

EFFECTIVENESS CRITERIA FOR MEASURING IMPACT ASSESSMENT TOOLS

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ABSTRACT

In order to measure the effectiveness of impact assessment processes, this paper has conceptualised an evaluation framework based on relevant literature. The findings established four categories of criteria for measuring the effectiveness of impact assessment processes: procedural (considering policy framework; political context; financial resources; public participation; and experience gained at all levels), substantive (considering regulatory framework; mechanism in decision making; levels of public participation among stakeholders; and report characteristics), transactive (considering how resources are used), and normative (considering how perceptions of the impact assessment process can lead to changes in terms of views based on the lessons and experience learned, and how these views bring about normative outcomes to policy and lower levels).

This framework was applied to a community HIA case study in Thailand. It was found that the ability to measure procedural and substantive effectiveness tended to rely on legal regulation while transactive and normative effectiveness tended to rely on the level of involvement in the HIA process. For the transactive category, it is suggested that adding human resource capacity building and availability is a crucial factor influencing the HIA effectiveness.

The findings also suggest that there are connections and dependencies between the framework criteria. Thus, the potential to develop a clearer understanding about critical criteria could lead to a better focus on significant considerations for the improvement of IA effectiveness in future.

1. Introduction

Impact assessment tools, for example: Strategic Environmental Assessment (SEA); Environmental Impact Assessment (EIA); Social Impact Assessment (SIA) and Health Impact Assessment (HIA); have been introduced to be part of the decision-making process for development at different levels, but there have been questions about how well the tools can work in different contexts to those for which they were designed. Cashmore *et al.* (2010) emphasised that the '*complex dynamic*' of '*politics and power*' should be a key focus when building a theory for measuring effectiveness. Theophilou *et al.* (2010) also suggested that '*political issues*' could influence the effectiveness of these tools, whilst Partidário (2000) stated that added values in decision making could reflect the circumstance of the effectiveness. Other relevant studies have shown that the perspectives on the effectiveness of impact assessment (IA) tools have varied widely. For example, Sadler (1996) tended to pay attention to the process and outcomes to ascertain whether the result of the process meets the expected purposes. Wismar *et al.* (2008) and Van Buuren and Noteboom (2009) focused on decision making after having considered implementing the IA tools. Taylor *et al.* (2003) and Birley (2003), in the context of HIA, were concerned about effectiveness in terms of its contributions to policy making based on the purposes and resources used. Kauppinen *et al.* (2006) added '*learning and changes in views*' to be another perspective of the effectiveness to consider. Moreover, Baker and McLelland (2003) proposed that effectiveness components, when considering policy implementation, should be based on the policy application (practice), the meeting of objectives (performance), the proficiency with which the objectives are met, and the achievement of goals (purpose). Based on these studies, definitions of effectiveness were reviewed and a conceptualised framework for assessing IA tools was developed.

A key issue is, thus, the effectiveness of impact assessment tools or processes in their application context, and this paper aims to propose a means of measuring the effectiveness of the impact assessment tools.

2. Methodology

Effectiveness is a troublesome term which seems to have many different meanings. In terms of its definition, for Young and Levy (1999, p.3), “effectiveness” is “*a matter of contribution that institutions make to solving the problems that motivate actors to invest the time and energy needed to create them*”. Wimbush and Watsan (2000) consider that intended and unintended effects of policies, projects and programmes could be identified as a result of effectiveness evaluation.

In the impact assessment field, Sadler (1996) defined effectiveness as “*how well something works or whether it works as intended and meets the purposes for which it is designed*” (p.37). In addition, the effectiveness of impact assessment tools has been considered to be their influence on decision-making processes in selecting the most appropriate option for the development, based on sustainability measures (Partidário, 2000, Van Buuren and Nootboom, 2009). However, the extent of their ‘*influence*’ to contribute to the decision could rely on effectiveness perspectives and the context where the implemented tools are applied.

In terms of perspectives on effectiveness in the literature, four categories can be identified: procedural; substantive; transactive; and normative (Baker and McLelland, 2003, Theophilou et al., 2010).

Procedural effectiveness relates to the principles governing impact assessment processes (Sadler, 1996). It should also reflect what and how the procedures or policy are implemented (Baker and McLelland, 2003). In addition, Bina (2007) added that the methodological approach could affect procedural effectiveness.

Substantive effectiveness relates to the achievement of objectives set when implementing the impact assessment tools in the decision-making process (Sadler, 1996). Likewise, Baker and McLelland (2003) suggested that substantive effectiveness is the performance obtained when the practice is completed concerning the objectives set. In addition, Theophilou et al. (2010) emphasised that substantive effectiveness is demonstrated when changes are made to the policy, plan, or programme being assessed.

Sadler (1996) considered *transactive effectiveness* as the achievement of outcomes, when investing minimum cost and time, or when the outcomes are efficient. This means that proficiency in using resources to achieve the objectives should be examined to assess the effectiveness (Baker and McLelland, 2003). Theophilou et al. (2010) added the points of considering SEA practice based on skills and roles of the practitioners in addition to time and money to explain transactive effectiveness.

Normative effectiveness relates to the achievement of normative goals (Baker and McLelland, 2003). These goals could be incremental changes in institutions, organisations, philosophy, science and culture that could bring about changing consent and decision making (Cashmore et al., 2004). The result obtained could be the evidence of the contribution towards achieving sustainable development (Bina, 2007). Normative changes could be observed based on the perceptions of those who were involved as stakeholders to the process or in the implementation of the tool.

Factors identified in the literature as potentially influencing the effectiveness of impact assessment across these four categories were reviewed to set criteria for measuring effectiveness as presented in **Table 1**.

The conceptualised effectiveness criteria were applied to a case study of a Potash mine HIA in Thailand. This case was selected based on its contentious nature and the existence of stakeholders who were involved in the HIA to interview. Also, as a result, this case has implicitly led to the possibility of SEA being applied to the salt mining sector. Thus, the case was considered to be suitable, accessible, and purposive as suggested by research scholars (Denscombe, 2003, Silverman, 2005, Stake, 2005, Cashmore, 2007). Although this HIA was not conducted based on regulatory requirement, rather, it was based on public demand, interesting consequences from the HIA process were worth testing through the criteria set. Semi-structured and in-depth interviews with thirty research participants, who were the stakeholders to this project development, were conducted.

Table 1 Evaluation checklist for the effectiveness of SEA/ Impact Assessment (IA) processes

Procedural Effectiveness Criteria	Substantive Effectiveness Criteria
<p>P1. Relevant policy framework and procedures for SEA/ IA processes – Existence of national plan on health, regulations or guidelines or standard performance for SEA/ IA processes, procedure implementation in SEA/ IA processes, and licensing</p> <p>P2. Institutional infrastructure – Existing environmental monitoring network, disease surveillance network, and role of government</p> <p>P3. Integrating SEA/ IA in planning process</p> <p>P4. Identification of financial funds for SEA/ IA practice</p> <p>P5. Involvement of stakeholders in the process</p> <p>P6. Capacity of SEA/ IA in presenting as a sound and clear, understandable evidence for decision-making process with validity of predictions, argumentation, and understandability</p> <p>P7. Delivering the report to participating stakeholders</p>	<p>S1. Regulatory framework on implementing SEA/IA in decision-making</p> <p>S2. Incorporation of proposed changes – most or all proposals for changes and/ or additions to the draft programme emanating from the SEA/IA were taken into account in the final version of the programme</p> <p>S3. Informed decision-making – the use of all mandatory documents produced as part of the SEA/ IA process coupled with continuous dialogue between the parties involved in the process of informed decisions on the final version of the programme</p> <p>S4. Close collaboration – there was communication and a high level of collaboration between those producing the HIA and those producing the programme</p> <p>S5. Parallel development – the SEA/IA and policy/ plan/ programme developed alongside one other with considerable cross-cutting between the processes</p> <p>S6. Early start – the SEA/IA process was initiated at the very first stages of programme development</p> <p>S7. Institutional and other benefits – there is strong evidence of better department relations, development of otherwise absent expertise, learning, new partnerships and better public-private-voluntary sector communication as a result of SEA/IA</p> <p>S8. Successful statutory consultation – the statutory consultation bodies had a fair opportunity to contribute and their views and comments were taken on board</p> <p>S9. Successful public consultation – the public consultation bodies had a fair opportunity to contribute and their views and comments were taken on board</p> <p>S10. Satisfactory/ comments in using SEA/IA in decision-making process</p>
Transactive Effectiveness Criteria	Normative Effectiveness Criteria
<p>T1. Time – SEA/IA was carried out within a reasonable time frame without undue delay or within a very short time period (as compared to old ex-ante mechanism, where applicable)</p> <p>T2. Financial resources – carrying out the SEA/IA did not entail excessive spending</p> <p>T3. Skill – the acquiring of skills and personnel required for the SEA/IA did not contribute a big burden and these were easily accessible</p> <p>T4. Specification of roles – responsibilities were clearly defined and allocated and tasks were undertaken by the most appropriate subjects.</p> <p>Additional criterion based on the research findings</p> <p>T5. Availability of human resource and capacity building</p>	<p>N1. Adjustment of relevant policy framework concerning the normative goal achieved in term of changes of views</p> <p>N2. Learning process, perception, and lesson learnt from SEA/IA</p> <p>N3. Development or changes in relevant institutions</p> <p>N4. Improvement of health and quality of life</p>

Remarks: **P1-P7** developed based on Caussy et al. (2003), Baker and McLelland (2003), Bekker et al. (2005), Van Buuren and Noteboom (2009), Partidário (2000), Arden (2004), Quigley and Taylor (2004), Harris-Roxas (2009), and Sukkumnoed et al. (2002) **S1** developed based on Partidário (2000), **S2-S10** and **T1-T4** are based on Theophilou et al. (2010), **N1-N4** developed based on Baker and McLelland (2003), Kauppinen et al. (2006), Stoeglehner et al. (2009), Harris-Roxas (2009) and Quigley and Taylor (2004)

3. Potential for applying this framework to measuring the effectiveness of SEA and other impact assessment tools

The framework developed based on the literature here contains criteria of equal validity for SEA and other areas of impact assessment. It also has developed additional criteria beyond those identified in other relevant literature on measuring the effectiveness of impact assessment processes. For example, it includes system, process, and foundation measures as evaluation criteria proposed by Jones et al. (2005) and Ahmad and Wood (2002). In addition, as Arden (2004) emphasised (based on the practitioners' views) that resource availability is important to consider before the processes are conducted, this framework has provided a criterion (P4) for estimating the availability of financial resources for impact assessment processes which has not been mentioned in other frameworks before.

The substantive category enables the determination of the level of accountability, focus, iteration, and participation based on IAIA (2002) as well as reflecting the performance of outcome criteria based on Jones et al. (2005). It also reflects system and foundation criteria suggested by Ahmad and Wood (2002). Although Ahmad and Wood (2002) have provided a criterion that the EIA process should have a systematic EIA report approach, they did not consider the satisfaction of the users. In terms of satisfaction, for example, in HIA implementation, Petticrew et al (2007), in the context of HIA, suggested that an increased level of satisfaction could lead to higher level of substantive effectiveness. The understandability of the impact assessment report also could lead to better substantive effectiveness (Kauppinen et al., 2006). Therefore, an additional criterion developed for substantive effectiveness is about the satisfaction of decision makers on using the impact assessment report (S10).

The transactive effectiveness criteria developed reflect the suggestion by IAIA (2002) on cost- and time- effectiveness as well as the outcome criteria as suggested by Jones et al. (2005). They also include the expertise in conducting the impact assessment process and skills training proposed by Ahmad and Wood (2002). However, this framework has added a criterion of availability of human resource (T5) to measure transactive effectiveness, which was emphasised by most of the interviewees from governmental

sectors, when applying the criteria to a case study in this research, as the most important resource for impact assessment processes.

Moreover, this framework evaluates normative effectiveness as an additional perspective to examine the perceptions about these tools/ processes. The perceptions ascertained via this framework could provide comments for the improvement of effectiveness based on considering normative changes and lessons learnt among involved actors.

This paper argues that it is essential to consider normative effectiveness in impact assessment fields. This is because increasingly application of SEA has led to a more complex understanding of what effective SEA comprises (Bina, 2007). In addition, Cashmore et al. (2004) stated that awareness, visions, beliefs, and values among involved sectors tend to affect the degree to which EIA influences decisions to achieve the goals of sustainable development. It was also found that there is a knowledge gap amongst politicians when implementing impact assessment processes for sustainable development (Nykvist and Nilsson, 2009). Also, the context of understanding and implementing SEA legislation and guidelines among actors tends to have significant influence on the SEA effectiveness (Stoeglehner et al., 2009). Organisational culture and history tend to influence the extent of knowledge delivery within the organisation, where the learning capacity at this level could reflect the effectiveness of SEA (Jha-Thakur et al., 2009). Theophilou et al. (2010) found that actors involved in the SEA process were uncertain about the achievement of its proposed goal, as were external researchers because of the multiple variables affecting the process. This suggests that it is necessary to consider how these processes work in all perspectives, particularly, normatively, in terms of understanding knowledge and lessons learnt from the assessment processes.

Baker and McLelland (2003) have proposed that considering normative effectiveness together with the other three perspectives: procedural; substantive; and transactive could explain how well policy works and reflect the policy effectiveness holistically. In addition, it was suggested that *direct* and *indirect perspectives* of ‘*democratic effectiveness*’ and ‘*environmental effectiveness*’ should be measured when considering SEA effectiveness (Kørnørv and Thissen, 2000). Also, decision-making context criteria,

which are implicitly felt to influence a normative change such as ‘*political climate*’, and its role in improving the SEA effectiveness, have been used, in addition to SEA methodology criteria, when considering SEA effectiveness with the goal of sustainable development in a particular context (Fischer and Gazzola, 2006). As such, concerning the effectiveness of SEA and other impact assessment processes that are linked to decision and policy making, the normative effectiveness of the processes should be considered. This could help to suggest ways to increase knowledge and understanding in all stakeholders, reduce conflicts, and might lead to legitimacy in implementing these impact assessment processes/ tools effectively.

In summary, compared to other studies on measuring the effectiveness of impact assessment processes, the framework designed in this research might provide wider perspectives. While normative effectiveness has not been much considered in previous studies, Theophilou et al. (2010) suggested that looking at the effectiveness of impact assessment tools by taking a ‘*multi-dimensional approach*’, including the stakeholders’ perceptions could establish the causal factors to improve impact assessment effectiveness.

4. Application of the effectiveness criteria to a case study

Reflections on the effectiveness criteria

The results of the application of the framework to the HIA of the Thai Potash mining case study suggest that not all of the criteria can be applied in this context because there was a lack of information about this HIA process reaching some stakeholders. This is because there was a lack of regulatory framework on implementing HIA in decision making at that time when the interviewees’ perspectives suggest that governmental sectors tended to rely on formal regulation, as indicated by interviewee responses:

“I don’t think this HIA has been implemented in the decision making process yet.....I still have a question that in what way that HIA can be introduced to the decision making process? Will we identify this project (Potash mine) as a project which causes severe impacts or not, and who is authorised to identify it and how, because some people might think that the impacts from this project

might not be severe while another group might argue that it would be absolutely severe. This is still unclear for me” (# a participant from the governmental sector).

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“Because of the lack of regulation for implementing HIA, this HIA has not been accepted formally. So, we wanted this HIA case to be an example for other following cases so that it could be part of a driving force for a public issue that finally the decision maker needs to consider. I felt that we could push findings from this HIA process to the public stage so that other people that might be affected by any project development might want to study it as we have done. I think, at least this HIA was part of the driving force and I am proud that I got involved with this process” (# a community member).

The results also suggest that the lack of HIA regulation could limit some interviewees’ ability to present their perception because they did not take part in this HIA process at that time.

“I don’t know how they have conducted the HIA, I haven’t read it. I haven’t seen it before...I don’t have any comparison about the Potash case as no one has done this before. Actually, I have to say, I have quite little knowledge about health.....” (# an interviewee from the governmental sector).

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“... We did not get involved with this process...we haven’t seen the report paper. However, we have a question that on what basis was the HIA conducted...” (# an interviewee from the project development sector).

The response gained from the interviewees in this study implies that regulatory frameworks tend to be very important in assessing the effectiveness of impact assessment processes in the Thai context. Similarly, for SEA matters in Thailand, it has been suggested that a legal framework for SEA is required in order that all relevant sectors can take actions actively (Wirutskulshai et al., 2011). Furthermore, Birley (2007) suggested that a regulatory framework for HIA is required at all levels; national, international, and global.

It was clear that when applying the conceptual framework to the case study considering procedural, substantive, transactive, and normative effectiveness, there are connections between the criteria. The procedural criteria were interlinked with some substantive criteria (regulatory framework on implementing HIA in decision making (S1); parallel development (S5); and successful statutory consultation (S8)) which rely on the availability of a regulatory framework for HIA. This finding supports the call by Theophilou et al. (2010) to consider the interrelation between procedural, substantive, and transactive elements.

In addition, the ability among the interviewees to comment on normative effectiveness tended to rely on their levels of involvement in the HIA process which was related to the existence of a legal requirement.

Considering transactive effectiveness, the respondents felt that resources were manageable in this two-year conducted HIA process despite the very limited budget (~£2,000 GBP). This was because the participants in this HIA process prioritised the HIA practice as the first priority, with their willingness to take part as much as they could, such that money and their time was not a key concern as a limitation in this case. Baker and McLelland (2003) indicated that having public participation as a component in the assessment processes could influence the level of transactive effectiveness. Furthermore, the skills (T3) and the roles allocated among the HIA practitioners (T4) demonstrated here could reflect that HIA practitioner experience (P6) in the procedural effectiveness category was built up based on '*learning by doing*', as there was a lack of HIA experts and HIA was a very new thing in Thailand at that time. The experience they gained from this HIA has led to the enhancement of their concerns and perceptions on health and development at all levels that is related to normative changes about perspectives on health impact of the public. It also could reflect the level of success in public consultation (S3) that community members and relevant sectors in the province took part in this HIA process both explicitly and implicitly. This finding suggests that the components in transactive, procedural, normative and substantive categories could have influential connections between each other.

The findings also suggest that another criterion not identified in the literature review, the availability of human resource and capacity building (T5), should be added in the

transactive category. This is consistent with other studies that emphasise that human resource and capacity building are crucial factors strengthening the effectiveness of impact assessment processes (Harris et al., 2009, Schirnding, 2005, Inmuong et al., 2011, Cameron et al., 2011, Kang et al., 2011, Harris and Spickett, 2011).

5. Conclusions

The findings from applying this framework to the case study have shown that there are connections between effectiveness categories that could affect the levels of the effectiveness of impact assessment processes. The effectiveness of these processes could be different in different contexts. The framework developed is broader than existing frameworks in the literature, which should lead to a better understanding of the effectiveness of IA tools in particular contexts. Even with this broader context, application of the framework has identified that additional criteria were missing (which have now been added).

The interlinkages and dependencies between the framework criteria is a significant finding. This suggests opportunities for developing a clearer understanding of critical criteria which might allow a clearer understanding on where best to focus future effects in order to improve IA effectiveness.

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