

Decision Quality for Sustainability Assessment

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1. Introduction

Sustainability assessment, also termed integrated assessment, is a generic term that applies to a wide range of *ex-ante* impact assessment processes whose main aim is to direct a decision-making process towards sustainability outcomes (Hacking and Guthrie 2008). Sustainability assessment is often considered the ‘third generation’ of impact assessment, following environmental impact assessment (EIA) and strategic environmental assessment (SEA) (Sadler 1999).

Impact assessment processes, including sustainability assessment, may often be distinct from and supplementary to the planning and decision-making process. To ensure that the impact assessment process has maximum influence, it has been argued that impact assessment practitioners should first understand how the decision-making process works in practice, in order to provide relevant information at key points in the decision-making process (Nitz and Brown 2001).

This paper, however, takes a different perspective. It specifically considers the application of sustainability assessment by organisations as an essential component of internal planning and decision-making processes (Pope 2006). This is becoming increasingly common in Western Australia where the authors live and work and where many organisations seek to demonstrate the sustainability of their plans and proposals as an essential requirement of their social licence to operate. The quality of the decision-making process itself is central to maintaining credibility as well as to delivering sustainability outcomes.

This paper introduces a Decision Quality Framework developed to guide strategic decision-making in a corporate context that incorporates three dimensions: sensemaking, architecture and team capital, and considers the relevance of the various aspects of the framework to sustainability-oriented decision-making. It then presents the successful application of this framework to the design and implementation of a sustainability assessment undertaken by a municipal government in Western Australia.

2. Decision Quality and the CIDQ Framework

Organisations are increasingly faced with making complex decisions in turbulent internal and external environments (Christensen and Fjermestad 1997; Slevin, Boone et al. 1998). Growth in competition, growing demands regarding accountability, governance and the need to include sustainability considerations are all factors coming to bear on the decision making milieu (Finnegan and O'Mahony 1996; Guzzo and Dickson 1996; Christensen and Fjermestad 1997; O'Faircheallaigh 2009).

Driven by these concerns, contemporary decision making is also complicated by a demand for enhanced decision quality (Kopeikina 2005). It has been argued that, for teams involved in strategic decisions and in formal strategic planning activities in organisations, certain procedures and principles need to be attained for that team to make the very best decisions of which its members are capable at that time (De Reuck, Schmidenberg et al. 1999; De Reuck, Schmidenberg et al. 2000; De Reuck, Schmidenberg et al. 2001).

The Centre for Innovation in Decision Quality (CIDQ) at the Graduate School of Business, Curtin University in Western Australia, has developed a Decision Quality Framework that considers and accommodates the above issues (Wood and Klass 2007). The key focus of the CIDQ framework is to improve decision quality and to endeavour to enhance the reach of human achievement. CIDQ is an integrative framework that draws on complexity science for **Sensemaking**, crucial aspects of **Team Capital** and the critical importance of **Architecture** to co create solutions for “best bet” decisions.

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3. Application of the CIDQ Decision Quality Framework

The CIDQ Framework was utilised by the authors in a case study process undertaken by a municipal government within the Perth metropolitan area in Western Australia. In this section, the case study is introduced and the three dimensions of the CIDQ Framework described in more detail in the context of the case study.

3.1 City of South Perth tree planting project

The authors were engaged in early 2009 by the City of South Perth to assist with a sustainability-oriented decision-making process relating to the development of a plan for the planting of trees within the Sir James Mitchell Park (SJMP) on the southern foreshore of Perth's iconic Swan River. The park is managed on behalf of the people of Perth in accordance with a Management Plan prepared in 2001 (Swan River Trust and City of South Perth 2001).

The Management Plan includes actions requiring the planting for additional trees within the park to provide additional shade for users. These actions had not been implemented by early 2009, due to extensive opposition expressed by foreshore residents living adjacent to the park, who feared that their city views might be compromised (M. Taylor, *pers. comms.*)². The issue had therefore become highly emotive and contentious.

The CIDQ framework was invoked in this case to ensure that the decision-making process to deliver a tree planting plan for the City of South Perth would be appropriate and robust, and that a sustainability assessment approach would be fully integrated with the decision-making.

3.2 Sensemaking

Sensemaking is the ability or attempt to make sense of an ambiguous situation in order to make decisions. The sensemaking dimension focuses on discovery and understanding of the decision situation and involves "a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively" (Klein, Phillips et al. 2006). The process of sensemaking is demonstrated in the context of the City of South Perth tree planting project below.

1. Decision framing and stakeholder analysis

Since the objective of the project was to implement a specific action of the Sir James Mitchell Park Management Plan relating to the planting of additional trees within the park, and to demonstrate the application of a sustainability assessment approach, the decision-framing question in this case was defined as, "What is the most sustainable way to plant trees on Sir James Mitchell Park?" This definition meant that no consideration was given in the process to the 'do nothing' option, or to alternative landscaping options to tree planting.

It was also clear that several stakeholder groups and individuals would be affected by the decision and hence it was important at this phase for the decision team to be sensitised to the different perspectives (frames) of these key groups. To ensure decision quality the sensemaking phase adopted a multi-frame perspective approach to get a good idea of what the different stakeholders considered important to them. This information would help develop the attributes that would potentially form the sustainability criteria for the model.

The key stakeholders were identified and a basic analysis of the influence these stakeholders had on the decision and the impact the decision would have on them was conducted. The views of stakeholders were initially well understood and confirmed in the initial round of consultation, reflecting the low social complexity of the decision (Rauschmayer and Wittmer 2006).

Of these key stakeholders, it was considered that the stakeholders with the greatest, and perhaps a disproportionate, degree of influence over the process were the foreshore residents known to be opposed

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to the tree planting project. The elected councilors themselves were critical to the success of the process due to the requirement that the final tree planting plan be endorsed by Council prior to its implementation.

2. Complexity of the decision

The key considerations relevant to this decision, as defined by the City of South Perth, were the need to develop a tree planting plan that would maintain existing vistas as far as possible, provide shade to park users, and maximize the biodiversity benefits of the trees.

There is minimal interaction and inter-dependence between these broad objectives, and it was therefore decided that the decision fell within the ordered domain and straddled between the complicated and simple quadrants of the decision domains according to the framework suggested by Kurtz and Snowden (2003). This highlighted the possible consideration of the decision lending itself to relatively simple, rational decision-making tools and that, given the projects objectives, would require multi criteria modeling to inform the final choice.

3. Sustainability considerations and criteria

Sustainability considerations were central to this decision, in accordance with community expectations. Given the definition and requirements of the decision, however, sustainability considerations were limited to environmental, social and economic issues relating to tree planting on a particular site, with the overall aim of maximizing positive sustainability outcomes and minimising negative ones. Community and stakeholder input and feedback played a major role in deciding which criteria were included in the final decision model.

4. Risks

As part of sensemaking the risks associated with this decision were assessed. The main risks to the success of the tree planting project were identified as:

- The potential for the process to be derailed by political processes, i.e. lobbying of councilors by foreshore residents opposed to the project;
- Perceptions of process legitimacy.

3.3 Architecture

Architecture is the art or practice of design, creation and combination of frameworks, processes and tools to enhance outcomes. Architecture draws on Sensemaking and attempts to determine the most appropriate decision theoretic tool(s) to adopt, choose the right processes and systems to accommodate these tools and finally to identify the parameters (time frame, frequency of this type of decision, level of uncertainty etc) impacting on the modelling process.

There are numerous tools and techniques available to support sustainability assessment processes (see for example Ness, Urbel-Piirsalua et al. 2007) and the key is therefore choosing the appropriate ones. Consideration of architecture is illustrated in the context of the City of South Perth tree planting project below.

1. Decision type and uncertainty

Landscaping decisions undertaken by local municipalities would typically be framed as negotiation decisions, whereby landscape architects would be engaged to develop a draft plan meeting specified objectives, including sustainability objectives, which would then be put out for public comment and revised as required in response to develop a plan broadly acceptable to all stakeholders. Negotiation decisions are appropriate when there is uncertainty in related agendas (Friend and Hickling 1987).

A negotiation process was considered to be inappropriate and likely to fail in this case however, due to the known opposition to the tree planting initiative by a small group of foreshore residents. For this group, the starting point for negotiation would be that no trees should be planted, and the decision would thus be re-framed as a 'trees or no trees' or a 'views and no views' decision, with other advantages and disadvantages of the trees receiving little consideration. It was therefore determined that the decision

should be framed as a choice not in relation to whether public shade or private views should have supremacy, but between a series of potential plans across a broad range of sustainability objectives.

In this case there was a low degree of uncertainty, due to the tight definition of the decision question. Uncertainty was therefore considered to be manageable through investigations (environmental) and consultation (values) (Friend and Hickling 1987).

2. Potential tools and processes

Categorisation of the decision-type as a choice in this case led to the selection of multi-criteria decision analysis (MCDA) as the appropriate tool set, specifically a values-focused sustainability-oriented MCDA process rather than an alternatives-focused one. The basic steps of the process were:

- Identification of sustainability criteria;
- Development of tree planting plan options demonstrating diversity across the criteria;
- Evaluation of each option against the criteria (scoring);
- Determination of the relative importance of each criterion to the decision at hand (weighting);
- Analysis.

MCDA provides a transparent structure for the decision-making process that focuses the discussion on the objectives to be achieved and illustrates the diversity of viewpoints, highlighting areas of agreement as well as of dispute (Bell, Hobbs et al. 2003; Stirling 2006; van den Hove 2006). It also provides clearly defined opportunities for the participation of the community and other stakeholders in the process (Rauschmayer and Wittmer 2006).

3. Frequency of this type of decision and supporting structures and systems

This decision was somewhat unique due to its controversial nature. The definition of the decision as one-off choice rather than negotiation was one point of differentiation with other landscaping decisions made by the City of South Perth environmental officers; another being that it involved a team established specifically for the purposes of this project, comprising the authors together with environmental, sustainability and communications officers of the City of South Perth and landscape architect consultants. A number of established City of South Perth information and communications systems were identified by the project team for use in this project and were utilised to inform and seek feedback from the community on various aspects of the process.

4. Timing requirements

A period of approximately six months was available from the commencement of the project to the endorsement of the City of South Perth Council of the final tree planting plan, to enable the trees to be planted in the early Western Australian spring (September). Aspects of the process timing were also dictated by City of South Perth protocols relating to the length of public comment periods on key documents.

5. Community engagement

Community engagement was an important part of the decision-making process. However, it was apparent from previous experience that the engagement processes would need to be carefully designed to minimize challenges to the basic premise of the project, namely that a certain number of trees would be planted in the Park. The community engagement processes were therefore designed to 'close down' rather than 'open up' discussion on the project framing (Stirling 2006), while providing opportunities for the broader community to contribute constructively to the process.

Accordingly, two main points for broad community engagement were identified, one at the very commencement when feedback was sought via a widely distributed Community Information Sheet and Feedback Form on sustainability criteria, relative importance of these criteria and preferred tree species, and one at the final stage when the preferred tree planting plan option was released for community comment.

3.4 Team Capital

Team Capital encompasses those aspects which critically influence the ability of the decision making team to achieve its potential. The Team Capital dimension is to do with ensuring that the team continually builds on and improves the team's human capital, encapsulating team culture, development, training, leadership, recruitment and selection. The Team Capital dimension in the CIDQ framework highlights six interdependent and interactive "intelligences" that impact on decision quality: Informed Intelligence, Communicative Intelligence, Critical Intelligence, Creative Intelligence and Decisive Intelligence, all moderated by the degree of Emotional/Social Intelligence inherent in the group. A full description of these "intelligences" is contained in Klass, Schmedenberg & DeReuck (2006).

The intelligences analysis was not formally conducted in this case since the team does not work together as a decision team on an ongoing basis, but the competencies of the individuals comprising the decision-making team, as well as the other groups which played a key role, were informally assessed. Members of the project team were found to possess a deep understanding of local community and history of park management; ecological knowledge; awareness of sustainability; and communications expertise. It was therefore felt that the expertise inherent in the group was sufficient to accommodate most aspects of the process.

The Sir James Mitchell Park Community Advisory Group was identified as a valuable resource in the decision-making process. This group, comprising equal representation of foreshore residents and members of the broader South Perth community, had been meeting regularly for nearly eight years at the time the project commenced under the provisions of the Sir James Mitchell Park Management Plan. The group was perceived to have developed significant team capital over this period, as well as a deep appreciation of park management issues, including the tree planting initiative. Furthermore, the group had clearly defined Terms of Reference and established operating protocols. It was therefore determined that this group would participate in the MCDA process on behalf of the whole community.

4. Process summary and conclusions

The CIDQ Decision Quality Framework was applied by the authors to ensure the robustness and quality of decision-making designed to deliver a tree planting plan for City of South Perth, that incorporated a fully integrated sustainability assessment process. This was critically important to the City of South Perth as a defence against the expected criticism of the initiative from foreshore residents opposed to the planting of additional trees, and essential to the successful implementation of the tree planting plan.

The decision-making and sustainability assessment process is described in detail at http://old.southperth.wa.gov.au/Sustainability/pdf/DraftSustAssessReport_JP_v6Final.pdf. The following key process characteristics resulted from the CIDQ framework analysis discussed in the previous section:

- The decision was framed as a choice, utilising an MCDA methodology, rather than as a negotiation, emphasizing process rationality as a risk management strategy;
- Extensive but highly structured opportunities for community participation were incorporated into the process;
- The well-established Sir James Mitchell Park Community Advisory Group played a key role on behalf of the broader community, particularly in the MCDA process.

The final outcome of the decision-making process was that five tree planting plan options were developed and the one that performed best across all sustainability criteria was selected through the MCDA process. There was a high level of acceptance of both the process and the final plan by the elected councillors and the community of the City of South Perth, in stark contrast to other landscaping projects. The additional trees have now been planted and this long-outstanding action from the Sir James Mitchell Park Management Plan completed.

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