclusion that ratifies your position
Discover new options, not seeking closure

10. Typical SEA Processes for Different Types of SEA

SEAs in Hong Kong can be generally grouped into three categories, each targeting for one of the following types of PPPs :

- territorial land use planning
- transportation strategies and policies
- sectoral strategies and policies

The following sections outline the characteristics of each group of SEA and more importantly, their typical processes in an attempt to shed lights on “key points to note” in applying SEA under different circumstances.

10.1 Territorial Land Use Planning

10.1.1 Nature and Scope

Usually closely related to

- Population growth
- Transport (in the sense that land use patterns should facilitate rail transit systems which are energy efficient and environmentally friendly)
- Supporting infrastructure (including environmental infrastructures e.g. sewage treatment plants)
- Ecologically important areas (e.g. no-go areas)
- Strategic growth areas (e.g. urban-biased vs. New Territories-biased)
- Cumulative territorial impacts in relation to sustainability

For those plans related to new town developments, more detailed information would usually be involved in an effort to assess cumulative environmental impacts comprehensively and to suggest positive features of the whole new town which cannot be done in project EIA.

10.1.2 Considerations

Detailed evaluations at various levels should be carried out in order to generate the preferred options, which can then be synthesized into the development strategies.

Environmental initiatives and objectives should be fully integrated into the overall planning process. As this type of SEA seeks to develop a plan with scale and types of developments being commensurate with environmental thresholds, stringent testing procedures should be developed and undesirable elements should be screened out at each stage of the plan formulation process.

Moreover, as these landuse plans at strategic level provide for long term development guidance, opportunities should be seized to rectify existing landuse-related environmental problems.

10.1.3 Examples

HK2030 *(http://www.info.gov.hk/hk2030/hk2030content/news/cover.htm) and* TDSR *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/territorial_dept.html)* are among examples of SEA of Territorial Land Use Planning. The key points of the examples are shown in Table 2 below while project descriptions of the study are in Appendix 1.

Table 2 Examples of SEA Applying in Territorial Land Use Planning

Study	Key Sectors Involved	Scale	Dimension of Environmental Issues	Strategic Environmental Concerns and Foci
Hong Kong 2030 : Planning Vision and Strategy	Territorial Land Use, Transportation	Territory wide land use, transport and ports planning up to 2030	Territorial District	Potential environmental implications and acceptability of various development options. Key concerns were air, water, traffic noise and conservation.
Territorial Development Strategy Review	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. Key concerns were air, water, traffic noise and conservation.

10.1.4 Process

Since territorial or regional land use plans usually cover long time frames, and will lead to projects and developments over a long period of time, a comprehensive SEA is beneficial to identify major environmental problems at the outset and avoid problems which would be difficult and costly to resolve as projects are implemented at later stages.

In the process, SEA are usually supported by comprehensive studies with public consultation undertaken at the earliest possible stage.

Regarding plans for new town developments, SEA would usually be conducted together with Engineering Feasibility Study which is a Schedule 3 project under the EIA Ordinance, requiring to follow the Ordinance's procedures such as carrying out of public consultation.

A typical SEA process for this type of PPP, by referring to the case of HK2030, is presented in Figure 17 below.

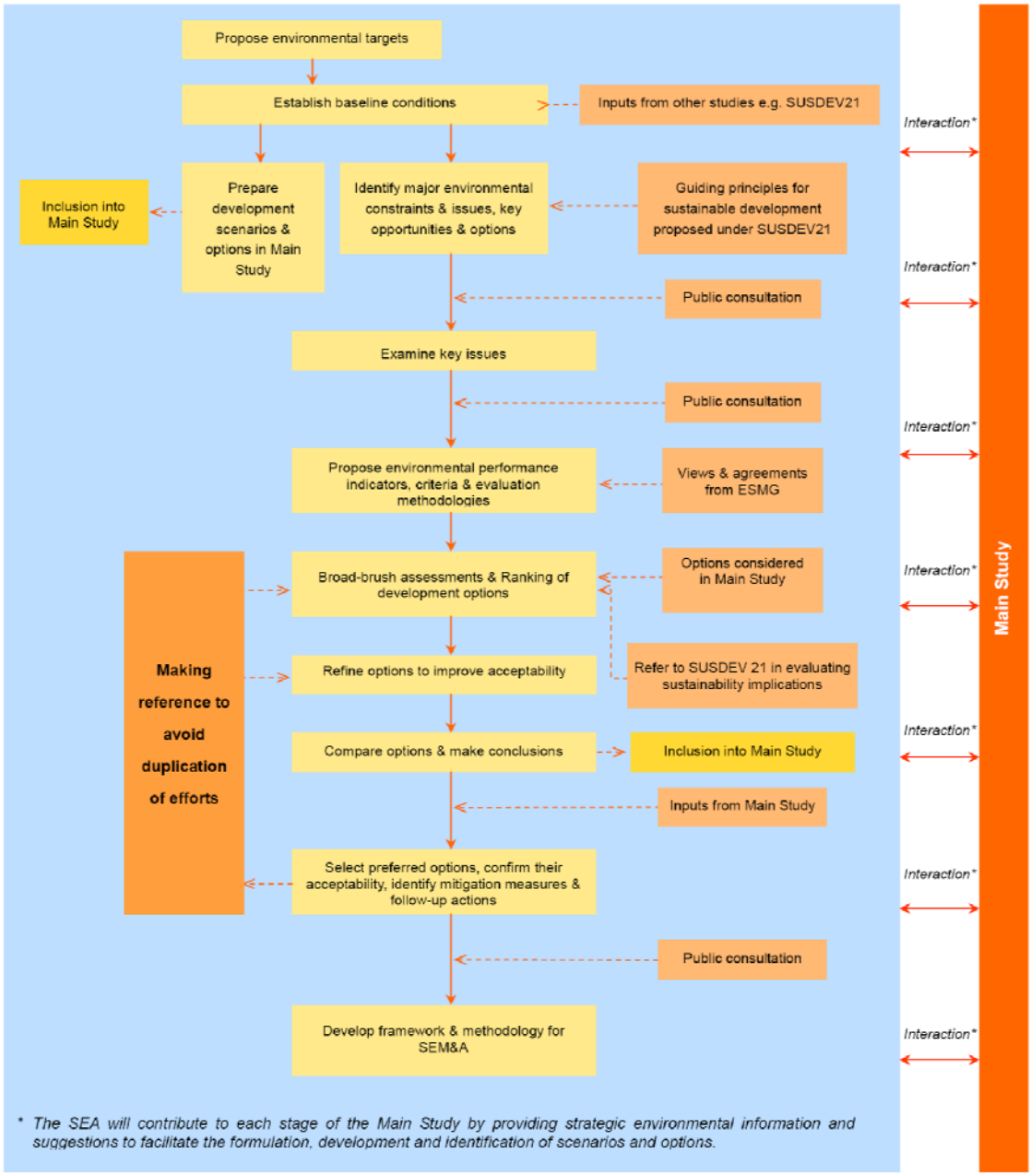


Figure 17 A Typical SEA Process for Territorial Land Use Planning –The Case of Hong Kong 2030 : Planning Vision and Strategy

10.2 Transportation Strategies and Policies

10.2.1 Nature and Scope

Aimed at facilitating the formulation of a "win-win" strategy/ policy which can best meet transport (social) and environmental needs plus financial/economic requirements.

10.2.2 Considerations

For long term sustainability, the following issues are key factors to be considered:

- mode of transport;
- alternatives and needs;
- rail or road;
- alignment options;
- integration with environmental and landuse planning;
- traffic management and control;
- use of advance vehicle technologies.

10.2.3 Examples

CTS3 *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/third_comp.html)* and RDS2 *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/second_railway.html)* are among examples of SEA of transportation strategies and policies. The key points of the examples are shown in Table 3 below while project descriptions of the two studies are in Appendix 1.

Table 3 Examples of SEA Applying in Transportation Strategies and Policies

Study	Key Sectors Involved	Scale	Dimension of Environmental Issues	Strategic Environmental Concerns and Foci
CTS3	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 were identified. Environmental constraints on further strategic transport developments were examined in which key concerns were air pollution and traffic noise. Ecological profile was identified to avoid strategic transport infrastructures from being developed in environmentally sensitive areas.
RDS2	Transportation, Fuel consumption, Land Use	Territory wide cross boundary population from 6.8M in mid-1999 to 8.9M in 2016	Territorial District Local	Formulating a preferred rail network that can maximize environmental benefits and avoid adverse environmental impacts as far as possible. Potential environmental implications due to the railway development options, including indirect effects and benefits of reducing air pollution were identified and compared with the use of road transport

10.2.4 Process

In many cases, qualitative analysis is made together with quantitative evaluations with a focus on comparing different scenarios. As there would be many uncertainties and assumptions behind the scenarios, certain extent of "professional judgments" would be involved during the process.

A typical SEA process for this type of PPP, by referring to the case of RDS2, is presented in Figure 18 below.

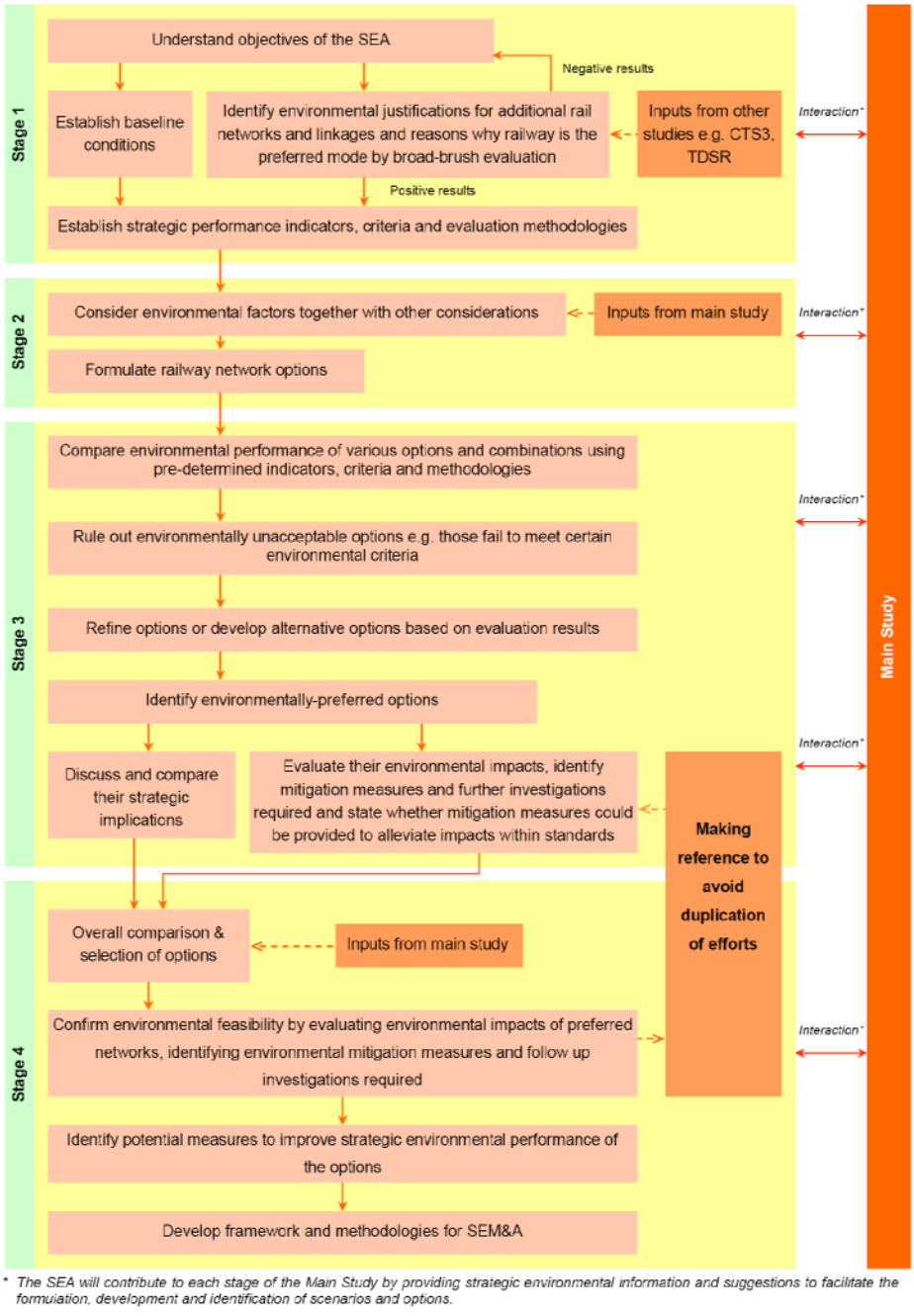


Figure 18 A Typical SEA Process for Transportation Strategies and Policies – The Case of Second Railway Development Study

Focus of SEA for RDS2

Annex A – Economic Appraisal of the Environmental Costs and Benefits of New Railways

- Traditional Project Appraisals in H.K.;
- Environmental Valuation Tools;
- Environmental Economics and Railway Development;
- Mechanisms for “Capturing” Benefits to the community.

Annex B – Comparative Assessment of Road vs. Rail

- Project appraisal of Highway and Railway projects;
- Air quality implications;
- Noise performance;
- Landtake and landuse implications;
- Transport safety.

10.3 Sectoral Strategies and Policies

10.3.1 Nature and Scope

- Usually for very major infrastructure / facilities at an early stage;
- Usually high profile and restricted access during the course of SEA;
- Timely environmental inputs are important, especially for different sitings.

10.3.2 Considerations

Linkages between policy action and environmental issues are key to the SEA. Using trade and environment as an example, it is important to map out the environmental effects of trade agreements at the early stage in order to properly complete a SEA.

Usually need to consider alternative sites over the territory, among other issues including major environmental constraints, e.g. ecologically sensitive areas, air sheds, population centres.

Other alternatives, apart from siting, would also need to be considered, e.g. consideration on the use of natural gas and other fuel options in a strategic power supply proposal.

10.3.3 Examples

Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.html)*, is one of the SEA examples for Sectoral Strategies and Policies. The key points of the example are shown in Table 4 below while project descriptions of the study are in Appendix 1.

Table 4 Examples of SEA Applying in Strategic Proposals and Options

Key Sectors Involved	Scale	Dimension of Environmental Issues	Strategic Environmental Concerns and Foci
Land Use Compatibility, Landfill Technology, Waste Planning, Design of Facilities	Across HK Territory	Territorial District Local	Potential environmental implications and acceptability of various site and landfill technology options. Key concerns were waste, water, air quality and ecological impacts.

10.3.4 Process

For PPP proposals which are land-related, the process usually begins by identifying the "Areas of Absolute Exclusion" where project at those areas would not be permitted. It is then followed by environmental screening of a list of possible sites identified. The selection process can be carried out in stages, during which long-listed sites could be screened at a board brush level taking into account the relatively important criteria while further environmental evaluation and screening could be applied for short-listed sites at a more detailed level to ascertain their likely environmental implications.

A typical SEA process for this type of PPP, by referring to the case of "Extension of Existing Landfill and Identification of Potential New Waste Disposal Sites", is presented in Figure 19 below.

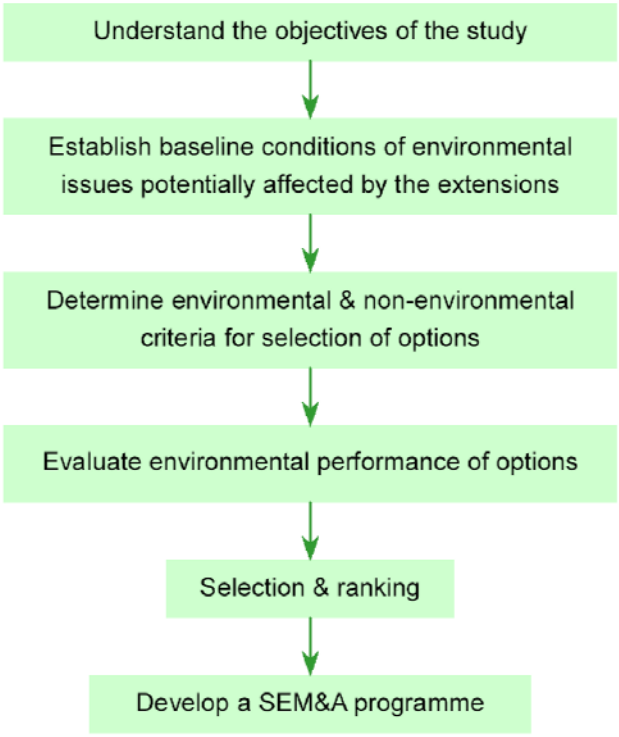


Figure 19 A Typical SEA Process for Sectoral Strategies and Policies – The Case of "Extension of Existing Landfill and Identification of Potential New Waste Disposal Sites"

11. SEA Methodologies

11.1 Methods and Applications in Hong Kong

Since policy-making processes may vary from case to case, it is commonly agreed that methods and techniques used in SEA should be highly flexible to coincide with each PPP.

SEA methodologies employed in Hong Kong and their applications on various PPPs are summarized in Table 5 below.

Table 5 SEA Methodologies and their Applications in Hong Kong

Methods	Remarks	Applications in Hong Kong
(I) Scenario Analysis		
a. Forecast	• Based on trends and mechanisms that can be seen in the past years. • More reliable for shorter-terms and well-defined areas. • Use of Scenario is good for comparative purposes and when there is a significant uncertainty about the future. • External Scenario – dependent on factors which cannot be controlled. • Policy Scenario – user can influence in a significant way.	• External Scenario have been used to estimate the future population, GDP, traffic etc. for land use and transport planning. • Computer modeling is commonly used to forecast environmental implications but before deciding whether to use it or designing the types of computer modeling, the following points should be noted: – The level of details required by the SEA should be carefully considered at an early stage as sophisticated models are usually time consuming and expensive but may not be meaningful for SEA in all cases. – Even though sophisticated models are available, special attention should be paid on whether credible information is available as input assumptions. – Margin of error of the model should be compared with that of the assumptions adopted. – Time available for conducting computer modeling should be assessed as even though very accurate results are produced, it would be useless if decisions have been made. • To deal with the uncertainty and to avoid unexpected environmental impacts, strategic environmental monitoring & audit should be developed as part of SEA to check the change of assumptions and follow up on the implementations of environmental mitigations that are necessary to avoid major problems. • Examples are SEA for TDSR, CTS-3, RDS-2, HK2030, etc.
b. Backcast	• Future goal is set. • Steps required to achieve this future goal.	• Used in HK2030 together with the Forecast approach. • In addition to the development pressure (such as population growth), the SEA also looked at the likely environmental targets in 30 years time and the possible trend or direction. • Measures required to achieve these future "targets" are also investigated and those related to land use planning are recommended to be incorporated in the strategic land use planning framework.

Methods	Remarks	Applications in Hong Kong
(II) Life Cycle Assessment	• Assess the environmental impacts and resources throughout a product's life from raw material acquisition through production use and disposal. • The Basis for the calculation is the functional unit to which all inputs and outputs are related (e.g. 1 MJ heat). • Such functional units could be compared among different alternatives. • The analysis is usually site and time independent. • Not all types of environmental effects are covered. • Effects associated with land use are traditionally difficult to assess.	• Relatively limited applications in Hong Kong. • Study on Potential Applications of Renewable Energy in Hong Kong (to be confirmed).
(III) Environmentally Extended Input/ Output Analysis (IOA)	• IOA is traditionally an analytical tool within economics and systems of national account. • IOA can be applied to include environmental impacts by adding emission coefficients to the monetary IOAs.	• In general, IOA has not been applied in SEA in Hong Kong. • However, a related approach is adopted in the SEA for the RDS-2 where the economic aspects of the environmental benefits and impacts of road vs. rail have been compared to present the whole picture of benefits and impacts borne by the community.
(IV) Risk Assessment		
a. of Chemicals	• For exposures of toxic chemicals.	• Only required if the proposals would lead to potential impacts related to the toxic chemicals. • For examples, toxic chemicals have been assessed in the site search for a Waste to Energy Incinerators. • Toxic Air Pollutants is also one of the indicators recommended in SUSDEV21 for sustainability assessment. • Environmental Baseline Surveys were conducted (as part of the Environmental Baseline Study for SUSDEV 21) to provide a comprehensive baseline of toxic air pollutants and toxic in marine sediments & biota for future SEA studies as appropriate.
b. of Accidents	• Analysis of accident consequences and their frequencies.	• Hazard assessment has been applied in SEA in Hong Kong if there are potential implications arising from the proposals, for example, TDSR, HK2030, where developments near the consultation zone of the Potentially Hazardous Installations have been considered (PHI).
(V) Impact Pathway Approach	• The analytical sequence "activities - emissions - dispersion – concentrations – impacts" are handled systematically. • Estimate how large a population is exposed to	• This approach is commonly applied in EIA in Hong Kong, and have been applied in a number of SEA, especially those with comprehensive studies, e.g. CTS-3 and Site Search for a New Power Station (by HEC). • Computer modeling (air quality and water quality), and wind tunnels are required to predict the concentrations of pollutants. For "points to note" in using computing

Methods	Remarks	Applications in Hong Kong
	different concentrations of pollutants. • Traditionally a site-specific and time-specific approach and is data demanding. • Mostly applicable to conventional pollutants.	modeling, please refer to "Applications in HK" column under Methodology (I) of the table. • The predicted concentrations are usually compared with the Air Quality Objectives and Water Quality Objectives to determine whether the impacts are acceptable.
(VI) Ecological Impact Assessment	• Usually site-specific. • In SEA, the areas affected will typically be larger and the detailed assessment methods may have to be adjusted to a coarser resolution.	• Ecological Impact Assessment has been commonly adopted in SEA in Hong Kong when there are potential ecological impacts arising from the proposal, e.g. TDSR, CTS-3, RDS-2 and HK2030. • In the SEA for RDS-2, potential cumulative ecological impacts arising from the proposed railway network were assessed based on indicative alignment. Encroachments into ecological sensitive areas were avoided.
(VII) Multiple Attribute Analysis (MAA)	• Aims to improve decision-making by making choices about conflicting or multiple objectives explicit and rational. • Display trade-off among criteria. • Use of weight and rating systems • Displayed in matrix display systems, diamond model, or value path. • Avoid a need for producing single summary values or indices that are supposed to capture different environmental dimensions. • Tend to have significant disagreements between methods as well as disagreement among individuals. • Purpose is not to come up with one answer but forces people to think about the problems at hand.	• MAA is a popular methodology for proponents and consultants in Hong Kong. However, there is a general tendency that instead of making the decision-making transparent and forces users to think, it often ends up with the opposite results where the reasons are buried and decisions are based on the final scores. • The final scores, derived by assigning and adding up scores, with or without weighting, based on different environmental aspects (e.g. noise, ecology, water and so forth) aims to provide a quantitative representation of the proposals' overall performance. This type of methodology must be used with caution as the approach is subjective and can be methodologically unsound. It can tend to hide the major issues which might not be reflected properly by final scores. However, this technique can, if used properly, provide a useful, quantitative, transparent and repeatable means to balance competing and disparate issues. As long as the shortfalls are recognized such methods can be useful, particularly in sensitivity analysis. • Moreover, qualitative information, such as rankings, have also been subject to various data manipulation as if they were quantitative information. This is methodologically flawed. • SEA in Hong Kong would try to make the environmental implications of a proposal and its alternatives explicit. • If MAA is used, it tends to use matrix display system as far as possible (e.g. SEA for the Landfill Extension Study) and avoid adding up scores assigned to environmental objectives with scores from the other objectives, a practice that would lead to over-relying on the final score, and lack of transparency for decision-making.
(VIII) Environmental Objectives	• Valuation results can be reported per target or objective. • The objectives can be used as a checklist when doing an inventory of potential impacts. • Indicators could be developed with the objectives in mind to facilitate comparisons. • Summarizing assessment	• Checklist, including environmental objectives, were developed to facilitate policy scans to check whether new policies under consideration has any potential environmental impacts (Appendix I of Joint PELBTC 10/98 (Figure 3 of this Manual refers) & WBTC 18/98). • Indicators recommended in SUSDEV21 for sustainability assessment are developed under a set of guiding principles, including one on environmental quality, and one on natural resources. • Please see above under MAA re aggregation. • Example : RDS2 -

Methods	Remarks	Applications in Hong Kong
	can also be made for the headline objectives in appropriate. • If Aggregation is required, has to be done through MAA mentioned above.	Two sets of objectives were developed – one for formulating railway network expansion options and the other one for comparing the options (the objectives are listed out at Appendix 2)
(IX) Economic Valuation	• To deal with social and private cost in the market as a result of certain activity (i.e. a negative environmental externality). • Different valuation approaches available, including hedonic pricing, willingness-to-pay, etc. • In the SEA context, might not have resource available to carry out the valuation studies. • Thus, probably have to work with the benefits transfer approach, i.e. utilizes results and data from existing studies and adjusts them to different situations.	• Data for detailed valuation studies is not available in Hong Kong. • Relevant studies in other parts of the world have been used with local emissions to demonstrate the likely consequence. • Pointed out the limitation of the current economic and financial assessment which did not take into consideration the environmental implications (both benefits and impacts) that are borne by the society. • Help to justify railway proposals that are marginally not viable in financial terms. • Example : RDS2 – In view that there is limited information and experience in monetarising environmental costs and benefits, and that monetarisation implicitly allows the environmental costs and benefits to be 'traded-off' by other economic factors, environmental costs and benefits were presented in the form of quantitative environmental information rather than monetarized terms. By producing two key issues papers - one on the economic appraisal of environmental costs and benefits of railways, and another on comparative assessments of road vs. rail, the whole picture of benefits and impacts borne by the community was well presented.
(X) Surveys	• This category refers to public opinion surveys, rather the traditional environmental surveys (such as field trips etc. to measure the ecological baseline). • In addition to public opinion survey, another set of methods emphasize small group elicitations and in-depth interviews.	• While public consultation are part of many SEA conducted in Hong Kong, public opinion surveys are in general not been used. • In the SEA for HK2030, it has arranged a view sharing workshops to listen to the major stakeholders and experts on any possible measures that could be incorporated in the strategic planning process to improve the environmental performance of the territorial land-use planning.
(XI) Valuation methods based on mass, energy and area	• As an alternative system to the economic valuation. • e.g. Material Flow Analysis, Material Intensity Per Unit Service, Ecological Footprint, etc. • Similar to the Life Cycle Assessment to certain extent	• In general have not been used in SEA. • However, Ecological Footprint has been considered as an valuation tools in the HK2030, and also as one of the sustainability indictors developed in SUSDEV21 to assess new proposals. • This tool was finally not adopted as a lot of assumptions need to used to convert all affected activities into "area", and it is more appropriate to serve as a tracking indicators to monitor the performance over time (with same set of assumptions), rather than as a tools to evaluate different proposals and alternatives.

11.2 Checklist of a Good SEA

No matter what SEA processes and methodologies are adopted, a good SEA should have the following characteristics:

Table 6 Checklist of a good SEA

Characteristics	Questions to be asked
Consideration of alternatives	Does SEA identify environmentally friendly alternatives ?
Pick up signals	Does SEA pick up key environmental threats and opportunities?
Focus	Does it focus on major issues?
Participation	Does it allow people to take part ?
Science-governance	Are the roles of experts and decision-makers clear and well understood?
Balancing interests & transparency	Is the decision-making transparent and balanced ?
Execution of agreed-on action	Are there commitments and mechanisms to follow through?

Part IV

Worldwide Experience and World Trend

This part outlines SEA developments/ practices in several jurisdictions outside Hong Kong. Formal provisions for undertaking SEA are now emerging around the world.

It is important to note that the EIA Law of Mainland China, which came into force in September 2003, also sets out the requirements for environmental assessment of plans in addition to projects.

12. Worldwide Experience

12.1 EU SEA Directive and Its Implications

The SEA Directive (2001/42/EC), *(http://www.europa.eu.int/comm/environment/eia/full-legal-text/0142_en.pdf)* being in force since 2001, is applied to the EU Member States such as the United Kingdom, Germany, Finland and Austria, providing a comprehensive basis for appraising development plans and programmes. The Member States have to conduct SEA according to the states' own procedures while integrating a set of broad principles and common procedural requirements as laid down in the Directive where appropriate. The requirements include :

- Production of an environmental report including descriptions and evaluations of impacts and alternatives
- Consultation and public participation
- Taking the environmental report into account in decision-making
- Provision of information on the decision, including action recommendations
- Monitoring and review mechanisms

Under the Directive, the Member States have to consider systematically whether the plans and programmes they prepare come within its scope of application and hence whether they need to carry out an environmental assessment of their proposals. If this is the case, SEA being conducted have to comply with the Directive in respect of the contents of the environmental report, the requirements on quality assurance of the report, the provisions of consultation, the nature of the monitoring requirements, and finally the relations between the Directive and other Community legislation.

The Directive ensures that the environmental effects of a broad range of plans and programmes have to be assessed and can be taken into account while plans are actually being developed, and adopted in due course. Meanwhile, the Directive enables public involvement in which the public must be consulted on the draft plans and on the environmental assessment and their views have to be taken into consideration.

12.2 Mainland's Recent EIA Ordinance – Assessment of Plans

http://www.people.com.cn/BIG5/huanbao/55/20021029/853066.html

The EIA Law of the People's Republic of China has come into force since 1 September 2003, setting out the statutory requirements for EIA of plans and construction projects; and the legal

liability in the EIA process.

Under the Ordinance, environmental assessments have to be conducted for land-use planning, regional planning, and certain sectoral plans such as industry, agriculture, energy and transport during their planning stages. Those projects without environmental assessments could no longer obtain authorities' approval. For projects with significant potential environmental impacts, public comments have to be consolidated with public hearings before submitting environmental assessment reports to the relevant authorities for approval.

12.3 SEA Practices in Other Countries

- ***United Kingdom***

Under the EU SEA Directive, the United Kingdom, as one of the member states of EU, requires an environmental assessment to be carried out for some types of plans and programmes if they are likely to have significant effects on the environment. Sustainability appraisals have also to be carried out thereby combining SEAs and sustainability appraisals into a single process. The two assessments/ appraisals are subject to scrutiny by inspectors testing the "soundness" of the plan and in case the inspectors consider the assessments/ appraisals as inadequate, this could undermine the integrity of the whole plan and may prevent adoption.

The Office of the Deputy Prime Minister has prepared a guidance on how to carry out S EAs in accordance with the EU SEA Directive. (*http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_026670.pdf*)

- ***Canada***

In support of sustainable development, Canadian government applies SEA during their PPP formulation process. The *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* is in place under which ministers expect a SEA of a PPP to be conducted should (i) they be required to submit to individual Minister or Cabinet for approval and (ii) implementation of the proposals may result in important environmental effects, either positive or negative.

The Directive establishes criteria to help federal departments and agencies concerned determine when SEA is appropriate and offers guidance on its preparation. The Directive was recently amended to include provisions for more transparency. As of January 2004, it is required public statements of environmental effects be prepared when a detailed assessment of environmental effects has been conducted through a SEA.

A Guidelines for implementing the Cabinet Directive is posted on Canadian Environmental Assessment Agency's website at *http://www.ceaa.gc.ca/016/directive_e.htm*.

- ***World Bank***

The Operational Directive (OD) of 1989 on Environmental Assessment included provision for Sectoral and Regional EA (REA) and has been implemented ever since. The conversion of the original OD into the Operational Policy (OP) 4.01 format in 1999 confirmed the role of SEA and REA.

The first Environmental Strategy of the World Bank, approved in July 2001, emphasized the potential role of SEA for upstreaming and mainstreaming environmental concerns in PPPs, along with the development of the Country Environmental Analysis and the strengthening of the safeguard policies framework and application. Sectoral EA are used to examine the issues/ impacts to a particular policy, plan, programme, or a series of projects for a specific sector. It is used to evaluate and compare the impacts against those of alternative options; assess legal and institutional aspects; and provide recommendations to improve environmental management in the region. REA are used to examine issues/ impacts related to a particular policy, plan or programme, for a particular region. SEA and REA need to be conducted in a very participatory way and, when conducted under the OP 4.01, need to be disclosed in-country and on the World Bank's Internet site.

Since 2001, work on good practices and guidance on SEA has increased and intensified, both within the World Bank and with external partners, particularly United Nations organizations and bilaterals (Organization for Economic Cooperation and Development /its Development Assistance Committee).

SEA is increasingly mandated or "guidelined" in national systems, including in Bank's borrowing countries, the most advanced (countries in accession to Europe) or fastest growing or even in less advanced countries.

The World Bank is helping and wants to continue helping build capacity for effective SEA preparation and development. More information is available at *http://www.worldbank.org/sea* and queries about SEA development at the World Bank can be sent to *sea@worldbank.org*.

13. World Trend

13.1 Sustainable Development

Although approaches of SEA differ between countries for matching with their own situations, institutional frameworks and political circumstances, all SEA tend to be developed in a direction towards achieving sustainability-led PPPs.

- ***Characteristics of sustainability-led PPPs :***

1. Focus on Long-term impacts, e.g. Environmental Carrying Capacity, so as to avoid impacts on future generations (e.g. TDSR);
2. Address Environmental Capital Stocks (e.g. Environmental Baseline Report of SUSDEV21);
3. Follow the principles of Sustainable Development by adopting the principles of Agenda 21 (e.g. TDSR), by considering environmental implications and economic factors simultaneously (e.g. RDS2); and
4. Provide adequate environmental information for conducting Sustainability Impact Assessments (e.g. HK2030).

13.2 Performance Criteria of International Association for Impact Assessment (IAIA)

IAIA has published in January 2002 a one page summary of SEA performance criteria. This document provides general guidance on how to build an effective SEA process and to evaluate the effectiveness of the existing SEA processes. According to the document, a good SEA process should possess the following characteristics :

- Integrated
- Sustainability-led
- Focused
- Accountable
- Participative
- Iterative

More information on this document could be obtained at *http://www.iaia.org/Publications.htm*.

13.3 Regional Centre of Excellence

To avoid repeating previously encountered SEA problems in other countries or cities and to share techniques in tackling major strategic environmental issues during SEA processes, there is a genuine need for a forum to share SEA knowledge around the world. Thanks to the wide applications of internet, knowledge sharing is much easier nowadays. However, there are still barriers that need to be removed to make knowledge sharing more effective. For example, understandings of different cultures and implementation frameworks of countries need to be enhanced to enable practitioners and decision-makers to fully appreciate the issues and to really benefit from the lessons learnt elsewhere. Otherwise, lessons learnt could easily become just another "text book" on the shelf and could not avoid problems repeating again and again in different time and spatial horizon.

One possible solution is to build up the "regional center of excellence" so that places with more experience on SEA could be tasked to disseminate the knowledge and information to other regions. To increase effectiveness in information sharing, it needs to illustrate the principles and practices of SEA by real examples to show that these principles really work and have been put into practice with major environmental outcomes. Regional centers, in particular those with common language and/or similar cultural background would therefore be much more effective in conducting the task.

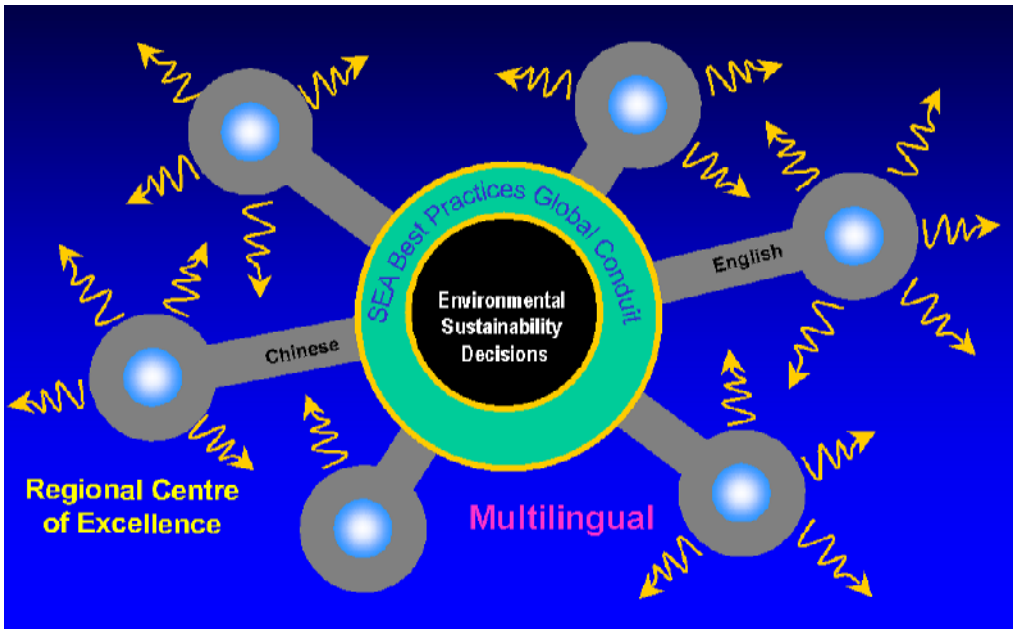


Figure 20 Vision for the future : SEA multilingual global enabling network

14. Major Challenges and Issues

Major Trends and Issues affecting SEA

- Great demand for efficient and prompt decision-making and simplicity
- Need for comprehensive, reliable and affordable environmental information of proposals and alterantives
- Need for clarity on ecological criteria, energy and conservation policies

Obstacles to Faster/Smoother Development of SEA

- Lack of ownership from proponents
- Lack of win-win development alternatives
- Conventional assessment techniques not suitable
- Lack of knowledge and experience by consultants
- SEA moving faster than other international or local polices – assessment in a policy vacuum

How Can Quality be Improved

- Informed discussion on scoping and process
- More ownership and accountability from proponents (sticks and carrots)
- Early public consultation on key issues and criteria
- Integrate environmental considerations when options are being formulated by others

Recommendations on Ways and Means to Improve SEA

- SEA Guideline being prepared in HK to provide a concise framework for proponents/consultants to follow
- SEA examples and past SEA reports available and easily accessible by public, proponents, consultants
- Strategic follow-up and monitoring framework as a key feature of SEA
- Knowledge and experiences sharing across the globe
- More practical pragmatic research towards efficient, effective processes

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34. "**Some Experience from the Strategic Environmental Assessment for the Second Railway Development Study in HK**", W. T. Yeung (December 2002)

35. "**International Trend of Strategic Environmental Assessment and the Evolution of Strategic Environmental Assessment Development in HK**", Elvis Au (December 2002)

36. "**SEA Process in HKSAR" -** Edited Version, Elvis Au (December 2002)

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Appendix 1

Project Descriptions of Key SEA Examples

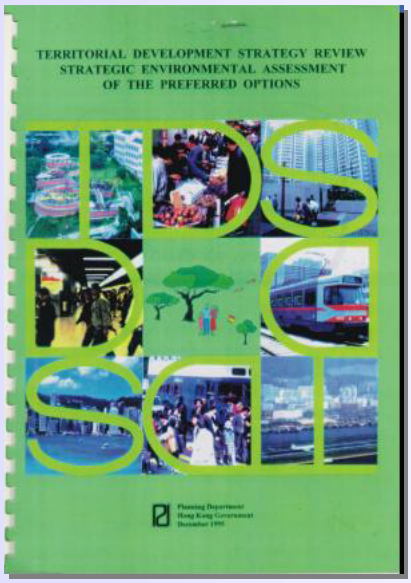
- **Territorial Development Strategy Review (TDSR) (Competed in 1996)**

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/territorial_dept.html

To cater for the potential increase of population from 6.4 million in 1996 to about 8.1 million in 2011, TDSR - a comprehensive review of the land use development strategy for the whole of Hong Kong - was conducted and a SEA was also conducted as part of the Review as land use planning would have remarkable influences on people's lives, environmental conditions as well as sustainability.

With a view to maximize environmental benefits, more than 20-plus options were considered and broad-brush assessments were carried out at the initial stage of the SEA, followed by more detailed assessments of short-listed options.

SEA of TDSR – Key Points



- Population from 6.4 to 8.1 million by 2011
- SEA evaluated 20+ development options
- Several options discarded or amended
- Incorporate environmental consideration in the planning process at early stage

SEA of TDSR – Key Outcomes

- Policy issues raised at the highest level
- Eliminate environmentally undesirable options
- Recognize and protect environmentally sensitive areas

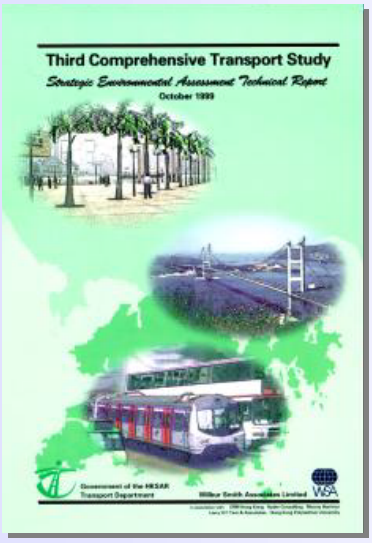
- **Third Comprehensive Transport Study (CTS3) (Completed in 1999)**

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/third_comp.html

The study aims to develop a comprehensive territory-wide transportation strategy to meet the short and long-term transport needs of Hong Kong. SEA, as part of the study, intends to assess strategic environmental implications of transportation strategies being proposed during the CTS3 study.

In the SEA, air, noise and ecological implications were evaluated and a range of actions were recommended including integration of land use and transport planning to reduce the need for travel, more extensive rail networks, better co-ordination of different transport modes, pedestrianization and cycling etc.

SEA of CTS3 – Key Points



- 4 population, traffic growth scenarios with range of rail, road and traffic management strategic options considered
- Conduct strategic environmental assessment of alternatives or options
- Attempt to analyse the full cost and benefits : Road vs. Railway
- Consider alterative funding and institutional arrangement

SEA of CTS3 – Key Outcomes

- Evaluate air, noise & ecological implications and recommended potential actions
- Set out SEM&A framework

- **Second Railway Development Strategy (RDS2) (Completed in 2000)**

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/second_railway.html

RDS1, completed in 1993, defines the current phase of rail developments in Hong Kong and RDS-2, aims to identify railway development options and improvements to meet the transportation needs up to 2016 while improving the efficiency of railway networks.

The SEA helps formulate environmentally acceptable strategies and ensure that environmental considerations were fully integrated into the overall study, thereby maximizing environmental benefits and avoiding adverse environmental impacts of all the options selected. The SEA compares road vs. rail developments and considers the whole transport networks comprehensively. Alignments going through environmental sensitive areas were avoided. The SEA also quantifies environmental benefits of railway developments which is not captured in the cost and benefit analysis, to facilitate informed decisions. The SEA demonstrates that more environmental advantages would be achieved by developing railways than roads, and highlights that discrepancies existed in the appraisal processes of these two transport modes would make implementations of rail projects become harder so it emphasizes all environmental benefits associated with railway developments should be taken into account and recommends that more emphasis should be placed on environmental aspects during project evaluations.

The findings of RDS2 form a basis for the Government to prepare a railway development strategy in the context of the overall transport plans and policies promulgated in late 1999 following completion of CTS3.

SEA of RDS2 – Key Points

- Focus on environmental benefits as well as impacts – a balanced approach needed
- Look at the hidden environmental implications
- Highlight major implications not reflected in financial analysis

SEA of RDS2 – Key Outcomes

- Recommended Railway Project $80 – 100 billion.
- Railway Development Strategy 2000. "Other support for marginally viable projects will be considered on the basis of the need for the individual projects."

- **Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites (Completed in 2003)**

http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/waste_disposal_sites.htm

The purpose of the study is to identify both possible extensions to the existing landfills and new sites for waste disposal so that replacement landfills can be planned, developed and opened ready to accept waste.

The SEA process avoided a number of environmentally sensitive sites and identified insurmountable ecological problems by ruling them out during the site selection process. Also, the SEA formed as one key element of an evolving waste management strategy for Hong Kong. The study process allowed numerous important issues or considerations to be looked into at an early stage and therefore allowed the decision makers and stakeholders to have a better overall picture.

SEA of Landfills Extension Study – Key Points

- An investigation to identify new landfill sites and extension of landfills.
- Identifying "Areas of Absolute Exclusion".
- Constraints mapping: environmental, ecological, conservation etc.
- 15 sites were identified for assessment
- Identified insurmountable environmental problems.
- Discussed the environmental implications of the selected sites.
- Recommended preferred sites and suitable sites for further investigations.
- Proposed a SEM&A programme.

SEA of Landfills Extension Study – Key Outcomes

- The South Cheung Chau is identified as the environmentally preferable site.
- The site is within the current dumping ground, i.e. limited ecological value.
- Minimal far field water quality impacts and the overall changes in flow discharges through the major water channels would be within 0.1%.
- Hydrodynamic changes are unlikely to affect any significant marine ecological resources.

- **Hong Kong 2030 : Planning Vision and Strategy (On-going)**

http://www.info.gov.hk/hk2030/hk2030content/news/cover.htm

In the wake of the previously completed Territorial Development Strategy, the highest tier of land use planning for Hong Kong and the last review of the Territorial Development Strategy, completed in late 1996. The Hong Kong SAR Government launched a study in November 2000 entitled "HK2030: Planning Vision and Strategy" ('the HK2030 Study'), to review the Territorial Development Strategy and bring it up-to-date. Under the overarching goal of adhering to the principle of sustainable development, one of the planning objectives of the HK2030 Study is to provide a good quality living environment.

To achieve this, it is necessary to establish the required environmental targets during the initial stage of the Hong Kong 2030 Study. In view of the environmental problems identified in the last TDSR, it is also necessary to spend more efforts under the Hong Kong 2030 Study on assessing our environmental capital, or budget for use as a basis, among other factors, for deriving development options. Besides setting the targets, as there is increasing demand for environmental resources and their supply is not unlimited, it is also necessary to work out the environmental carrying capacity and the demand that would be generated from the future developments. Apart from the developments in Hong Kong, regional development in Pearl River Delta may also influence Hong Kong's environmental conditions. To address all these issues, an on-going SEA has been/will be carried out to form an integral part of the Hong Kong 2030 Study.

Unlike the conventional approach, some esteemed external members (including the Green Groups, academics, and professionals) have been invited to join the Environmental Study

Management Group to form a panel of external specialist advisors for the SEA Study. The HK2030 Study has also adopted a proactive approach to consult and involve the public. In order to foster community consensus on the key issues and promote ownership of the outcome, the public as well as all stakeholder groups have been/will be closely consulted throughout the entire study process. In particular, they have been/will be consulted at each of the following four key stages of the HK2030 Study:

- Stage 1 : Agenda Setting, Baseline Review and Identification of Key Issues;
- Stage 2 : Examination of Key Issues;
- Stage 3 : Formulation and Evaluation of Scenarios and Options; and
- Stage 4 : Formulation of Development Strategies and Response Plans.

In addition to the above proactive public consultation process, several brainstorming sessions, view sharing workshops, and other focus meetings have been/will be held with the external specialist advisors and the public with a view to collect their views and suggestions on environmental-friendly ideas, options and measures and other environmental initiatives for the SEA study to take on board.

SEA of HK 2030 – Key Points

Strategy Focus and Drivers

- International Benchmarking of Environmental Targets, long time-frame, up to 2030; vision-based.
- Environmental carrying capacity.
- Integrated environmental considerations throughout the study.
- Enhance environmental sustainability and avoid major environmental problems.
- Strategic environmental monitoring and audit.

How HK2030 SEA differs from Others

- Sustainability – driven
- Public Engagement
- Transparency

Appendix 2

Lists of Objectives used in RDS2 for Formulation and Comparison of Railway Development Options

Objectives used for formulating railway network expansion options :

Sustainability	• maximize rail share of travel in the HKSAR and Cross Boundary • minimize the adverse impacts of transport and travel on the physical environment • minimize the depletion of scarce resources – fuel, land
Development	• integration of transport and land use planning • facilitate urban renewal, in particular in – Central Kowloon – Western District – Wanchai • facilitate new development areas, in particular in – South East Kowloon – NENT – NWNT – Lantau – South Hong Kong Island – Tseung Kwan O Intensification • facilitate the housing programme by enhancing the scope for high density development and redevelopment
Cross Boundary	• facilitate Cross Boundary travel for – commuting – leisure – business – freight to adjacent Shenzhen and Pearl River Delta, and further into Mainland
Integration	• form part of an integrated transport system for Hong Kong and Cross Boundary providing : – hierarchy of transport links and services – convenient and seamless interchange – user-friendly system

Level of Service	• provide appropriate high quality metro, commuter, and inter-city services • provide adequate capacity to meet peak demands • charge affordable fares to the general public in order to offer an attractive choice compared with road-based travel
Economic	• provide a cost-effective railway system • generate maximum community benefits • offer affordable fares to avoid social exclusion • affordable investment for the community through Government or private sector
Financial	• to be self-financing • provide appropriate return to shareholders • generate sufficient returns to meet replacement and recurrent costs

Objectives used for comparing railway network expansion options :

Accessibility	• Accessibility by rail to employment and other activities
Development Potential	• Improved rail access to existing and planned areas of development; spare capacity for future growth
Level of Service	• Total rail ridership • Rail market share • Overloading of rail system • Interchange • Journey time
Engineering	• Impacts on/disruption to existing infrastructure and services; construction difficulties/risks
Planning	• Planning and property impacts
Environmental	• Environmental impacts • Rail market share • Reduction in road traffic
Value for Money	• Economic and financial viability
Phasing	• Dependency on programmes for other lines and infrastructure

Appendix 3

Other Guidance Materials Available

- **SEA Reports**

In Hong Kong, proponents will be requested to upload the SEA onto the internet to facilitate public consultation, although this is not a statutory requirement as in the EIA Ordinance. Completed SEA such as TDSR, CTS3, RDS2 and recently completed ones including HK2030, SUSDEV21 etc. have been uploaded to EPD's website *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/sea.html)* for easy reference by project proponents and the public.

- **SEA Leaflet**

A leaflet entitled "Examples of SEA in Hong Kong", containing 10 major SEA examples in Hong Kong, is also posted on EPD's website *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/ebook1.html)*. The examples illustrate how environmental assessments have been applied at strategic and regional levels; and how environmental factors have in fluenced the formulation and selection of strategies and regional development options.

- **SEA Study Brief**

At the start of the SEA process, EPD would work closely with project proponents to draft a study brief tailor-made for each SEA which sets out the terms of references, the scope, the approach and other guidance for proponents to conduct the SEA study. To view the key SEA Study Brief, please go to *http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/studybriefs.html*.

- **SEA Manual**

The softcopy of this manual is posted on the website *(http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/sea/hksea_manual.html)* for easy reference.