

EIA Effectiveness: conceptual basis for an integrative approach

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Abstract

One of the recurrent discussions in EIA research is the understanding of how to improve EIA effectiveness. Governments have sought to streamline EIA process, without empirical knowledge about their actual quality and outcomes, in order to make it more simple and agile. However, academics have been arguing about the best way to streamline EIA practice. This paper provides an overview of the EIA literature on effectiveness. Further, a set of criteria is suggested taking into account the integrative approach based on procedural, substantive, transactive and normative dimensions of effectiveness.

Introduction

For over 40 years the Environmental Impact Assessment (EIA) has been developed aligned with the growing concern about the environment. Despite the fact that the EIA literature has evolved during the last decades and, in recent years, particular attention has been directed towards its practice, there is few research, especially on long term studies about EIA practice effectiveness (Morrison-Saunders & Retief 2015; Fischer & Noble 2015; Fischer 2014).

Despite the empirical evidence, there is a belief that EIA process has become a burden to decisions related to the approval of development projects and, therefore, to economic growth. Recently some jurisdictions, as Australia, South Africa and Canada, have reported updates in their EIA systems aiming to streamline their EIA processes and decision-making by adopting measures to reduce overall bureaucracy in the system and therefore making it more simple and agile (Australian Government 2014; Republic of South Africa 2010; Gibson 2012).

But, which on is the best way to streamline? To respond this question, first it is necessary to understand, and produce evidences about EIA practice to know which part can be improved and only then to choose the best way to streamline. Effectiveness study is a good way to understand EIA practice and focus on its improvement.

How is the EIA practice? This is one of the fundamental research and practical questions which has animated and moved forward the rich scientific debate around the EIA issues (Morrison-Saunders & Retief 2015; Fischer & Noble 2015; Fischer 2014).

According to scientific community, to improve the EIA system, we must: (i) improve its effectiveness (Fischer & Noble 2015; Fischer 2014; Gibson 2012); (ii) be based on empirical evidences of its outcomes (Fischer & Noble 2015; Fischer 2014); (iii) deliver relevant information for decision-makers (Gibson 2012; Morrison-Saunders et al. 2014); (iv) consider aspects of pluralism (Bond & Pope 2012), knowledge management and learning (Bond & Pope 2012; Fischer 2014; Sánchez & Morrison-Saunders 2011).

This paper gives an overview of the literature on EIA effectiveness, followed by a set of criteria suggested for future analyses taking into account an integrative approach using procedural, substantive, transactive and normative dimensions of effectiveness.

Dimensions and aspects of EIA Effectiveness

Due to ongoing discussions about EIA practice, its effectiveness has been described from different perspectives driven by different actors involved in EIA process (Morgan 2012; Theophilou et al. 2010). Its concepts and approaches are in a constant state of evolution. Therefore, it difficult to measure effectiveness in absolute levels, due to the diversity and frequent divergence of points of view (Bond & Morrison-Saunders 2013). Further, EIA is frequently judged as being ineffective by most of stakeholders (Rozema & Bond 2015).

Based on literature review, the different dimensions and aspects related to EIA effectiveness are synthesized as follows:

Dimensions

Procedural effectiveness: the most assessed dimension of effectiveness (Bond et al. 2013), mainly focusing on the compliance with procedures and expected good practices (Sadler 1996; Baker & McLelland 2003).

Substantive effectiveness: despite its great importance is not the most assessed dimension of effectiveness (Cashmore 2004). It is related to the outcomes of EIA in terms of the objectives for which it was developed and evaluates whether the EIA helps/influences to include environmental aspects in decision-making and contributes to environmental protection (Sadler 1996; Baker & McLelland 2003).

Transactive effectiveness: very little assessed (Chanchitpricha & Bond 2013). This dimension is not well developed in the literature despite its relevance to global effectiveness (Baker & McLelland 2003). It is mainly focused on costs in terms of financial and time resources invested and the outcomes of the process judged by the participants (Sadler 1996; Baker & McLelland 2003).

Normative effectiveness: poorly considered in effectiveness assessment (Chanchitpricha et al. 2011) and focused on normative goals, this dimension of effectiveness is related to the improvements in the process (Gibson 2013b), regardless of what the legislation establishes about. Amongst other approaches, the normative effectiveness can be determined from the lessons learned and incremental changes in the process (Cashmore et al. 2004). This analysis can be made based on the identification of lessons learned (Cashmore et al. 2004) (Chanchitpricha et al. 2011), and understanding how and to what extent there is evidence of learning along the process.

Aspects

Pluralism: regarding to the public participation in decision-making processes, the empirical support about the processes of engagement have been scarce, especially by the lack of criteria and instruments to measure such relationships (Rowe et al. 2008). The analysis of this aspect of effectiveness involves understanding how and to what extent there was public participation in the process (O'Faircheallaigh 2010).

Knowledge management and learning: associated with identification of knowledge repositories currently in use and evidences about "learning from experience" (Sánchez & Morrison-Saunders 2011).

Approaches

A review of relevant EIA literature reveals different approaches adopted in research of EIA effectiveness. Sadler (1996) suggested that a multidimensional approach to assess EIA effectiveness could be more consistent and representative in terms of the results achieved. In this sense, research on effectiveness should consider a multidimensional approach taking into account its potential underlying factors (Theophilou et al. 2010) and the relevance of knowledge management and learning for the successful practice of EIA (Bond & Pope 2012; Sánchez & Morrison-Saunders 2011). However, there is an inherent complexity related to the transposition of the conceptual aspects of effectiveness to the establishment of assessment criteria (Sánchez & Morrison-Saunders 2011). Besides, any assessment of effectiveness can only be meaningful when considering the context in which EIA operates (Morgan 2012; Sadler 1996; Bond & Pope 2012).

A number of approaches and models can be used to evaluate the effectiveness and recent research suggests the existence of dependency links between the procedural, substantive, transactive and normative effectiveness (Chanchitpricha et al. 2011) clearly indicating the need for a systemic approach. **Table 1** illustrates some different approaches adopted in recent research on EIA effectiveness.

Table 1- Different approaches adopted in recent research on EIA effectiveness

Focus	Approach	Authors
Establishing concepts	Procedural, substantive and transactive	(Sadler 1996) (Sadler 2004)
	Procedural, substantive, transactive and normative	(Baker & McLelland 2003) (Chanchitpricha & Bond 2013)
	Procedural, substantive, transactive and normative (including aspects of pluralism and knowledge/learning)	(Bond et al. 2012) (Bond et al. 2013)
Empirical analysis	Substantive and transactive	(Theophilou et al. 2010)
	Procedural, substantive and transactive	(Baker & McLelland 2003)
	Procedural, substantive, transactive and normative	(Gallardo & Bond 2011) (Chanchitpricha et al. 2011)
		(Thérivel 2013)*
	Procedural, substantive, transactive and normative (including aspects of pluralism and knowledge/learning)	(Morrison-Saunders & Pope 2013)* (Gibson 2013a)*
		(Retief 2013)*

* applies the framework from Bond et al. (2013).

Integrative approach

In line with previous literature, it is suggested that although studies about effectiveness of EIA practices are important on their own, an integrative approach using different perspectives about effectiveness can be more successfully exploited.

In recent years, the systematic evaluation of the effectiveness using an integrative approach considering the different dimensions of effectiveness (procedural, substantive, transactive and normative) also emerged as an important aspect to promote improvements in the EIA system (Chanchitpricha & Bond 2013; Chanchitpricha et al. 2011; Bond et al. 2013). In this sense, the relevance of the context and pluralism have placed significant emphasis on this debate (Bond & Pope 2012).

In this paper, we adopted the following definition of EIA effectiveness, adapted from (Chanchitpricha & Bond 2013; Sadler 1996):

EIA effectiveness is the extent to which: it works (procedurally); it achieves its intended aims and its findings contribute to relevant and environmentally-sound decisions related to the project (substantively); it contributes to the acceptance and satisfaction of key stakeholders, in terms of cost and time used (transactively); and stakeholders can learn, improve their knowledge, and change their views (normatively).

Established criteria to effectiveness assessment

The Table 2 shows the set of criteria adapted to the current object of study and provides a summary explanation of them. The methodological aspects and criteria are based on previous research. It is proposed a set of criteria for evaluating the effectiveness in a broad perspective in terms of procedural, normative, transactive and normative dimensions, based on the “Framework for comparison of sustainability assessment processes” (Bond et al. 2013).

Table 2 - Criteria to effectiveness assessment

Dimension or aspect	Question	Criteria
Procedural	<i>Have appropriate processes been followed that reflect institutional and professional standards and procedures?</i>	- checking of actions following the appropriate procedures (specific to the context) and international best practices (IAIA, 1999).
Substantive	<i>- In what ways, and to what extent does EIA lead to changes in process?</i>	-S1: Identification of project changes during the EIA (Chanchitpricha & Bond 2013). -S2: Identification of public participation on the scoping (Chanchitpricha & Bond 2013). -S3: Perception of the stakeholders as to the EIA contributions to a better project (Rozema & Bond 2015). -S4: EIA quality (Chanchitpricha & Bond 2013).
Transactive	<i>- To what extent, and by whom is the outcome of conducting EIA considered to be worth the time and cost involved?</i>	-T1: Perception of the stakeholders related to the time and cost involved (Rozema & Bond 2015). -T2: Empirical identification of the aspects that influence the time course of EIA processes.
Normative	<i>In what ways, and to what extent does the EIA enable learning?</i>	- N1: Identification of evidence of learning on the EIA process (Cashmore et al. 2004; Chanchitpricha et al. 2011).
Pluralism	<i>- How, and to what extent are affected and concerned parties accommodated into and satisfied by the EIA process?</i>	- Identification of forms of public participation in the process (O’Faircheallaigh 2010).
Knowledge and learning	<i>- How, and to what extent does the EIA process facilitate learning?</i>	- Identification of repositories of knowledge (Sánchez & Morrison-Saunders 2011)

Source: adapted from (Bond et al. 2013) .

The paper concludes by discussing the potential contribution of the integrative approach to better understand EIA practice and support new directions of EIA systems in order to choose the best way to streamline.

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