

## Building tiering into Thai impact assessment (IA) practice

Chaunjit Chanchitpricha<sup>1)</sup> Thomas B Fischer<sup>2),4)</sup>, and Alan J Bond<sup>3),4)</sup>  
✉ chaunjit@g.sut.ac.th; fischer@liverpool.ac.uk; Alan.Bond@uea.ac.uk

1) School of Environmental Health, Institute of Public Health, Suranaree University of Technology, Nakhon Ratchasima, 30000 Thailand

2) School of Environmental Sciences, Department of Geography and Planning, University of Liverpool, Liverpool, United Kingdom

3) School of Environmental Sciences, University of East Anglia, Norwich Research Park, Norfolk NR4 7TJ, United Kingdom

4) Research Unit for Environmental Sciences and Management, North-West University, Potchefstroom Campus, Private Bag X6001, Potchefstroom 2520, South Africa

### Abstract

While strategic environmental assessment (SEA) for policies, plans and programmes is considered discretionary in Thailand at present, it is estimated that it will soon be required by law. Therefore, it is timely to consider tiering between SEA and Environmental Impact Assessment (EIA) for projects in order to make both SEA and EIA more effective. In this paper we explore tiers of land use policy and planning in Thailand. A completed SEA case will be investigated and linkages with EIA explored. Recommendations are provided to enhance overall effectiveness through better tiering.

**Keywords:** Planning tiers, Strategic environmental assessment (SEA), environmental impact assessment (EIA)

### 1. Rationale and background

Impact assessment (IA) practice in Thailand has evolved over 45 years with regards to different types of mandatory IA, starting with EIA which has been in use since 1975. In 2010, EIA was expanded into environmental and health impact assessment (EHIA). Other emerging practices include IA as a supporting mechanism for public participation (PP) in EIA (e.g. through social impact assessment - SIA, and voluntary health impact assessment (HIA)) as well as non-mandatory SEA (Chanchitpricha and Bond 2019, p.5). To date, the main focus of IA practice has been on project rather than strategic levels of decision making. Furthermore, understanding of IA tiering between strategic and project levels has remained low (i.e. Chanchitpricha 2012, Chanchitpricha and Bond 2015; 2018; 2019, Chanchitpricha et al. 2019).

Therefore, in this paper, after explaining the connections between IA practice and planning in Thailand, and the role played in land use policy, in the next section, we answer the following specific research questions:

1. Is there currently any evidence for the tiering of information between SEA and EIA?
2. How can tiering be effective? Are all IA effectiveness elements relevant for all IA tiers?

We concentrate on the land use policy and planning sector, with a particular focus on the Eastern Economic Corridor (EEC), in which Rayong is one among three provinces involved in

development. Whilst no EEC SEA has been completed and delivered to date, there are earlier pilot SEAs, (i.e. as provided by the Department of Industrial Works 2012). Aspects of effectiveness developed by Chanchitpricha et al. (2019) are used to evaluate practice.

## 2. Tiers in Thai spatial planning, EEC policy and SEA at strategic development levels

Spatial planning in Thailand can be classified as occurring at 2 main levels; strategic spatial policy planning and land use planning (National and Regional Planning Bureau 2019). The National Economic and Social Development Council (NESDC) and the Ministry of Interior (DPT) are the key relevant authorities for national spatial development and planning (**Box 1**).

Levels	Categories	Policy/ Plans
Strategic spatial planning	National	Policy Plan : National Economic and Social Development (NESD) Plan » EEC policy is proposed under NESD Plan no.12 Spatial Plan : National Spatial Development Plan
	Regional	Regional Spatial Development Plan
	Subregional	Subregional Plan
Land use planning	Provincial	Comprehensive Plan
	Town	
	Specific area (action plan)	Specific Plan
		Land re-adjustment plan

**Box 1** Level of spatial development at strategic level in Thailand

Source: based on Department Public Works and Town & Country Planning, Ministry of Interior, Thailand (DPT) (2013) as cited in [https://www.mlit.go.jp/kokudokeikaku/international/spw/general/thailand/index\\_e.html](https://www.mlit.go.jp/kokudokeikaku/international/spw/general/thailand/index_e.html); National and Regional Planning Bureau (2019)

EEC policy has been enforced through EEC Act B.E. 2561, developed as part of Thailand's national development strategy (The national strategy 2018, The Prime Minister's Office 2018). The Act states that sustainable development (SD) and PP are key elements in plans relevant to EEC development (section 30, paragraph 3). The terms 'feasibility study (FS)' (section 40, paragraph 2) and EIA (section 8) are referred to in the Act whereas 'SEA' is not. SEA has therefore not been mandated for EEC policy development and implementation. According to the Act, EEC policy was proposed to promote potential industries in the eastern seaboard industrial area (e.g. Map Tha Phut industrial estate in Rayong, and Laem Chabung industrial estate in Chon Buri), with the goal to create a New Engine of Growth by promoting first and new S curve industries in 3 provinces (Rayong, Chonburi, and Chachoeng Sao) (ONEP 2018). Kumpa (2018) suggested that SEA should be applied prior to the operationalisation of the special economic zone development; ONEP and NESDC were assigned to integrate and drive SEA as a tool promoting EEC development (The Secretariat of the Cabinet 2017). Currently, a pilot SEA of Rayong development master plan has been completed (as of May 2021).

### 3. Methodology

Documentary analysis is the main approach in acquiring data for tiering evidence. The SEA of Muang Rayong district and the adjacent zones (Department of Industrial Works 2012) was selected for investigation. Associated EIA reports in Rayong (between January 2012 and January 2020) were searched via the Smart EIA4Thai database (accessible online via <http://eia.onep.go.th/index.php>). EIA approval letters of 25 projects operated in Map Tha Phut, Muang Rayong, were found on the database, rather than EIA full reports. Additional documents were sought from relevant authorities' websites, including the EEC and industrial estate authority of Thailand (IEAT). Practice was categorised according to tiers of information between IAs in Rayong province, and IA effectiveness aspects were applied in evaluating practice (Table 1).

**Table 1** Examined IA practice, research questions, and IA effectiveness criteria

IA cases	2012	2014	2019
Strategic level	(1) Muang Rayong district and the adjacent zones <b>SEA</b> (Department of Industrial Works 2012)		
Project level		(2) Petrochemical project <b>EIA</b> (Air Save Co. Ltd. 2014) – located in Map Ta Phut industrial estate (3) Mitigation measure & monitoring <b>follow up report</b> (Map Ta Phut industrial estate) (IEAT 2014)	(4) <b>FS</b> of special economic zone establishment in Map Ta Phut industrial estate (related to EEC policy) (IEAT 2019)
<b>Research questions</b>			
1. Is there currently any evidence for the tiering of information between SEA and EIA? 2. How can tiering be effective? Are all IA effectiveness elements relevant for all IA tiers?			
<b>Elements of IA effectiveness</b>			
<p><b>Procedural</b> : Have appropriate processes been followed that reflect institutional and professional standards and procedures?  <b>Substantive</b> : To what extent does the assessment lead to changes in process, actions, learning or outcomes?  <b>Transactive</b> : To what extent, and by whom, is the outcome of conducting the assessment considered to be worth the time and cost involved?  <b>Legitimacy of SEA practice (Organisational &amp; Knowledge Legitimacy)</b>: Was the assessment process perceived to be legitimate by a wide range of stakeholders?</p> <p style="text-align: right;">(Chanchitpricha, Morrison-Saunders and Bond 2019, Pope et al. 2018)</p>			

### 4. Muang Rayong district and the adjacent zones SEA

Table 2 summarises the SEA findings. A recommendation was made that option 4 was most appropriate alternative for Rayong, which links with the Rayong development policy on promoting eco-industrial town development.

**Table 2** SEA summary

<b>Objectives</b>	1. Investigate area potentials and capacity for development 2. Provide alternatives for the development
<b>Approach/ Methodology</b>	Public meetings, gap analysis, focus group, expert consultation; multi-criteria analysis (MCA), and matrices
<b>Findings</b>	<i><b>Economic:</b></i> Industries are the key economic driver in Rayong <i><b>Social:</b></i> Insufficient public health & academic service potentials <i><b>Environmental:</b></i> Concerns over limitations of waste management, green space, protection and traffic conditions. <i><b>Technology:</b></i> Technology & knowledge transfer for environmental management system (EMS –ISO14001), pragmatic technology, emergency response, information accessibility <i><b>Concerns over development among sectors:</b></i> Industrial, agricultural, tourism, community area, water resource, infrastructure, ports
<b>Proposed alternatives</b>	1: Stop new investment; 2: Allow < 50% new investment; 3: Allow new investment regarding the industrial zone capacity, with acceptability of total emissions 4: Allow new eco-industry investment ( <b>(Recommended)</b> )
<b>Outputs</b>	Protection and mitigation guidance for Rayong economic and industrial development

Source: (Department of Industrial Works 2012, p. 5-1)

## 5. Tiers of information from SEA to EIA and overall effectiveness

On tiering of information from SEA to EIA and subsequent follow-up practices, **Table 3** demonstrates the connections between the SEA and EIA. EIA provides information on issues of environmental and social aspects at the project level, rather than economic and technology aspects. The EIA follow-up report (IEAT 2014) explains how technology has been applied with environmental monitoring & online database, safety protection system, and emergency response support, which is related to the assessment made in the SEA. However, the report presents mostly physical environmental data whereas the progress of PP and collaborations with relevant authorities could have been demonstrated in the follow-up report. This is associated with IA procedural effectiveness.

**Table 3** Key issues addressed in IA practices (industrial sector)

Focus	Economic	Social	Environment	Technology	Relevance to upper tiers
SEA	✓	✓	✓	✓	Rayong Eco industrial city development framework
EIA	?	✓	✓	✓	Rayong SEA
Follow up report	✗	✓	✓	✓	
FS report	✓	✗	✗	✓	-

Remark: ✓ includes this aspect, ✗ does not include this aspect, ? = not clear

Regarding overall effectiveness, SEA effectiveness in Thailand was previously investigated, and this Rayong district SEA was considered to be partially effective with regards to the majority of criteria covering procedural, substantive, and transactive effectiveness; but it remained unclear whether the case established legitimacy (see Chanchitpricha, Morrison-Saunders and Bond 2019). IEAT mentioned this SEA in the terms of reference (TOR), assigning IA practitioners to use it as source material when conducting feasibility studies of EEC project developments (IEAT 2016). This suggests an attempt to connect the SEA findings to the FS process. In the FS of the EEC promoting zone in Map Ta Phut (IEAT 2019) there is a lack of transferral of social and environmental aspects from the SEA and therefore a clear tiering gap. This presents a gap between different tiers, where communication and transfer of knowledge can be considered interrupted, which is connected with knowledge legitimacy.

Also, different levels of authorities are embedded with how IA practice is tiered; and this is related to institutional legitimacy (Chanchitpricha and Bond 2019).

## **6. IA effectiveness as a means of designing IA tiering**

The findings in Section 5 suggest that tiering is necessary for SEA and EIA to develop their full potential. The effectiveness framework proposed by Chanchitpricha et al. (2019) can be used to support connecting SEA and EIA. Reflecting on procedural aspects, providing a regulatory framework and legislation for SEA could lead to the establishment of tiering guidance. This could help to clarify the roles of decision makers and relevant statutory authorities. This links with substantive effectiveness aspects. Additionally, the resources invested in SEA and EIA practice at different levels of decision-making should not be overlooked (transactive effectiveness). From Thailand's experience, pilot SEAs have been financially supported by the government via research practice and through hiring of specific consultants. It appears that the authorities ordering SEA have utilised the findings to some extent. However, the SEA considered in this paper has not been cited in policy implementation, for example, the EEC policy. If it was considered that the former studies are obsolete or not good enough, lessons should have been derived from such cases. This also reflects that the knowledge gained has not been exchanged and transferred or disclosed broadly enough, which is connected with the legitimacy criterion of IA effectiveness. The current SEA guideline has been established (NESDC 2020) and the sustainability assessment (SA) concept has been integrated in the guideline. However, unfortunately, relevant research findings on SEA effectiveness evaluation have not been taken into consideration. To date, guidance on translating SEA findings to EIA or other relevant IA practice has not been provided.

## **7. Conclusion**

This paper has investigated how IA tiering can be designed based on the aspects of IA effectiveness. It can be concluded that the procedural effectiveness aspect is a key foundation element. Establishing SEA legislation can be a trigger point that can initiate SEA and EIA tiering as a protocol for the relevant actors to follow, and this is linked with the substantive effectiveness aspect in terms of implementing SEA in decision making, and realising that it is linked with other forms of IA practice, particularly, EIA. Resource costs can be invested efficiently if SEA findings can suggest further steps of IA practice in relevant sectors, such that the assessment of issues is not repeated. Legitimacy is essential for effective tiering as this can help ensure that the findings from SEA are transparent, accurate, communicated, delivered, and diffused to relevant stakeholders. This means accessibility of the findings and knowledge should be ensured. Knowledge gained from SEA and EIA practice and experience in the Thai context can contribute to building IA theory, principles, and even a toolkit for practice in this particular context. As such, relevant research findings of practice and its effectiveness should be taken into account.

Considering the cases investigated in this paper, it seems likely that further actions on IA can

be transferred to other relevant sectors, e.g. agriculture, tourism, community / town / infrastructure development, and water resource development.

## References

Air Save Co. Ltd. 2014. EIA (Main Report): Proposed change of project description of Polyethylene manufacturing EIA no. 4 (in Thai): Project developer - Siam Polyethylene Co. Ltd.

Chanchitpricha C. 2012. Effectiveness of Health Impact Assessment (HIA) in Thailand: a case study of a Potash mine HIA in Udon Thani Norwich: University of East Anglia.

Chanchitpricha C, Bond A. 2015. Procedural effectiveness of the new environmental health impact assessment (EHIA) process applied to power plant projects in Thailand. Impact Assessment in the Digital Era 35th Annual Conference of the International Association for Impact Assessment.

Chanchitpricha C, Bond A. 2018. Investigating the effectiveness of mandatory integration of health impact assessment within environmental impact assessment (EIA): a case study of Thailand. Impact Assessment and Project Appraisal.36:16-31.

Chanchitpricha C, Bond A. 2019. Evolution or revolution? Reflecting on IA effectiveness in Thailand. Impact Assessment and Project Appraisal 38:156-166.

Chanchitpricha C, Morrison-Saunders A, Bond A. 2019. Investigating the effectiveness of strategic environmental assessment in Thailand. Impact Assessment and Project Appraisal.37:356-368.

Department of Industrial Works. 2012. Strategic Environmental Assessment (SEA) of Mueang Rayong district and the adjacent zones (in Thai). Bangkok, Thailand.

IEAT. 2014. Mitigation measure and monitoring follow up report (Map Ta Phut) (in Thai). Bangkok.

IEAT. 2016. Terms of Reference: Smart Park. [Online Accessed 2018].

IEAT. 2019. Feasibility study (FS): the establishment of special economic promoting zone for industries in Map Ta Phut industrial estate Bangkok: IEAT.

National and Regional Planning Bureau. 2019. Spatial Development in Thailand. In: Department of Public Works and Town & Country Planning, Ministry of Interior.

NESDC. 2020. Strategic Environmental Assessment Guideline. In: Bangkok: NESDC.

ONEP. 2018. EEC Environmental plan B.E. 2561-2564 (in Thai). In: Bangkok: ONEP.

Pope J, Bond A, Cameron C, Retief F, Morrison-Saunders A. 2018. Are current effectiveness criteria fit for purpose? Using a controversial strategic assessment as a test case. Environmental Impact Assessment Review.70:34-44.

The national strategy. 2018. Notification Re: The national strategy (B.E.2561-2580) (in Thai). In: No 135, section 82a The Thai Government Gazette. p. 1 with appendix p. 1-71.

The Prime Minister's Office. 2018. Eastern Economic Corridor (EEC) Act B.E. 2561 (in Thai). In: Thai Government gazette, no 135, section 34a, published on 14 May 2018 Bangkok, Thailand: Cabinet and Royal Gazette Publishing Office.

The Royal Thai Government. 2018. The Enhancement and Conservation of National Environmental Quality Act (NEQA) (no.2) B.E. 2561 issued on 16th April 2018. In: Thai Government gazette, no 135, special section 27a, published on 19 April 2018 Bangkok, Thailand.

The Secretariat of the Cabinet. 2017. The command as appointed by the Prime Minister no. ๓๕๖/ ๓ 384 issued on 03/08/2017 ref. 01/08/2017 [Online] [Accessed October 2018].