



Comparative SWOT analysis of strategic environmental assessment systems in the Middle East and North Africa region

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ABSTRACT

This paper presents a SWOT analysis of SEA systems in the Middle East North Africa region through a comparative examination of the status, application and structure of existing systems based on country-specific legal, institutional and procedural frameworks. The analysis is coupled with the multi-attribute decision making method (MADM) within an analytical framework that involves both performance analysis based on predefined evaluation criteria and countries' self-assessment of their SEA system through open-ended surveys. The results show heterogeneous status with a general delayed progress characterized by varied levels of weaknesses embedded in the legal and administrative frameworks and poor integration with the decision making process. Capitalizing on available opportunities, the paper highlights measures to enhance the development and enactment of SEA in the region.

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1. Introduction

As a decision support tool intended to facilitate transition to sustainable development through integrating environmental considerations into policies, plans and programs, strategic environmental assessment (SEA) has globally played an appreciable role in the decision making process on land use planning, transportation policies, development sectors and infrastructure plans. The rationale for SEA stems from the need for an approach that extends beyond the downstream analysis and mitigation of adverse impacts of development to cater for the interdependency of the environment with development and growth. Its unique feature lies in its potential to promote sustainable development through integrating environmental considerations at high levels of decision making and acting as an early warning of large scale cumulative and synergistic effects to enable strategic decision making.

Since the enactment of the 2001/42/EC European Council Directive and the Kiev 2003 Protocol, SEA has been on a rising trend of adoption and mainstreaming where its implementation has become common practice in developed countries and has gained momentum worldwide with around forty countries reportedly having formal SEA systems (Garfi et al., 2011; Noble, 2009; Sanchez

and Sanchez, 2008; Sheate and Partidario, 2008; Partidario, 2007; ECA, 2005; Abaza et al., 2004). Promoted by international organizations, its application in developing countries, although critically important, remains limited (Gachechiladze-Bozhesku and Fischer, 2012; Lemos et al., 2012; Garfi et al., 2011). Studies on SEA systems have focused on the evaluation of local country-specific SEA application and performance, on comparative sector-based SEA assessments, and on case studies of SEA application and methodology invariably addressing countries around the world (Lemos et al., 2012; Partidario and Coutinho, 2011; Noble, 2009; Sinclair et al., 2009; Retief et al., 2008; Joao, 2007; Partadario, 2007; Chaker et al., 2006; Cashmore et al., 2004; Partidario and Fischer, 2004; Sadler, 2004) but with a sparse referral to countries in the Middle East and North Africa (MENA) region (Sharifzadegan et al., 2011; Unalan and Cowell, 2009; Say and Yucl, 2006; Dalal-Clayton and Sadler, 2005).

The MENA region, consisting of 20 countries (Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestinian Authority (PA), Oman, Qatar, Kingdom of Saudi Arabia (KSA), Syria, Tunisia, Turkey, United Arab Emirates (UAE) and Yemen), spans over a geographical area of 8.7 M km² that is disproportionately populated and endowed with natural resources. While most if not all suffer from similar environmental problems consisting mainly of water scarcity, land, coastal and marine degradation, and weak environmental institutions (Tolba and Saab, 2008), country-specific environmental management is defined by the varying severity of these challenges, as well as by the diversity

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of political systems and policy making processes that exist among countries exhibiting different levels of transparency, accountability, efficiency and effectiveness.

The most recent published data on SEA systems in the MENA region by El-Fadl and El Fadel (2004) reported that no country has a SEA system. Since then, little is known about the nature and practice of emerging SEA systems in the MENA region where its need, as in any other developing region, capitalizes on its ability, along with other environmental planning and management tools, to incorporate environmental and social considerations into planning, otherwise usually ignored. Assessing existing structures and applications is an indispensable step to understand weaknesses and barriers as well as benefits and opportunities to properly proceed into mainstreaming effective SEA systems in the region. This paper evaluates weaknesses and strengths and potential threats and opportunities for SEA systems mainstreaming in the MENA region through a comparative SWOT analysis of legal, institutional, procedural and application frameworks while delineating future needs to enhance the effectiveness of SEA implementation in the region.

2. Methodology

The methodology consists of a quantified SWOT analysis of SEA systems constructed by coupling SWOT with multi-attribute decision making (MADM) within a comprehensive analytical framework to assess, evaluate, compare and quantify cross-country systems based on pre-defined evaluation criteria. SWOT analysis is a qualitative examination that pinpoints internal and external factors at play in a specific environment that helps in understanding the status and formulates follow-up strategies (Kajanus et al., 2012; Chang and Huang, 2006). To improve the incomplete analysis inherent to SWOT, attempts for quantified analysis through coupling SWOT with multi-attribute decision making (MADM) methods have been increasingly reported (Svekli et al., 2012; Gao and Peng, 2011; Amin et al., 2011; Lee and Lin, 2008).

The use of MADMs allows the systematic evaluation of the SWOT factors and the commensuration of their intensities (Kajanus et al., 2012; Kurtilla et al., 2000). The Analytic Hierarchy Process (AHP), the Analytical Network Process (ANP) and the Stochastic Multi-criteria Acceptability Analysis (SMAA-O) have been combined with SWOT analysis (Kahraman et al., 2007; Yuksel and Dagdeviren, 2007; Chang and Huang, 2006; Shrestha et al., 2004; Stewart et al., 2002; Lahdelma et al., 2003; Kurtilla et al., 2000; Miettinen et al., 1999; Saaty, 1977, 1980; Edwards and Barron, 1994). In this study, the four-aspect MADM additive valuation method is used to quantitatively compare countries' performances. In contrast to more complex MADM tools, the four-aspect additive valuation method provides a comparable rigid result while being simpler in structure and satisfactory in comparative analysis application with minimal constraints on the decision making processes. The four-aspects of the selected MADM tool consist of 'alternatives' which refer to countries being compared at the MENA level, 'criteria' which refer to the predefined evaluation criteria, 'performance' which refers to countries progress on key factors and 'weights' which refer to the relative importance of each factor. Accordingly, the analytical approach consists of:

1. Determination of evaluation criteria categorized into key internal (strengths and weaknesses) and external (threats and opportunities) factors that aid or impede SEA effective implementation for individual country assessment and comparative SWOT enabling
2. Collection of country specific information
3. Definition of weights of identified key factors and scoring system for country performance

4. Calculation of weighted performance scores for individual countries
5. Benchmarking of overall weighted performances to calculate and compare coordinate values.

While the use of quantitative SWOT in the framework of SEA systems evaluation has not been reported in literature, the use of a systematic framework to evaluate SEA systems has been promoted with criteria based on SEA contribution to decision-making (Sanchez and Sanchez, 2008; Dalal-Clayton and Sadler, 2005) as well as by performance criteria for the evaluation of the effectiveness of existing SEA processes (Retief, 2007; IAIA, 2002). While, it is argued that different criteria should be used to evaluate SEA systems in countries with different planning systems (Retief, 2007; Fischer and Gazzola, 2006; Marsden, 1998), common criteria are used for the comparative assessment in this study based on three performance areas, namely: institutionalization, implementation process and application, and influence on decision making, within which six criteria are evaluated with 13 indicators (Table 1).

To feed into the SWOT analysis, these criteria are categorized into internal (I) factors (i.e. legal framework (I1), administrative framework (I2), and procedural framework (I3)); and external (E) factors (i.e. number of SEAs undertaken (E1), SEA impact on decision making (E2) and political will (E3)). Internal factors consist of those factors that define efforts, measures and steps taken by the responsible authority to initiate, develop and mainstream SEA systems whereby their presence or absence signifies strengths and weaknesses, respectively. External factors are those factors in the external uncontrollable environment that the responsible authority can seize as opportunities to benefit from in its pursuit of SEA framework development or that denotes a threat that will hinder the aspired development. As undertaking SEAs could be the result of multiple factors at play that may or may not be related to the legal, administrative and procedural framework in operation, the number of SEAs undertaken is considered, for the purpose of this analysis, an external factor. In fact, many SEAs have been undertaken based on requests by donors, international operators or local authorities despite the absence of an operational SEA system in a country.

Country data for indicators' analysis are compiled from available literature supplemented with countries' self-assessment of their SEA systems and experiences through an open-ended survey (Table 2) administered to accessible focal points at relevant national authorities in MENA countries (Table 1 Supplementary Material). Focal ministries for environmental management were identified in each country, where available, and then EIA/SEA focal units/individuals were contacted with the questionnaires. Respondents varied in positions ranging from EIA/SEA officers to Head of Departments and Branch Directors. The survey targeted legal and operational frameworks, examples of successful SEAs and lessons' learned, challenges and weaknesses to SEA implementation, as well as subjective weighing of the relative importance of key factors for building strong SEA systems and defining SEA future in individual countries. Note that while one survey response per country was targeted, multiple responses were received in some cases and were screened for discrepancies before incorporating into the database for subsequent analysis.

This weighing process highlights the potential heterogeneity in how countries perceive the appropriate framework for SEA implementation within their system. Relative percentages assessed by respondents were then averaged and weighted to develop a standard weighing system that is applied uniformly to all countries. The unified weights eliminated or minimized the influence of subjectivity in responses as well as allowed the application of weights to cases of countries that were inaccessible through the

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