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Paper Title: **Strategic Environmental Assessment – Implementation Mechanisms & Tools for the Future**

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**Abstract**

In Hong Kong, Strategic Environmental Assessment (SEA) is a systematic process, with multi-stakeholder involvement, for analyzing 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.

Internationally, SEA is an evolving process. About 10 years ago, there were discussions at the International Association for Impact Assessment 2002 (IAIA'02) that a good quality SEA process should include elements such as integrity, sustainability, focus, accountability, participation and interaction. In the IAIA'12, there were postulations that the SEA review criteria should focus on both the process criteria (alternatives consideration, impact evaluation, participation & engagement, and monitoring programme) and outcome & influence criteria (knowledge & understanding, decision-making, tiering, and communication & learning).

Throughout this 10-year evolution process, observation tells that the effective management and transformation of SEA “data”, “information” and “knowledge” is a key towards the success of SEA. In this regard, Knowledge Management (KM) concept and Information and Communication Technology (ICT) are two useful implementation mechanisms and tools for the SEA. The KM concept emphasizes a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights and experiences. The ICT can be applied to process, and then to distill a vast amount of data and information to formulate SEA knowledge. In addition, ICT can also serve as an electronic platform, allowing easy access to information as well as true interaction between the public, the project proponents and the authority.

The paper discusses the Hong Kong's SEA system, summarizes the application of KM concept and ICT in processing SEA studies, and projects how future SEAs may be carried out.

## **SEA – its Key Elements**

Whilst there are different textual definitions with Strategic Environmental Assessment (SEA) in different countries, the key SEA elements normally include “*integration of the principles of sustainable development into country policies and programmes*”, “*analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter linkages with economic and social considerations*”, “*develop and apply common approaches for SEA at sector and national levels*”.<sup>[1]</sup>

In Hong Kong, the SEA is defined as a systematic process, with multi-stakeholder involvement, for analyzing 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.<sup>[2]</sup>

SEA is no doubt an evolving process. About 10 years ago, there were discussions in the International Association for Impact Assessment 2002 (IAIA’02) that a good quality SEA process should include elements such as integrity, sustainability, focus, accountability, participation and interaction.<sup>[3]</sup> In the immediately past IAIA’12, there were postulations that the SEA review criteria should focus on both the process criteria (alternatives consideration, impact evaluation, participation & engagement, and monitoring programme) and outcome & influence criteria (knowledge & understanding, decision-making, tiering, and communication & learning).<sup>[4]</sup> There is a general trend that the SEA focus is shifting from the “means” to the “ends”, and more emphasis is now given from the quality of the SEA studies and reports to the management of SEA outcome and expectation. Yet, this is tally with the changing world that we are now facing.

## **The Changing World**

Different journalists and social scientists observed that the world entered a whole new era. For example, the book “*The World is Flat*” names today’s world as “*Globalization 3.0*”<sup>1</sup>. The Globalization 1.0 was about countries globalizing; the dynamic force in Globalization 2.0 was companies globalizing; the dynamic force in Globalization 3.0 is the newfound power for individuals to collaborate and compete globally. This Globalization 3.0 commenced around the year 2000, and a “*flat-world platform*” has been established which enables, empowers, and enjoins individuals and small groups to go global. This flat-world platform is the product of a convergence of the personal computer, which allows every individual to become the author of his or her own content in digital form. Individuals and/or groups of individuals from every corner of the flat world are being empowered, and Globalization 3.0 makes it possible for more people to plug in and play.<sup>[5]</sup>

## **SEA as an Evolving Process**

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<sup>1</sup> According to the book, the Globalization 1.0 commenced from 1492 – when Columbus set sail, opening trade between the Old World and the New World – until around 1800. The Globalization 2.0 lasted roughly from 1800 to 2000, interrupted by the Great Depression and World Wars I and II.

The empowerment of individuals in this Globalization 3.0 era is in line with the experience gained from various SEA and Environmental Impact Assessment (EIA) projects in twofold. Firstly, the number of views and comments from the individuals on SEA and EIA projects increase drastically whilst those from the green groups or established organizations remain steady. Secondly, more and more public comments now contain personal views and with sound technical information support consolidated from various sources and web sites.

The Hong Kong Environmental Protection Department's (EPD) two previous IAIA papers discussed some necessary policies, attitudes and prerequisites on handling these changes. As discussed in the IAIA'05, it has been the goal of the Hong Kong EPD to strive for continuous development and improvement in the public engagement strategy in the following directions:

- from “DAD” (“decide, announce and defend”) to “DDD” (“discuss, decide and deliver”) approach;
- from treating the public as “objectors” to treating the public as “contributors” and “partners”;
- from “debate” to “constructive and meaningful dialogue” (and the Government serves as facilitator);
- from “paper-based EIA” to “web-based plus on-line EIA” to supplement paper-based EIA, and to 3-dimensional (e.g. site meetings, physical models, 3-D visualization) collective learning, dialogue & knowledge development; and
- from “one-off (or ad hoc) involvement” to “continuous and interactive public involvement”.<sup>[6]</sup>

In the IAIA'08, the Hong Kong EPD raised three elements for enhancing the future SEA and EIA process, i.e. collaboration, conflict resolution / problem solving and creativity.<sup>[7]</sup>

### ***Collaboration***

Collaboration is the combined work of a large number of people on a common task,<sup>[8]</sup> and collaboration does not require leadership and can even bring better results through decentralization.<sup>[9]</sup> This can easily be explained by the “Game Theory” developed by John von Neumann and Oskar Morgenstern in 1944. In this theory, there are “zero-sum” and “non-zero-sum” outcomes relate to the net loss or gain across participants. In the case of a zero-sum game, “players” are engaged in an activity which entails that the participant's net outcomes will have an inverse proportion to one another resulting in a zero sum. In other words, “my gain is your loss”. Non-zero-sum outcomes on the other hand describe win-win scenarios – “my gain is your gain”. In practice, zero-sum and non-zero-sum dynamics are often mixed, and participants must internally cooperate in order to compete across their external boundaries.<sup>[10]</sup>

### ***Conflict Resolution / Problem Solving***

Conflict is a state of discord caused by the actual or perceived opposition of needs, values and interests. For major infrastructure projects, research shows that public involvement is a necessary part of risk management. Very often, project proponents need better advice on how to involve the public earlier in the development cycle, and high quality public involvement is more important than, for example, involving more members of the public.<sup>[11]</sup> The role of environmental and social impact professionals will become more

important, particularly in utilizing various conflict resolution / problem solving techniques in coordinating and collaborating diversified views. When applying these techniques, creativity is an essential element leading to achievements.

### ***Creativity***

Creativity is a mental process involving the generation of new ideas or concepts, or new associations between existing ideas or concepts. Today it is undeniable that environmental and social impact professionals will need to use various creativity techniques on moving from conflict to collaboration, proactive listening, clarifying customer expectations, resolving customer dissatisfaction; and influencing for win-win outcomes.<sup>[12]</sup>

## **SEA – Implementation Mechanisms & Tools for the Future**

Traditional professional activity is unidirectional, entailing the issue of proclamations to the public by people claiming professional expertise on matters of public concern. But environmental and social impact professionals can also be multidirectional, as professionals not only seek to impart expertise to publics, but take the experiences, activities, and knowledge to a lay public as important factors in the development of professional knowledge and activities.<sup>[13]</sup> To further enhance the SEA roles on collaboration, conflict resolution / problem solving and creativity, the exploration and application of Knowledge Management (KM) skills and new Information Communication Technology (ICT) are essential. The following discussions may provide some hints on future development in this area.

### ***Knowledge Management***

According to KM principles, new knowledge begins with the individual, and makes personal knowledge available to others.<sup>[14]</sup> There are five main KM principals, including systematic problem solving, experimentation with new approaches, learning from their own experience and past history, learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organization.<sup>[15]</sup>

To implement these useful KM principles, there is need to establish and operate a SEA KM library to keep those SEA information and knowledge. An example can be found in the Hong Kong SEA Knowledge Centre “<http://www.epd.gov.hk/epd/SEA/eng/index.html>”, which contains a lot of useful SEA information and knowledge, including Hong Kong SEA Manual, Completed SEA Reports, SEA Examples / Outcome Profiles, Review of Global Environmental Evaluations of Policies and Proposals, International Web Resources, etc.

As mentioned above, collaboration, conflict resolution / problem solving are the keys towards the success of SEA, and inconsistent information release during the SEA process can be destructive to these good elements. A dedicated SEA search engine can facilitate environmental and social impact professionals to collect project specific news from web sites, and to keep track with the public and the government’s views on SEA projects. The collected information can then be used in the knowledge distillation process, in order to formulate public engagement strategies to reach the collaboration, conflict resolution and problem solving purposes. Such dedicated search engine, for example, can be found in the Hong Kong Government Information Services Department “News Archives” web site “<http://www.isd.gov.hk/pr/eng/>”. This search engine can keep track with all those Press

Release issued to the public and the media, no matter they are from the Hong Kong EPD or other government departments.

### ***Information Communication Technology***

To play a more active collaboration, conflict resolution / problem solving and creativity roles, the project proponents are now setting up designated web sites for individual SEA projects. Example can be found in the Hong Kong “Review and Update of the Railway Development Strategy 2000” web site “<http://www.ourfuturerailway.hk/>”. In the future, these project web sites should possess the content management system features, such as:

- identification of all key users and their content management roles;
- ability to assign roles and responsibilities to different content categories or types;
- definition of the content work flow tasks, often coupled with event messaging so that content managers are alerted to changes in content;
- ability to track and manage multiple versions of a single instance of content; and
- ability to publish the content to a repository to support access to the content. Increasingly, the repository is an inherent part of the system, and incorporates enterprise search and retrieval.<sup>[16]</sup>

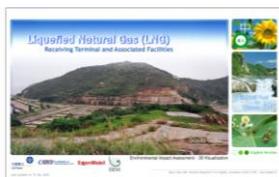
For effective implementation of those SEA elements, free information exchange in a user-friendly mode is vital. In the conventional paper reports, the environmental information is presented in the form of text, photos and charts, and the real-life 3-dimensional environmental conditions are compressed into 2-dimensional, non-interactive tables and diagrams. The technical information on the environmental impacts and the proposed mitigation measures may not be so interesting and easy to be understood by the general public. As raised in the Hong Kong EPD IAIA’05 and IAIA’08 papers, the presentation of environmental findings in 3D visualization models are highly welcomed and appreciated by the public. Examples are shown in Annex A for reference.

### **Conclusion**

SEA aims at integrating the environmental, social and economic considerations in the early policy, plan and programme formulation stage. SEA is a dynamic process, and it has been evolving in order to synchronize with this changing world. The success of SEA should possess those good elements and techniques such as continuous development and improvement in the public engagement strategy, and collaboration, conflict resolution / problem solving and creativity throughout the SEA process.

Future SEA will involve the process of distilling the various raw data and information to useful SEA knowledge. The efficiency of such data-to-knowledge transformation will highly involve the application of KM and ICT techniques and strategies. This paper recommends four potential areas for future development, i.e. (i) SEA KM Centre to store the past SEA records, (ii) dedicated search engine to collect SEA specific data and information, (iii) designated project web sites and (iv) 3D visualization models to facilitate a meaningful dialogue between SEA experts with the public and various stakeholders.

## **Annex A: Examples of the 3D electronic models for various infrastructure projects**



Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities, ESB-126/2005  
web site: "<http://202.128.236.109/pub/lng/lng/default.html>"



Wan Chai Development Phase II and Central-Wanchai Bypass, ESB-153/2006  
web site: "<http://202.128.236.109/pub/EIA/index.htm>"



## **Bibliography**

- 1: Organization for Economic Co-operation and Development (2006), "DAC Guidelines and Reference Series: Applying Strategic Environmental Assessment – Good Practice Guidance for Guidance for Development Co-operation", p.19.
- 2: Extracted from the Hong Kong SEA Manual (2007) deposited in the web site "<http://www.epd.gov.hk/epd/SEA/eng/interactive/p10111.html>".
- 3: Elvis Au (2002), "*International Trend of Strategic Environmental Assessment and the Evolution of Strategic Environmental Assessment Development in Hong Kong*".
- 4: Lisa White and Bram Noble (2012), "*The Contributions of SEA to Energy Sector Planning*", paper presented at International Association for Impact Assessment (IAIA) Seminar 2012 in Porto, Portugal.
- 5: Summarized from: Thomas L. Friedman (2007), "*The World is Flat, a Brief History of the Twenty-first Century*", p.9-11.
- 6: Simon Hui (2005), "*EIA – Towards a New Era through Continuous Public Involvement*", paper presented at International Association for Impact Assessment (IAIA) Seminar 2005 in Boston, USA.
- 7: Simon Hui & Anthony Ho (2008), "*Hong Kong's innovative Techniques in Public Engagement*", paper presented at International Association for Impact Assessment (IAIA) Seminar 2008 in Perth, West Australia.
- 8: Reference to Mass-Collaboration.net "<http://www.mass-collaboration.net/?files|mass-collaboration.htm>".
- 9: Reference to Wikipedia "<http://en.wikipedia.org/wiki/Collaboration>".
- 10: Reference to Mark Elliott's PhD Dissertation: "<http://mark-elliott.net/view/Dissertation/CollaborationDissertation>".
- 11: Reference to Howard KUNREUTHER, (2007), "*Proceedings for Dealing with Transboundary Risks in Siting Noxious Facilities*", Proceedings of the International Conference on Siting of Locally Unwanted Facilities: Challenges and Issues, 2007, p.67-8.
- 12: 5 points extracted from US Environmental Protection Agency web site "<http://www.epa.gov/customerservice/training.htm>".
- 13: Reference to Andrew L. Barlow, (2007), "*Transformative Collaborations: Professionals and Minority Community Power*", Collaborations for Social Justice, 2007, p.6.
- 14: Ikujiro NONAKA, (1987), "*The Knowledge-Creating Company*", Harvard Business Review on Knowledge Management, 1998, p.21-45.
- 15: David A. GARVIN, (1987), "*Building a Learning Organization*", Harvard Business Review on Knowledge Management, 1998, p.47-80.
- 16: Extracted from Wikipedia "[http://en.wikipedia.org/wiki/Content\\_management\\_system](http://en.wikipedia.org/wiki/Content_management_system)".