

Advancing Strategic Environmental Assessment Concept and Practice: A Role for SEA in Energy Transitions

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In Partial Fulfillment of the Requirements
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University of Saskatchewan,
Saskatoon, Canada

By

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ABSTRACT

Increasing demands to address some of society's most complex environmental and sustainability issues are defining a new agenda for strategic environmental assessment (SEA) research and practice. SEA, practiced solely in accordance with the traditional project EIA paradigm, has in the past failed to live up to its promise of facilitating true sustainability transitions and promoting the strategic choices needed to achieve broader sustainability goals and objectives. This thesis advances the notion that in order for SEA to fully realize its potential as a sustainability decision-making tool, attention must be paid to the decision processes for addressing environmental and sustainability issues, including the relevant institutional arrangements and governance structures that can enable or constrain the successful formulation and implementation of strategic initiatives. In comparison to the more traditional understanding of SEA as an impact assessment-based tool, however, such an approach to SEA remains relatively undeveloped and untested. The thesis provides a distinct conceptualization that frames SEA as agency in the broader context of socio-technical transitions for sustainability. The research adopts a mixed-method approach, which primarily entails an in-depth review of scholarly literature, document analysis, and semi-structured interviews. The results are presented in four manuscripts. The first manuscript provides a systematic conceptualization of the various SEA approaches and also highlights the need for a new research agenda focused on the development and testing of an institution-centered and more deliberative governance approach to SEA. The second manuscript explores the diversity and state of SEA practice in Canada in light of the multiple dimensions of SEA effectiveness. While much of current practice under the Cabinet directive remains entrenched in project-based assessment principles, more exemplary cases of SEA and SEA-like practices are occurring in diverse forms across Canada. The third manuscript presents the transition-based SEA conceptual framework detailing the key elements and strategic questions to be asked in such EA design. The SEA design focuses on the guiding vision for transitions, the institutional context and governance arrangements, opportunities and risks of proposed sustainability pathways, progress indicators for on-going transition management, and impacts of the exogenous landscape. Finally the fourth manuscript provides an empirical application of the framework to the case of renewable energy transitions in the province of Saskatchewan, Canada. The results highlight the need for transparency and accountability to ensure effective implementation of the transition-based SEA

design. The thesis concludes with a recap of the current state of knowledge in terms of SEA research and practice, discusses the research implications of advancing SEA methodology following the transition-based approach. The thesis defines the path for a renewed research agenda and contributes to the much-needed advancement in SEA theory and practice.

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LIST OF ABBREVIATIONS

CCME	Canadian Council of Ministers of the Environment
CESD	Commissioner of Environment and Sustainable Development
EIA	Environmental Impact Assessment
IAA	Impact Assessment Act
IAIA	International Association for Impact Assessment
MLP	Multi-level Perspective
NIRB	Nunavut Impact Review Board
NTG	National Transmission Grid
PPP	Policies, Plans, and Programs
RCEA	Regional Cumulative Effects Assessment
SDS	Sustainable Development Strategy
SEA	Strategic Environmental Assessment
TM	Transition Management
WBNP	Wood Buffalo National Park

CHAPTER ONE

Introduction: Strategic Environmental Assessment for Energy Sector Decision-Making

1.1 Background

Growing demands to address some of society's recurring environmental and sustainability issues are defining a new agenda for strategic environmental assessment (SEA) research and practice. There is now stronger recognition that the diverse challenges and complexities surrounding decision-making on natural resource management require more integrated, collaborative, and value-driven environmental assessment processes than what is currently in place. Broadly defined as a more comprehensive process for evaluating the environmental effects of a policy, plan or program and its alternatives at the earliest possible stage, SEA emerged in part to address the limitations of project-based environmental impact assessment (EIA), particularly in terms of EIA's inability to tackle key environmental and sustainability concerns beyond the project level (Wood and Djeddour, 1989; Sadler, 2001). While project-based EIA remains a useful tool in informing decisions on individual developments, it has often been criticized for being too narrow in focus and somewhat disconnected from broader planning and policy processes (Bonnell, 2016; Gillingham et al., 2016). Formally instituted in over 60 countries with widespread application across key development sectors, SEA is currently a fundamental aspect of environmental assessment (EA) theory and practice (Dalal-Clayton and Sadler, 2005; Fundingsland Tetlow and Hanusch, 2012).

As initially proposed, SEA should ideally be able to facilitate strategic transformations in any development sector and guide decision processes towards more sustainable outcomes, however, despite growing advancements in SEA theory and practice, its added value as a sustainability transition tool is yet to be fully realized (Partidario, 2015; Gibson et al., 2016; Noble and Nwanekezie, 2017; Noble et al., 2019). Several scholars have argued that the inability of SEA to fully engage with the sustainability issues it seeks to address can be linked to SEA's deeply entrenched roots in the traditional project-based EIA principles and methodology (Partidario,

2012; Noble and Nwanekezie, 2017; Noble et al., 2019). Dominant SEA practice remains identifying, assessing, and finding ways to manage the likely impacts of policies, plans and programs (PPP) within existing institutional structures; an approach to SEA that rarely aligns with the complexities and realities of the underlying decision context SEA seeks to influence (Lobos and Partidario, 2014; Partidario, 2015; Doelle and Sinclair, 2019).

Against this background, the issue of how to transition SEA away from its EIA roots toward approaches that are better suited to understand and assess the complex, multifaceted components of the decision-making environment has received increasing attention in both EA research (Kirchoff et al., 2011; Partidario, 2015, 2020; Gibson et al., 2016; Retief et al., 2016; Noble and Nwanekezie, 2017; Noble, 2019) and the broader policy arena (World Bank, 2011; Slunge and Loayza, 2012). The argument is that in order for SEA to fully realize its potential as a sustainability tool, attention must be paid to the decision processes for addressing environmental and sustainability issues, including the relevant institutional arrangements and governance structures that underlie the formulation and implementation of strategic initiatives (Slunge et al., 2009; Partidario, 2012; Noble and Nwanekezie, 2017). Such a shift in focus toward conceptualizing SEA as agency in enabling sustainability transitions should arguably be an integral part of ongoing discourse on advancing SEA theory and practice.

There is now a significant growth in studies adopting a more strategic lens to understand the governance dimensions of decision-making (De Mulder, 2011; Partidario, 2012; Monterio and Partidario, 2017; Fischer et al., 2020); the role of actors in decision processes including effective stakeholder collaboration and participation (Gauthier et al., 2011; Hansen et al., 2013); the role of institutions in strategic decision-making (Slunge et al., 2009; Slunge and Loayza, 2012; Slunge and Tran, 2014); and the importance of policy learning, politics and power considerations in EA (Slootweg and Jones, 2011; Cashmore and Alexsson, 2013; Hansen et al., 2013). Missing in these studies, however, is a clearer understanding of how SEA can actually engage with the co-evolving institutional and socio-political processes and interactions that significantly influence change in decision processes (Lawhon and Murphy, 2011). There is limited understanding of how SEA can be effectively integrated in reshaping and enhancing capacity in institutions and governance structures (Hansen et al. 2013; Geels et. al, 2017).

The energy sector may be an obvious candidate for the application of SEA, to help establish or re-define the institutional and policy environment that underlie energy decision-making (Jay and Marshall, 2005; Mulvihill et al., 2013; McMaster et al., 2020). It is widely acknowledged in the literature that energy transition issues need to be addressed at the strategic levels of decision-making. In practice, however, there remains a disconnect between SEA and the broader energy decision-making context it seeks to influence (Jay, 2010; Mulvihill et al., 2013). Despite the growing number of studies demonstrating how SEA can be effectively integrated to guide energy sector decision-making (Lyhne, 2011; White and Noble, 2012; Fidler and Noble, 2013; Mulvihill et al., 2013; Larmorgese et al., 2015; Fischer et al., 2020), attempts to reconcile energy sustainability concerns continue to be frustrated by democratic protocols, rigid institutions, politics and power struggles, value conflicts, and overall lack of leadership (Bale et al., 2015; Burke and Stephens, 2018). Addressing these complexities will require more comprehensive and coordinated approaches to energy planning, including the assessment of long-term policy designs to guide energy transitions (Geibler, 2013; Oldreive, 2013; Fischer et al., 2020).

This thesis seeks to address this gap by introducing the transitions-thinking approach that frames SEA in the broader context of socio-technical transitions for sustainability. As increasing attention turns toward the energy sector to meet low-carbon transition goals, enabling true strategic change requires a shift in focus toward the broader, non-linear and socio-political processes that influence fundamental change in established development sectors (Geels et al., 2017). The intent is to redefine the role of SEA as an agency of change and driver of sustainability transitions, rather than solely an impact assessment tool applied to already proposed or existing policies and initiatives. This introductory chapter provides an overview of the research context, theoretical perspective and study approach, including the overall structure of the thesis.

1.2 Theoretical Context

The last decade has witnessed a significant growth in scholarly debates around the strategic purpose and role of SEA in decision-making (Fischer and Onyango, 2012; Fundingsland Tetlow and Hanusch, 2012; Lobos and Partidario, 2014; Noble and Nwanekezie, 2017). Emerging from these debates is the need for theory advancement in SEA, including the development of more analytical methods and tools that can support the range of strategic issues SEA seeks to address (Geneletti, 2015; Kornov, 2015). There has been growing interest among SEA scholars in

translating ideas from theoretical perspectives related to policy analysis, complex systems theory, decision theory, and political ecology as they have become useful in understanding the dynamics of strategic decision-making (Dalkmann et al., 2004; Nilsson et al., 2005; Lawhon and Murphy, 2011; Partidario, 2012). While these theories have made significant contributions to SEA research, challenges remain as existing SEA frameworks and methodologies are yet to adequately account for and interpret the complex dynamics of sustainability transitions (Lawhon and Murphy, 2011; Noble and Nwanekezie, 2017).

The focus on the sustainability transitions framing in this research is contextualized against the backdrop of the need to explore in more depth the broader, non-linear socio-technical and socio-political processes that influence the outcomes of transitions. Sustainability transitions involve long-term, multi-dimensional transformation processes through which established socio-technical systems shift toward more sustainable modes (Markard et al., 2012). If SEA's primary goal is to guide decision processes toward sustainability, there is a need for assessment approaches that can account for the peculiarities of sustainability transitions (Markard et al., 2012; Geels et al., 2017). In theoretical terms, very few studies have so far explored the linkages between SEA and the institutional and governance processes that guide transitions (Slunge et al., 2009; Partidario, 2012). Addressing this gap is important because, as Lawhon and Murphy (2011) argue, transitions-thinking provides a particularly useful way for EA theorists and practitioners to adopt a multi-level conceptualization of sustainability issues, including an understanding of the critical factors and conditions that can steer a development trajectory toward desired sustainable futures.

Key insights can be gained from the socio-technical transitions theory for the development of a transitions-based SEA framework. There has been significant research in the sustainability transitions literature on the socio-political and spatial dynamics that shape transition pathways, as well as the challenges and opportunities for achieving more sustainable forms of development (Lawhon and Murphy, 2011; Markard et al., 2012; Cherp et al., 2016; Geels et al., 2017). Yet, this body of research has rarely been explored within the EA field. In particular, two prominent ontological frameworks: *the multi-level perspective* (MLP) and *transition management* (TM) guide our understanding of the dynamics of transitions, system innovation, and transition governance (Geels, 2011; Verbong and Geels, 2007; Loorbach, 2010). The MLP conceptualizes transitions as a multi-dimensional interplay of three analytical levels – niche, socio-technical

regime, and the socio-technical landscape – interacting within a nested hierarchy (Geels, 2005; Geels and Schot, 2007). Within an SEA context, the MLP directs our understanding toward how innovations in PPPs come about, and what enabling conditions and capacities are required to foster more sustainable development trajectories. Insights can also be gained about the implications of broader landscape activities on the long-term viability of strategic initiatives, including identifying and addressing institutional challenges and constraints within existing regimes that pose obstacles to realizing sustainability goals.

The TM framework adopts a deliberative governance approach to guide and foster transitions toward realizing defined sustainability goals. It provides an analytical lens to assess how societal actors can address complex, multi-faceted sustainability issues at different levels of decision-making (Kemp and Loorbach, 2006). Underscored by the premise of “long-term thinking for shaping short-term policy-design,” the framework proposes four types of governance activities that can influence sustainability transitions: strategic, tactical, operational, and reflexive (Loorbach, 2010: 168). Both the MLP and TM theoretical frameworks provide structural models of sustainability transitions conceptualized as the outcome of the interlinkages of complex multi-actor and multi-level processes, and a better understanding of such relationships could enhance the governance capacity to manage transition processes (Geels and Schot, 2007; Loorbach, 2010).

The research also draws on Giddens (1984) structuration theory to demonstrate how SEA can be positioned as agency in reshaping institutional structures and governance processes to ultimately facilitate sustainability transitions. Attention is paid to the power dynamics and influence of actors in the decision arena, particularly, “the *transformative capacity* of actors and their ability to influence decision processes by changing or reshaping existing structures” (Hansen et al. 2013, p. 38). Such conceptualization is important in SEA research as it provides clearer insight into the underlying processes and interactions that can be reformed to create the right decision-making context needed to achieve desired sustainability transitions.

Overall, these theoretical perspectives provide three key contributions that are significant to transition-thinking SEA: (i) the inclusion of a multi-dimensional and multi-level framing to understand system dynamics, actor behaviour, and the overall change processes influencing development trajectories (Geels, 2011; Hansen et al., 2013; Geels et al., 2017); (ii) the adoption of

a deliberate governance approach and long-term perspective in analyzing transition pathways, including a focus on the governance activities that influence the outcomes of transitions (Loorbach and Rotmans, 2010); and (iii) the need to reform institutional structures and governance processes that influence and support long-term regime changes (Slunge and Loayza, 2012).

1.3 Research Purpose and Objectives

The purpose of this research is to advance a transitions-based SEA design that can be applied to assess the decision environment including the institutional and policy context that underlie development of strategic initiatives, commitments, supporting policies, and opportunities. The goal is to identify the value and merits of adopting such an SEA approach, including how SEA can inform transition processes and overall energy sector decision-making toward more sustainable outcomes. Beyond the energy sector, the framework provides a generalized SEA methodology that can be adapted to foster sustainability transitions in other development sectors. The specific objectives of the research are to:

- 1. Explore the scope of models of SEA that exist, from impact-assessment based to strategy-based approaches.*
- 2. Explore the diversity and state of SEA practice in Canada, highlight the multiple dimensions of SEA effectiveness and identify important lessons for shaping the direction of SEA.*
- 3. Develop a conceptual framework detailing the principles and characteristics, including the types of questions to be asked in a transitions-based SEA design.*
- 4. Demonstrate, using an energy case study, how a transitions-based framework can be utilized to assess the decision environment including the institutional and governance context, in order to identify the opportunities, constraints, and capacity needs for enabling successful transitions.*

In addressing these research objectives, the study adopts a qualitative, inductive, and exploratory approach owing to limited existing research on the subject matter. Further, the multifaceted and complex nature of the issues the research seeks to address, including the diverse perspectives being put forward are often well suited to exploratory investigations through

qualitative research methods (Creswell, 2013). Specifically, the thesis adopts a mixed-methods approach to data collection and analysis, which primarily entails an in-depth review of scholarly literature, document analysis, and semi-structured interviews. These methods are further elaborated on within each manuscript of the thesis (i.e. Chapters 2 to 5).

1.4 Thesis Structure

The thesis adopts a ‘dissertation by manuscript’ style, in accordance with guidelines set out by the College of Graduate and Postdoctoral Studies and is organized in six chapters. Each of the four manuscripts represents a separate thesis chapter.

- Chapter 1 (Introduction): provides a background to the state of practice in SEA and describes the research problem and rationale. It also highlights the theoretical basis for the research, the research purpose and objectives, and study methods adopted.
- Chapter 2 [Noble, B.F. & Nwanekezie, K. 2017 - *Conceptualizing strategic environmental assessment: Principles, approaches and research directions*]. This manuscript explores the strategic principles of SEA and the various models of SEA that exist, in response to scholarly debates on the need to re-examine the strategic nature and role of SEA in sustainability decision-making. The study adopts a conceptualization of SEA as a multi-dimensional and multi-faceted assessment process, seeking to clarify exactly how SEA can interact flexibly with the decision context it seeks to inform. This is an invited manuscript, published in a peer-reviewed special issue of *Environmental Impact Assessment Review*.
- Chapter 3 [Noble et al., 2019 - *Effectiveness of strategic environmental assessment in Canada under directive-based and informal practice*]. This manuscript reflects on the effectiveness of SEA in Canada both under the federal Cabinet directive and informal or non-directive-based applications. The paper explores the diversity and state of SEA practice, highlights the multiple dimensions of SEA effectiveness and identifies important lessons for shaping the direction of SEA. This also an invited manuscript, published in a peer-reviewed special issue of *Impact Assessment and Project Appraisal*.
- Chapter 4 [Nwanekezie, K., Noble, B. F. & Poelzer, G. 2021- *Transitions-based Strategic Environmental Assessment*]. This manuscript details the key principles and components, including the strategic questions to be asked in the transitions-based SEA conceptual model. The paper provides methodological guidance that could be adopted to critically assess the

institutional and governance context surrounding the development and implementation of proposed sustainability initiatives. This manuscript has been accepted and published in *Environmental Impact Assessment Review*.

- Chapter 5 [Nwanekezie, K., & Noble, B., & Poelzer, G. 2021- *SEA for Energy Transitions: The Case of Renewable Energy Transitions in Saskatchewan, Canada*]. This chapter provides an empirical application of the transitions-based SEA framework using the case of renewable energy transitions in Saskatchewan, Canada. The study demonstrates how the transitions framework can be applied to critically assess the decision environment including the capacity needs, opportunities and risks, as well as the obstacles within existing institutions, policy and governance arrangements to enabling successful low-carbon transitions. This manuscript has been accepted and published in *Environmental Impact Assessment Review*.
- Chapter 6 (Conclusion). The final chapter of the thesis provides a recap of current state of knowledge in terms of SEA research and practice and discusses the benefits and opportunities for advancing SEA methodology in accordance with the transition-based approach. Key research limitations, challenges, and lessons learned are also highlighted. The thesis concludes with broader recommendations for advancing SEA theory and practice and possible directions for future research, particularly in terms of applying the transitions framework to other jurisdictions and development sectors.

1.5 Co-authorship Statement

Chapters two through five consist of four co-authored manuscripts that have either been published or have been submitted for publication and currently under review. Citations for the manuscripts are provided below.

- Chapter 2: Noble, B.F. & Nwanekezie, K. (2017). Conceptualizing strategic environmental assessment: Principles, approaches and research directions. *Environmental Impact Assessment Review*, 62, 165-173.
- Chapter 3: Noble, B., Gibson, R., White, L., Blakley, J., Croal, P., Nwanekezie, K. & Doelle, M. (2019). Effectiveness of strategic environmental assessment in Canada under directive-based and informal practice. *Impact Assessment and Project Appraisal*, 37(3-4), 344-355.
- Chapter 4: Nwanekezie, K., Noble, B., & Poelzer, G. (2021). Transitions-based strategic environmental assessment. *Environmental Impact Assessment Review*, 91, 106643.

- Chapter 5: Nwanekezie, K., Noble, B., & Poelzer, G. (2021). SEA for energy transitions: the case of renewable energy transitions in Saskatchewan, Canada. *Environmental Impact Assessment Review*, 92, 106688.

For the purpose of this thesis, I was the lead researcher as set out in the guidelines for *manuscript style thesis* by the College of Graduate and Postdoctoral Studies¹. Intellectual guidance and support, including assistance with research design and interpretation of results, was provided by the co-authors. For manuscript 1, which was an invited special issue paper, I took the lead in the in-depth review of both scholarly and grey literature, and the presentation of findings with input and feedback for further analysis from the co-author. The draft manuscript was also submitted to the co-author for detailed edits and final review to ensure suggestions were duly considered and incorporated as applicable. For manuscript 2, I took the lead in the in-depth review of both scholarly and grey literature on SEA practice and effectiveness under the Cabinet directive. The various co-authors contributed in-depth to the case study review, including the discussion points and conclusion of the manuscript. For both manuscripts and 2, the first listed author reflects the author who was invited by the journal to submit to the special issue. The order of authors in the second manuscript was determined based simply on how long the authors have known the first listed author, as agreed upon by all co-authors.

For manuscripts 3 and 4, I took the lead in the in-depth review of both scholarly and grey literature, conducting the semi-structured interviews with subject matter experts, and the presentation of findings with input and feedback for further analysis from co-authors. Co-authors provided assistance with the identification of study participants and development of the interview guide. I also took the lead in transcribing and analyzing the interview data but received additional guidance from the co-authors on further analysis of emerging research themes, and overall interpretation of the results.

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¹ <https://students.usask.ca/graduate/manuscript-style.php#CoauthoredManuscripts>

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CHAPTER TWO

Conceptualizing Strategic Environmental Assessment: Principles, Approaches and Research Directions

This chapter explores the strategic principles of SEA and the various models of SEA that exist, in response to scholarly debates on the need to re-examine the strategic nature and role of SEA in sustainability decision-making. The paper adopts a conceptualization of SEA as a multi-dimensional and multi-faceted assessment process, seeking to clarify exactly how SEA can interact flexibly with the decision context it seeks to inform. This manuscript has been published in a peer-reviewed special issue of *Environmental Impact Assessment Review*².

Abstract

Increasing emphasis has been placed in recent years on transitioning strategic environmental assessment (SEA) away from its environmental impact assessment (EIA) roots. Scholars have argued the need to conceptualize SEA as a process designed to facilitate strategic thinking, thus enabling transitions toward sustainability. The practice of SEA, however, remains deeply rooted in the EIA tradition and scholars and practitioners often appear divided on the nature and purpose of SEA. This paper revisits the strategic principles of SEA and conceptualizes SEA as a multi-faceted and multi-dimensional assessment process. It is suggested that SEA can be conceptualized as series of approaches operating along a spectrum from less to more strategic – from impact assessment-based to strategy-based – with each approach to SEA differentiated by the specific objectives of SEA application and the extent to which strategic principles are reflected in its design and implementation. Advancing the effectiveness of SEA requires a continued research agenda focused on improving the traditional SEA approach, as a tool to assess the impacts of policies, plans and programs (PPPs). Realizing the full potential of SEA, however, requires a new research

² Noble, B. F., & Nwanekezie, K. (2017). Conceptualizing strategic environmental assessment: Principles, approaches and research directions. *Environmental Impact Assessment Review*. <https://doi.org/10.1016/j.eiar.2016.03.005>

agenda — one focused on the development and testing of a deliberative governance approach to SEA that can facilitate strategic innovations in PPP formulation and drive transitions in short-term policy and initiatives based on longer-term thinking.

2.1 Introduction

Now in place in some 60 countries (Fundingsland Tetlow and Hanusch, 2012), strategic environmental assessment (SEA) is a familiar member of the impact assessment family. Conceptualized under the philosophy of environmental impact assessment (EIA) as an assessment process appropriate for policies, plans and programs (PPPs) (Wood and Djeddour, 1989), SEA is now viewed as an instrument that can also help shape the formulation and implementation of strategic initiatives, and even play a political role in decision making (Bina, 2007; Jiliberto, 2011; Partidário, 2015). Scholarly research and thinking about the nature and scope of SEA have evolved significantly over the past 25 years (Lee and Walsh, 1992; Bailey and Renton, 1997; Noble, 2000; ; Bina, 2007; Partidário, 2015). Fischer and Onyango (2012), for example, undertook a comprehensive overview of SEA related research projects and publications, reporting some 500 English language publications in referred journals on the subject. The result has been the development of multiple SEA methodologies and a range of applications (Thérivel and Partidário, 1996; Noble and Storey, 2001; Dalkmann et al., 2004; Gunn and Noble, 2009; Sizo et al., 2016), along with more substantive interpretations of the strategic role of SEA beyond that of appraising PPPs or assessing their impacts (Partidário, 2015; Pang et al., 2014; White and Noble, 2013; Jiliberto, 2011; Sloodweg and Jones, 2011).

The realization that SEA can have multiple roles and benefits in different decision contexts has also led to diversity in understandings and expectations about SEA (Noble et al., 2013; Partidário, 2012; Bina, 2007). There is a general consensus that SEA is somehow different than project-based EIA; however “considerations as to what SEA really is, what it delivers and how it should perform are still far from a consolidated stage” (Vicente and Partidário, 2006: 697). Noble (2000) argued that scholars and practitioners have failed to explain why certain assessments are strategic and how they differ from those that are non-strategic. It is suggested that notwithstanding the international growth of SEA, and numerous scholarly papers addressing SEA concept and practice, understandings of SEA still vary considerably. Bina (2007: 586), for example, observes that “scholars and practitioners appear divided on such fundamental matters as the concept of and

approach to SEA”; whilst Noble et al. (2013) identify the diversity of understandings of what SEA is, and expectations about what it can and should deliver, as major barriers to its advancement.

The purpose of this paper is to revisit the strategic nature of SEA, and to conceptualize SEA as a multi-faceted and multi-dimensional assessment process. The objective is to help clarify specifically how SEA, as a flexible and multi-purpose assessment tool, relates to the policy and planning processes it is intended to inform. This is done in response to recent scholarly arguments suggesting the need to rethink the strategic nature and role(s) of SEA (Partidário, 2015; Partidário, 2012; Pope et al., 2013; Bina, 2007), and in light of the diversity of SEA expectations and understandings that exist amongst SEA scholars and practitioner communities (Silva et al., 2014; Fidler and Noble, 2013; Noble et al., 2013; Fischer and Onyango, 2012; Wallington et al., 2007). In the sections that follow the evolution of SEA and the basis strategic thinking in SEA is briefly explored, followed by the fundamental principles that, based on the scholarly literature and evidence from practice, characterize strategic environmental assessment. SEA is then conceptualized as an approach to impact assessment that reflects multiple purposes, from appraising existing PPPs to assessing the institutional environments needed to enable the development and implementation of successful strategic initiatives. The paper concludes by suggesting directions in research to advance SEA understanding and influence.

2.2 Evolution of strategic thinking about SEA

Fundingsland Tetlowand and Hanusch (2012) provide a comprehensive overview of the evolution of SEA. The intent here is not to revisit this history; rather the focus is on how strategic thinking about SEA has evolved. The basic concept of assessing the impacts of PPPs is rooted in the 1969 US National Environmental Policy Act, requiring the environmental assessments of proposed federal actions. Fischer and Onyango (2012) report that the concept of strategic assessment had started to gain much traction by the late 1970s, but it was not until the late 1980s, by way of a research report to the European Commission (Wood and Djeddour, 1989), that the term ‘strategic environmental assessment’ was formally introduced and popularized. At the time, SEA was described as environmental assessment appropriate to PPPs and of a more strategic nature than assessments applicable to individual development projects – setting the context for the

most commonly cited definition of SEA – the environmental assessment of PPPs. The rationale for SEA at the time, and often still very much so today, was the need to address some of the limitations of project EIA, including the need to more proactively consider potential environmental impacts at earlier stages of decision making (Cherp et al., 2011; Partidário, 2000; Sadler and Verheem, 1996), to resolve longstanding concerns about how EIA approached cumulative environmental effects (Bidstrup et al., 2016; Therivel and Ross, 2007; CCME, 2009), and to set better direction for project-level approval processes (Johnson et al., 2011; Fischer, 2007; Hildén et al., 2004; Fischer, 1999).

In Canada, commitments to assessing the environmental implications of policies were in place in 1984, under the Environmental Assessment and Review Process Guidelines Order, which defined a *proposal* as including any initiative, undertaking or activity for which the Government of Canada has a decision-making responsibility (Noble, 2002). SEA was formally established in Canada in the early 1990s, by way of a federal directive on the environmental assessment of PPPs, and as a separate process from project EIA, thus “making it the first of the new generation of SEA systems that evolved in the 1990s” (Dalal-Clayton and Sadler, 2005: 61). By the early 2000s, Sadler (2001) reports less than 20 countries internationally with formal provisions for SEA. But the adoption of SEA would expand significantly in the years that followed, due in large part to the World Bank and similar agencies promoting SEA in international development cooperation, and the adoption of the European SEA Directive (White and Noble, 2013a; Fundingsland Tetlow and Hanusch, 2012). SEA emerged under the theory of EIA, and “sharing the same common objective – to assess environmental impacts – but addressing different objects – policies, plans and programs, instead of projects” (Vicente and Partidário, 2006: 69). As a result, the practice of SEA that developed throughout the 1990s and early 2000s, including guidance for its implementation under directive-based systems, was deeply entrenched in traditional project-based EIA principles and methodology (Fundingsland Tetlow and Hanusch, 2012; Gachechiladze and Fischer, 2012; Glasson et al., 2005). This traditional, EIA-based, rationalist approach to SEA was challenged by many scholars as SEA continued to expand and take shape (e.g., Dalal-Clayton and Sadler, 2005; Dalkmann et al., 2004; Owens et al., 2004; Nilsson and Dalkmann, 2001; Brown and Thériverel, 2000; Partidário, 1996), with several arguing that such an approach to SEA aligns with neither the complexities nor the realities of policy and planning processes – the very processes and

instruments that SEA was intended to address (Elling, 2009; Bina, 2007; Runhaar and Driessen, 2007).

Whilst the expectation of SEA is often that it will influence strategic decision-making, several scholars have suggested that both the practice and the institutionalization of SEA has simplified the complexity of strategic decision-making processes, and even the interplay of power and politics in PPP decisions (Jiliberto, 2007; Bina, 2007; Nilsson and Dalkmann, 2001). Nitz and Brown (2001: 329), for example, argued that “SEA must learn how policy making works”, suggesting that SEA researchers have focused on the content and assessment process of SEA, but have given limited attention to whether and how SEA actually fits into policy making and other strategic decision-making processes. Challenges to the conceptualization of SEA as an impact assessment tool for PPPs were reinforced by several empirical studies that questioned the influence and added value of SEA to both PPPs and decision outcomes (Noble, 2009). This led many scholars, including Jiliberto (2007: 212), to suggest that SEA needs to “distance itself from the concepts and models of EIA of projects, in order to be able to address the challenges of environmentally improving strategic decisions such as policies, plans and programs.”

The evolution of scholarly research on SEA “has shifted in its views of the SEA process as a formal process...to a much more flexible and adaptable approach” (Retief, 2007: 85) and one with a more strategic focus, beyond PPP impact assessment (see Fischer and Onyango, 2012). This evolution is reflected, in part, in how SEA has been defined over the years (Table 2.1), from an EIA-like tool for PPPs, to a process to facilitate strategic decisions toward sustainability. Indeed, several scholars are now advocating for a shift in thinking about SEA, and for an advancement in current SEA practice toward a policy, institutional, integrated, and strategic-oriented approach – one that provides for a better understanding of the complex institutional arena and governance conditions of strategic decision processes; ensues the creation and implementation of strategic actions that lead to more informed, and influential PPPs and development decisions; and facilitates strategic transitions toward more sustainable futures (Partidário, 2015; White and Noble, 2013a; Partidário, 2012; Fundingsland Tetlow and Hanusch, 2012; Jiliberto, 2011; Bina, 2007; Jackson and Dixon, 2006). The real purpose of SEA, argues Partidário (2012), is to help understand the

development context of the PPP or strategy being developed and assessed, and assess environmental and sustainable viable options that will help achieve strategic objectives.

Table 2.1 Definitions of Strategic Environmental Assessment – Past and Present

Theme(s)	Definition	Reference
Early evaluation of PPPs	The systematic and comprehensive process of evaluating at the earliest possible stage the environmental effects of a policy, plan or program and its alternatives	Thérivel and Partidário, 1996
Proactive assessment	The proactive assessment of alternatives to proposed or existing PPPs, in the context of a broader vision, set of goals, or objectives to assess the likely outcomes of various means to select the best alternative(s) to reach desired ends	Noble, 2000
Environmental and social issues	A decision support tool, designed to integrate environmental and social issues into higher-order PPP decision making processes, bringing together different aspects of problems, different perspectives, and providing possible solutions in an accessible form to the decision maker	Sheate et al., 2003
Environmental and cumulative effects	A process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives for a particular region...and in doing so inform the development of policies, plans or programs	CCME, 2009
Sustainable development context	A strategic framework instrument that helps to create a development context toward sustainability, by integrating environment and sustainability issues in decision-making, assessing strategic development options and issuing guidelines to assist implementation	Partidário, 2012

2.3 Strategic Principles of SEA

The International Association for Impact Assessment (2002) identifies several performance-based criteria that characterize a good quality SEA, namely that SEA is *integrated, sustainability-led, focused, accountable, participative, and iterative*. In addition to SEA performance or operational criteria, scholars have suggested several defining features or principles of SEA that make it strategic and therefore different from traditional impact assessment (e.g. Noble and Gunn, 2015; Lobos and Partidário, 2014; White and Noble, 2013; Partidário, 2012; Kirchhoff et al., 2011; CCME, 2009; Bina, 2007; Hildén et al., 2004; Fischer, 2003; Noble, 2000; CSIR., 1996; Thérivel and Partidário, 1996; Thérivel et al., 1992). Drawing on this literature and considering how scholarly thinking about SEA has evolved over time, it is suggested that there are at least four enduring and foundational principles that characterize SEA regardless of the nature of its application and irrespective of context. Each of these principles is briefly defined below. While these may not be the only defining principles of SEA, they do capture the most basic, defining features of strategic assessment. As foundational principles, they are also closely interconnected – if not overlapping.

2.3.1. Strategically focused

The strategic nature of SEA is not a function of its focus above the project level, but rather its emphasis on influencing PPPs and strategic initiatives. That is to say, the strategic in SEA cannot be explained simply in terms of the object of its application (Gachechiladze et al., 2009; Caratti et al., 2004; Partidário, 2000), but rather by the relationships between SEA and broader policy and planning processes (Bina, 2007), including the types of questions being asked (Noble, 2000). Strategic is derived from the Greek word *strategos*, meaning that which has to do with creating initiatives, determining broad goals and then finding the means to achieve them. A strategic approach is one in which the determination of the long-term objectives and the adoption of courses of action and allocation of resources necessary to achieve these goals is developed (Noble, 2000). It is “an attribute that qualifies ways of thinking, attitudes, and actions related to strategies” (Partidário, 2012, p. 11) — not PPPs themselves. As a strategic process, SEA is ultimately about establishing the enabling conditions for initiatives and decisions (including PPPs) to proceed in a more sustainable way (Gunn and Noble, 2015; Kirchhoff et al., 2011; Partidário and Clark, 2000), thus influencing the kinds of initiatives or decisions that are going to happen, by steering or directing their design and implementation (Gunn and Noble, 2015; Slunge et al., 2009; Thérivel, 2004; Dusik et al., 2003).

2.3.2 Exploratory of Strategic options

As a strategic process, the consideration of alternatives, or strategic options, is at the heart of SEA (Gonzalez and Therivel, 2014). SEA is about exploring desirable outcomes, determining what is needed to achieve those outcomes, and identifying and assessing the potential implications of alternative strategic initiatives (Noble and Gunn, 2015). The focus is on building a more desirable or resilient future (Slootweg and Jones, 2011), as opposed to locking-in futures based on past trends, conditions or events (Noble and Gunn, 2015; Partidário, 2007). It is about the identification and evaluation of a range of options, considering their opportunities and risks, toward achieving more desirable outcomes (Caratti et al., 2004; Partidário, 2007). Through an exploration of strategic options, a foundation for long-term strategic policy and planning is created, with short-term decisions shaping and informing subsequent future actions. Consider, for example, electricity demands outpacing supply in an area with a history of coal-fired electrical generation.

Rather than simply propose and assess the impacts of an increase in coal-fired generation capacity, or even explore a single demand reduction policy, SEA is exploratory of a range of options, including the identification and evaluation of short- and longer-term technically viable electrical generation options, exploring demand reduction strategies and efficiency opportunities in the existing system, and then identifying the policy, planning or other conditions necessary to pursue, implement and ensure the success of different options.

2.3.3. Nested

The strategic nature of SEA is not about “how SEA relates to other forms of impact assessment but how it relates to the planning process it is intended to inform” (Pope et al., 2013: 3). Often conceptualized as a means to influence ‘next-level’ initiatives (Nooteboom, 2000; Therivel and Partidário, 1996), particularly setting the direction or specific context for project EIA (Fischer, 2007; Nitz and Brown, 2001), SEA is nested in a much larger system of strategic initiatives and decision-making processes. White and Noble (2013a) identify three types of SEA tiering relationships: tiering down, whereby the SEA influences lower-level actions or decisions, such as the terms of reference for project EIA; nesting, whereby the SEA is set within the context of broader goals and objectives, such as a higher-tiered PPP or strategic initiative, that influences the input to the SEA process; and tiering up, whereby the results of EIA trigger the need for SEA, or the results of SEA trigger the need for changes in higher-tiered PPPs or initiatives. SEA thus takes into account multiple, mutually influential tiers of strategic decision making, is designed to provide clear implications for assessment and decisions at the project level, and recognizes the importance of guidance both from higher to lower tier decision making and from lower to higher tier decision making (Doelle et al., 2012).

2.3.4. Sensitive to PPP and decision-making contexts

Finally, PPP and decision-making contexts are highly dynamic; SEA thus defines its role based on the issues it is intended to address and based on the different PPP contexts in which it operates (Noble and Gunn, 2015; Fundingsland Tetlow and Hanusch, 2012). SEA interacts intimately with the specific decision-making process at hand (IAIA, 2002), thus ensuring the development or influence of strategic actions that are often context specific. Wirutskulshai et al. (2011: 358), for example, explain that “context is critical to the success and progress” of SEA, and

Marsden (1998) argues that SEA integrates itself within the existing social, political, environmental, economic, legislative and administrative contexts in which PPPs are formulated. That is to say, SEA operates within an institutional arrangement, either formal or informal, and is adaptive to different policy or planning cultures (Hilding-Rydevik and Bjarnadóttir, 2007). Such differences may affect the role of SEA in relation to PPPs, and whether SEA is applied as an integrative PPP development process or as a stand-alone assessment tool (Noble and Gunn, 2015). As such, each SEA is often the product of a particular set of legal, administrative, planning and political circumstances (Jones et al., 2005). That said, sensitivity to context does not imply that SEA is simply a more flexible form of impact assessment—context is not an excuse for poorly conceptualized SEA or for SEA that fails to reflect strategic principles.

2.4 Approaches to SEA: Conceptualizing Practice

There is no universal approach to SEA, and SEA itself has been subject to many diverse interpretations (White and Noble, 2012; Vicent and Partidário, 2006). Several authors and organizations have proposed various types of SEA, based on the spatial scope and objective of assessment (regional, sectoral, policy — World Bank, 1993); based on how development goals are defined (impact centered, institution centered— Loyaza, 2012); based on the advocacy role of SEA in mainstreaming environmental issues in decision making (marginal, compliance, constructive — Partidário, 2009); and based on how SEA connects or interacts with the policy-making or planning process (single opportunity, parallel, integrated, decision centered — Partidário, 2012). The intent here is not to add another layer of complexity, but to offer a much simpler, practice-oriented, conceptualization of SEA that reflects both SEA's humble beginnings as an impact assessment tool and more recent scholarly thinking about how SEA can better inform strategic decision-making.

SEA can be conceptualized as operating along a spectrum from less to more strategic. At one end of this spectrum, SEA can be characterized as ‘impact assessment-based’, reflecting the traditions of EIA and aligning with the initial conceptualizations of SEA. At the other end, SEA can be characterized as ‘strategy-based’, capturing more recent thinking about SEA as a process for driving institutional change (see Noble and Gunn, 2015; Partidário, 2012) (Figure 2.1). The object of assessment at either end of the spectrum may be the same, PPPs. What differentiates the

approaches long this spectrum are the purpose (s) of the SEA application and the extent to which the strategic principles, discussed above, are more or less reflected in its design, intent and implementation. It is not suggested that this conceptualization of SEA represents distinctly defined methodologies; neither is it argued that any one approach to SEA is best or sufficient. The focus here is on conceptualizations of SEA, and not on particular SEA design, methodology or supporting tools.

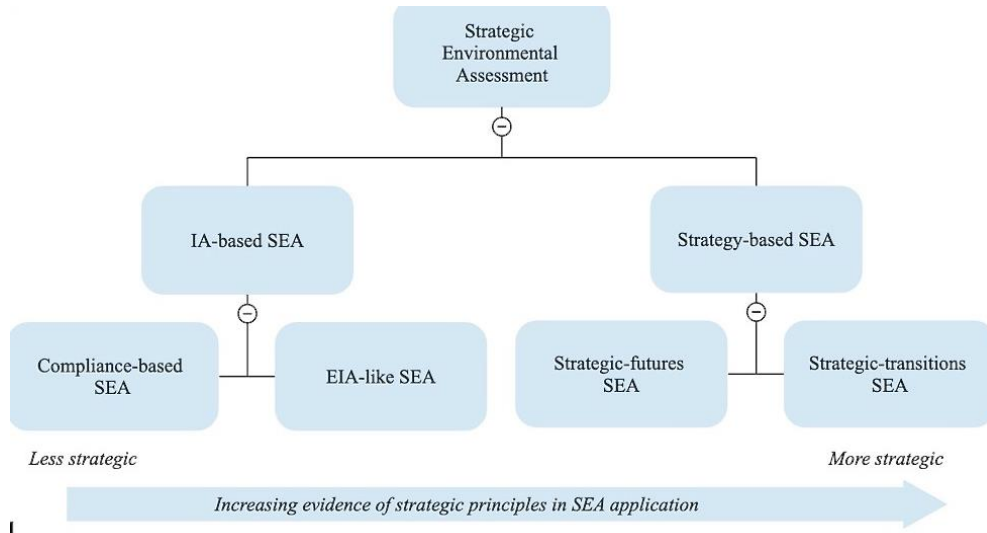


Figure 2.1: Impact-assessment based and Strategy-based Conceptualizations of SEA

2.4.1. Impact assessment-based SEA

Impact assessment-based, or IA-based, conceptualizations of SEA are rooted in the traditional paradigms of EIA and project appraisal. The objectives of assessment are similar – to appraise initiatives or to assess their impacts – but the objects of assessment are different – PPPs instead of projects (see Vicente and Partidário, 2006). IA-based SEA is the typical approach adopted under formal, directive-based SEA systems and requirements (see Noble, 2013; Verheem and Dusik, 2011). A PPP initiative is proposed and either appraised to ensure compliance with particular policies, regulatory or program objectives, or a direct assessment of the PPP's potential impacts is undertaken (Partidário, 2012; Noble, 2000). The suggestion is that IA-based SEA is characterized by two basic approaches—referred to here as compliance-based SEA, and EIA-like SEA.

2.4.1.1. Compliance-based

Compliance-based SEA focuses on an appraisal or evaluation of whether, and to what extent, a proposed PPP is in compliance with, or supports, other existing PPP objectives (e.g. existing land use plans) or commitments (e.g. greenhouse gas emission targets) and, if necessary, identifies and explores options to ensure compliance, as a matter of due diligence prior to PPP adoption. Partidário (2009: 8) suggests that a compliance approach is “mainly a mechanism of control of compliance with the existing legislation and policy requirements.” Gunn and Noble (2009) and Aura Environmental (2009) report that the majority of SEAs carried out by government departments and agencies under SEA directives often resemble evaluations or appraisals of PPPs (see George, 1999), designed to ensure that certain environmental factors have been considered in the PPP's development, or in its approval, and that the PPP supports, or at least does not contradict, other legislation or policy goals and objectives. The 2010 SEA of Canada's federal clean transportation initiatives, for example, a suite of government programs to address climate change by reducing transportation-related emissions and encouraging the uptake of clean technologies (Transport Canada, 2014), emphasized the extent to which the proposed programs aligned with other government policy commitments, including the reduction of greenhouse gas emissions to targets identified in Canada's overarching Federal Sustainable Development Strategy (Environment Canada, 2010).

Compliance-based SEA can be undertaken early enough to verify the consideration of environmental factors and tier toward other existing PPPs, but the consideration of strategic options is inherently restrictive and often limited to adjustments to the proposed PPP, or to its implementation strategy, to better meet compliance objectives. Although the object of assessment may be a policy, the ability of compliance-based SEA to ultimately influence strategic directions is limited (Partidário, 2015), due to its focus on compliance through minor adaptations to a predetermined initiative. Noble (2013) reports that compliance-based SEA is often viewed by government departments and agencies as a due diligence or risk management tool – a means to ensure that a PPP is in compliance with other policy and political objectives prior to its proposal or implementation.

2.4.1.2. *EIA-like*

EIA-like SEA reflects what Partidário (2009) describes as the ‘marginal approach’, whereby completing the SEA and generating an SEA report are often seen as the end in itself. Whether the SEA report influences a PPP, or PPP implementation, is often removed from SEA and attributed to a separate review and decision-making process. The SEA is focused on the provision of information about the potential impacts of a proposed PPP, and typically follows standard project-based EIA design, including screening, scoping, assessment, mitigation, and monitoring (Noble and Gunn, 2015; Partidário, 2012; Noble and Storey, 2001; Sheate et al., 2001). A range of options is often considered, assessing relative impacts, opportunities, risks, and mitigation possibilities, but the options themselves are typically limited to alternative means to carrying out or implementing the proposed PPP, as opposed to exploring fundamentally different PPPs, futures, or facilitating the creation of new PPPs.

Verheem and Dusik (2011) argue that the traditional EIA-like approach to SEA is characteristic of SEA under the EU Directive, which reinforces a typical project-based approach to assessing and mitigating the potential impacts of PPPs. Emphasis is placed on “the assessment of certain effects of plans and programs on the environment”, promoting a project-like SEA (Dalal-Clayton and Sadler, 2005: 538). Similarly, under the Canadian Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals, an SEA is to be conducted when a proposal is submitted to an individual minister or Cabinet for approval; and implementation of the proposal may result in important environmental effects, either positive or negative (Privy Council Office and CEAA, 2010, sec 3.1). The Directive then goes on to describe a typical ‘EIA-like’ methodology for conducting the SEA, which includes traditional project-based guidance for assessing impacts based on frequency, duration, magnitude and irreversibility. New PPPs, or strategic directions that fundamentally differ from what is initially proposed, rarely emerge.

2.4.2. Strategy-based SEA

Strategy-based conceptualizations of SEA are rooted in more recent strategic thinking about the role of environmental assessment beyond the scope of traditional impact assessment (Partidário, 2012; Noble, 2008; Bina, 2007; Cherp et al., 2007); establishing strategic direction(s), versus (reactively) appraising or assessing the impacts of proposed PPPs. Emphasis is on PPP

formulation, identifying and evaluating alternative futures or development intentions incorporated in PPP initiatives, and determining the necessary institutional context, and transformations, to facilitate desirable outcomes (Noble and Gunn, 2015; Partidário, 2012; Fundingsland Tetlow and Hanusch, 2012; Partidário, 2009). Two basic approaches to strategy-based SEA are proposed: strategic futures, and strategic transitions.

2.4.2.1. Strategic futures

Under the strategic futures approach, SEA is viewed as a means to shape or even formulate strategic initiatives or PPPs, particularly within the context of land use policies or plans in resource regions or sectors. SEA is thus exploratory of a range of alternative futures geared toward achieving desired outcomes, while taking into account the risks, opportunities, and implications of each. Increasingly referred to as ‘regional SEA’ (Fidler and Noble, 2013; CCME, 2009; Gunn and Noble, 2009), the focus is on devising and assessing the potential implications of alternative future scenarios or development strategies and outcomes; evaluating the potential risks and opportunities associated with each (Cherp et al., 2007; Bina, 2003); and identifying a strategic direction or preferred course of PPP action (CCME, 2009; Noble, 2008). Alternatives or strategic options, incrementally or fundamentally different in nature, are created and explored as possible pathways to help identify future outcomes and choose a preferred strategic direction, considering the consequences and responses under different circumstances. This typically involves some consideration of what may happen, what is most likely to happen based on current PPPs or development trajectories, and what we would prefer to happen from a broader sustainability perspective (Gunn and Noble, 2015). The SEA is often explicitly designed to tier forward, influencing planning actions or other next-level decisions concerning development initiatives, including project EIA. The strategic futures model is based on the notion that SEA is most influential when approached as a “plan shaper” rather than as a plan “fine-tuner” (SEPA, 2011), and in some instances SEA even becomes the planning process and the SEA document the plan itself (Noble, 2008; Retief et al., 2008).

Applications of SEA that reflect the strategic futures model are emerging in international practice, and they are often closely-linked with land use or spatial planning initiatives (Gunn and Noble, 2015); for example, applications to regional transport planning in New Zealand

(McGimpsey and Morgan, 2013). In the Canadian context, this approach to SEA has gained considerable traction (Chetkiewicz and Lintner, 2013), often framed as a collaborative initiative and/or adopting spatial and analytical models to explore alternative development futures. Examples include a recent regional SEA to identify alternative industrial growth trajectories and subsequent impacts and management needs in Alberta's oil sands, as a means to shape development under the provinces existing land use framework and direct future resource development initiatives (ESRD, 2014). The Alberta case was modeled, in part, after an earlier initiative in neighboring Saskatchewan, where SEA was also used to explore alternative land use futures, and help establish a preferred strategic direction for land use and biodiversity conservation, but in this instance the SEA substituted for the lack of a regional planning process and the SEA document became the regional land use plan (Noble, 2008). Common to these initiatives, and characteristic of future-based approaches, is the desire to create more sustainable regional land use policies and plans; integrate stakeholders in the design, evaluation and selection of preferred development futures; ensure the consideration of cumulative environmental effects; and provide strategic oversight to land use and development decisions, particularly project EIA. The majority of SEA applications under the strategic futures model occur external to directive-based SEA — often as ad hoc or one-off assessments (Noble and Gunn, 2015; McGimpsey and Morgan, 2013; Noble, 2008).

2.4.2.2. Strategic transitions

The strategic transitions approach to SEA has less to do with the assessment of impacts and scenario planning, and even the assessment of PPP options per se, and is focused on the institutional environment surrounding strategic initiatives and the conditions that either enable, or constrain, their success. The basic premise is that, beyond being a valuable tool that aims to integrate environmental issues into PPPs and decisions, SEA can enable a better understanding of the policy and institutional context of strategic initiatives, including PPPs, and influence institutional and governance transitions toward more sustainable outcomes (Partidário, 2012). Beyond the identification and exploration of strategic options or futures, SEA prioritizes the decision-making process, attempting to understand its complexity, and how environmental and sustainability issues can be constructively built into institutional arrangements, governance, and decision-making systems to ultimately achieve desired futures (Partidário, 2015). Consider, for example, the need for a new or renewed climate change policy or strategy. SEA could be applied

to ensure that the newly proposed policy is in compliance with other policy and regulatory priorities (i.e. compliance-based SEA), or to assess the potential social, economic or emissions-based impacts of the strategy and alternatives for its implementation (i.e. EIA-based SEA). Additionally, SEA can play a more strategic role —influencing the climate change policy development process (i.e. strategic futures SEA); and also identifying opportunities for institutional innovations, and facilitating changes in governance or decision-making cultures that are needed to ensure the successful formulation and implementation of the climate change policy or strategy (i.e. strategic transitions SEA).

Strategic-transitions thus represents a significant shift in how SEA is typically approached, focused on assessing the complex institutional arena and governance conditions of decision processes that either enable or constrain successful PPPs, while creating new policy windows of opportunity (Kingdon, 1995) to influence PPP directions and decisions (Partidário, 2015; Partidário, 2012; Fundingsland Tetlow and Hanusch, 2012; Jiliberto, 2011). SEA is conceptualized as a driver of fundamental change in decision making structures and institutional arrangements (Kirchhoff et al., 2011). There are far fewer examples of this model of SEA in practice than either the strategic futures or the traditional IA-based approaches, but there is some evidence of the ability of SEA to serve a much more strategic role than initially conceived. In the case of Portugal's National Transmission Grid (NTG) development plan, 2007, for example, SEA was used to facilitate the planning process and NTG concept design; to identify and evaluate environmental and sustainability issues to guide the plan's technical and strategic options; and to support decisions on solutions for the NTG's evolution (Partidário et al., 2010) — reflecting a strategic futures approach. However, not only did the SEA provide the niche to identify a new design and NTG opportunity not previously considered as part of the NTG planning process, which was subsequently determined to be the preferred option for expanding the NTG, it also provided a governance framework and guidelines for follow-up of planning, management and monitoring actions — reflecting a strategic transitions approach. Transitions in policies, society, or technology, are typically nonlinear, complex, and multi-level. To adopt Geels (2011) characterization of a multi-level perspective for analyzing transitions toward sustainability, the strategic transitions model of SEA considers the interplay of niches, regimes, and the socio-political landscape:

- Niches are the spaces where innovations in PPPs emerge—ones that may significantly deviate from existing PPPs and norms, and are often the starting point for systemic change to influence strategic direction. SEA is a means to identify and test such innovations, providing ‘proof of concept’ for a strategic initiative, and identifying critical decision windows (see Partidário, 2012) for influencing decisions, and ultimately enabling transitions toward more sustainable options.
- Regimes are the institutional structures that create stability, and consist of the rules, interests, capacities, and competencies of actors, which largely determine the direction and extent of strategic change, or transition, possible. Institutional challenges, more so than data or methods, often pose the most significant constraints to realizing strategic initiatives (Noble and Gunn, 2015; Slunge et al., 2009). SEA is a means to determine the supports and capacities that exist, or that are needed, to successfully implement and sustain strategic initiatives, and the potential barriers or limiting factors.
- The socio-political landscape is the wider exogenous environment, representing those emergent factors or conditions (Cherp et al., 2007) that influence both niches and regimes and thus the longer-term viability of strategic initiatives — for example, political ideologies, societal values, climate change, and macro-economic drivers (see Gachechiladze et al., 2009). SEA is a means to identify and explore potential exogenous variables, and their implications, to ensure the design of more resilient PPPs and strategic initiatives.

The strategic-transitions approach also reflects a deliberative governance approach to SEA, focused on long-term thinking as a framework for shaping short-term policy and initiatives. It facilitates innovations and transformations in PPPs and strategic directions (Cherp et al., 2007), effectively capitalize on emerging opportunities (Caratti et al., 2004; Thérivel, 2004). Conceptualized as a transition management approach (Loorbach, 2010), SEA provides the basis for understanding institutional coordination and capacities and, where relevant, the development of transition arenas, agendas and goals, and the fostering of successful PPPs that can influence the politics of decision-making.

2.5 Research Directions for Advancing SEA

There is no one conceptualization of SEA that is ‘best’ for all decision contexts; rather, each approach to SEA is necessary and valuable—each serves a different function, and each has its relative strengths and limitations. Over the past 25 years of SEA development various authors have reported the flexibility of SEA as one of its strengths, referring to SEA as “one concept, multiple forms” (Verheem and Tonk, 2000: 177), an “overarching concept” (Brown and Thérivel, 2000: 186), and “a family of approaches” (Dalal-Clayton and Sadler, 2005:12); arguing that as “a framework of activities” SEA is able “to become flexible, diversified and tailor-made to the decision-making process” (Partidário et al., 2008: 219). At the same time, Pope et al. (2013: 3) suggest that “something of a crisis of confidence in SEA practice has become evident in recent years.” As such, advancing SEA understanding, and better connecting SEA concepts and principles to practice, requires that research advance on four main fronts — presented here in order of increasing importance.

First, scholars must not lose sight of regulatory practice. It is unlikely in the near future that a wholesale shift in national directives and legislation away from IA-based SEA will occur, thus scholars should not completely abandon IA-based conceptualizations of SEA. The study agrees with Partidário (2015: 1), and others, in that there is a “need for research on strategic thinking in SEA to enable sustainability”, but also argued here is that IA-based SEA tradition still holds value. Though deeply rooted in EIA, IA-based conceptualizations of SEA benefit from the ability to draw on well-established institutional arrangements to implement, monitor and enforce SEA processes. Although the impacts of IA-based SEA are often considered short-term and realized, at best, through PPP modification (van Buuren and Nooteboom, 2009), several scholars have argued that IA-based SEA can also incrementally direct decision- making toward longer-term sustainable development goals and objectives (Wang et al., 2009; Dalal-Clayton and Sadler, 2005; Thérivel and Minas, 2002). Acharibasam and Noble (2014), for example, report some evidence of IA-based SEA helping realize broader institutional goals and objectives beyond the scope of the PPP at hand; stimulating new research directions or needs; and improving an agency's overall awareness of their actions. The majority of research reporting on IA-based SEA cases, as well as SEA audits (e.g. Bregha, 2011; CESD, 2008), has focused on whether SEA helps achieve the short-term objectives of integrating environmental considerations into a PPP, or enhancing the approval

of a PPP. Though important, more empirical research is needed to understand and report the longer-term, indirect impacts or outcomes of SEA beyond the object of assessment — the PPP itself. In doing so, the value of SEA under IA-based approaches may be more apparent to those government agencies and departments charged with its implementation (Acharibasam and Noble, 2014; Bregha, 2011).

Second, a diversity of methods and tools is needed to support the full range of SEA approaches and the variety of PPPs and strategic issues that SEA is intended to address. Geneletti (2015) argues that one of the main gaps in current SEA research is the limited development of analytical methods that are tailored to plans, programs and policies, resulting in SEA analytical content that is described as disappointingly low. SEA research has tended to focus on the relationship of SEA to other types of assessment tools, the analysis of practice through case studies under IA-based SEA systems, the promotion of broad SEA principles, and discussions about the nature of SEA and its flexible nature and adaptive forms (Geneletti, 2015; Pope et al., 2013; Fischer and Onyango, 2012; White and Noble, 2012). Technical guidance on SEA application, however, specifically methods and tools to facilitate its application and ensure SEA's input to policy and planning processes, has been overly generic, assuming a one-size-fits-all approach, and that those practicing SEA understand what types of methods are best-suited for different approaches to SEA (Noble et al., 2012). The study agrees with Geneletti (2015), that SEA could benefit from the development of more analytical-based methods; but, considering the multiple approaches to SEA, it is further suggested that methods and tools are needed that are suitable to each of the different purposes of SEA, along with appropriate guidance for practitioners on how and when to implement them.

Third, the notion of tiering – SEA informing, if not directing, next level assessments and decision processes – was once a common theme in the SEA literature (Thérivel, 2010; Fischer, 2007; João, 2005; Noble, 2000). In recent years, however, “tiering has been notable by its absence”, leading Pope et al. (2013: 3) to suggest that tiering in SEA “potentially remains an unresolved concern.” Criticized by many as an idealistic conceptualization of how SEA operates within real world situations (Bina, 2007; Nitz and Brown, 2001; Nooteboom, 2000), the argument here is that if SEA cannot relate to ‘next-level’ decisions then it remains an isolated exercise — generating strategic results with no one to tell (see Parkins, 2011). There are some examples of

effective tiering arrangements in SEA (White and Noble, 2013b; Gachechiladze et al., 2009; Sánchez and Silva-Sánchez, 2008), but it seems to be a forgotten attribute of what makes SEA strategic. If SEA of any approach is to be influential in influencing decisions and actions, the notion and practice of tiering in SEA, particularly the institutional arrangements needed to ensure effectively tiered processes, needs to be revisited by the scholarly community.

Finally, and most importantly, the scholarly community must provide clearer direction on how to complement IA-based SEA with a much more strategic approach to SEA — one that helps facilitate strategic innovations in PPP formulation and drives transitions in governance and decision-making processes. Inflexible institutional arrangements and the limited capacities for strategic thinking and transformative approaches have long been major challenges to SEA's success (Gunn and Noble, 2015; Gachechiladze et al., 2009). The concept of SEA has indeed evolved from solely an EIA paradigm to a mechanism to influence political change (Fundingsland Tetlow and Hanusch, 2012), but there is resistance to move away from the comfort of EIA thinking (Lobos and Partidário, 2014). Part of the reason for this resistance can be attributed to the lack of understanding of what a more strategic approach to SEA looks like, how it can be implemented, and its relationship to policy and strategic decision-making processes. SEA needs to be reconceptualized as a more strategic process — one that identifies and tests innovations in PPPs, and facilitates the necessary transitions in institutional environments to ensure PPP implementation and long-term success. The problem is that limited attention has been given to understanding the strategic nature of decision-making processes (Jiliberto, 2011); guidance on how SEA relates to the strategic processes it is intended to inform is limited (Noble and Gunn, 2015; Pope et al., 2013); and there are few reported examples of success (Partidário, 2009). Conceptualizing SEA as a process that facilitates strategic transitions is both useful and necessary, and researchers must continue to challenge current governance structures and institutional arrangements, but conceptualization alone is insufficient to ensure SEA's uptake and implementation in the public decision-making arenas. Practical guidance is needed on how SEA can be meaningfully integrated into strategic decision processes, and how strategic decision processes need to adapt to take full advantage of the promises of SEA.

2.6 Conclusion

Scholarly thinking about the nature and scope of SEA has evolved considerably over the past 25 years; from SEA as an impact assessment tool suitable to PPPs, to SEA as a means to influence the development of strategic initiatives and facilitate innovations and transitions in PPPs, governance systems, and decision processes. Attempts to develop distinct conceptual approaches to understanding and applying SEA have led to multiple interpretations and a diversity of understandings and expectations about what SEA is and what it can and should deliver. This paper revisited the strategic nature of SEA, and suggested a conceptualization of SEA as a multi-faceted and multi-dimensional assessment process. It was suggested that SEA is best conceptualized as a series of approaches operating along a spectrum from less to more strategic — characterized as IA-based at one end, reflecting the traditions of EIA, and strategy-based at the other, capturing more recent thinking about SEA as a process for driving institutional change and influencing decision making processes. There is no one approach to SEA that is best for all decision contexts, and research is needed to further advance the effectiveness of the multiple forms that SEA may adopt in different decision contexts. However, realizing the full potential of SEA requires a much more strategic approach than what is currently evident in practice—an approach focused on assessing the complex institutional arena and governance conditions of decision processes that either enable or constrain successful PPPs, while identifying and even creating windows of opportunity to influence PPP directions. Conceptualizing SEA as a strategy-based process is important to help direct scholarly thinking on the subject, but translating strategy-based SEA into practice requires the development of practical guidance and demonstrated application through empirical based research.

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CHAPTER THREE

Effectiveness of Strategic Environmental Assessment in Canada under Directive-based and Informal Practice

This chapter reflects on the effectiveness of SEA in Canada both under the federal Cabinet directive and informal or non-directive-based applications. The aim is to explore the diversity and state of SEA practice, highlight the multiple dimensions of SEA effectiveness and identify important lessons for shaping the direction of SEA. The manuscript has been published in a peer-reviewed special issue of *Impact Assessment and Project Appraisal*³.

Abstract

This paper explores the diversity of strategic environmental assessment practice (SEA) in Canada and lessons for improving the effectiveness of SEA. There are multiple dimensions to effectiveness, but core to SEA effectiveness is its strategic nature. SEA under the Canadian federal Cabinet directive is approached largely as an impact assessment tool, and effectiveness evaluated based on compliance. Practice is entrenched in project-based assessment principles, but with no mandatory provision for public engagement, which limits the potential effectiveness of SEA. External to the Cabinet directive, across Canada's provinces and territories, SEA and SEA-like practices are occurring in diverse forms and represent the more advanced and exemplary cases. A common challenge to SEA effectiveness, however, is that applications are often limited by their ad hoc nature and disconnected from any larger and formal system of open and integrated policy, planning, and development decision making.

³ Noble, B., Gibson, R., White, L., Blakley, J., Nwanekezie, K. & Croal, P. (2019). Effectiveness of strategic environmental assessment in Canada under directive-based and informal practice. *Impact Assessment and Project Appraisal*, 37(3-4), 344–355

3.1 Introduction

Strategic environmental assessment (SEA) was first introduced with a project environmental assessment (EA) mindset – a tool to assess the impacts of proposed policies, plans and programs (PPPs) (Wood and Djeddour, 1989). Increasingly, SEA is promoted as an instrument to also shape the formulation and implementation of PPPs, to provide for a better understanding of the complex institutional arenas that influence decision processes, to ensure actions that lead to informed development choices, and to facilitate transitions toward sustainable outcomes (Jilberto, 2011; Partidário, 2015). Many authors have thus suggested that SEA operates along a continuum, from the less (i.e. programmatic assessment) to the more (i.e. policy transitions) strategic (Fischer, 2001; Noble and Nwanekezie, 2017), and that SEA is flexible ‘leaving ample space for different interpretation’ (Fischer, 2002, p. 83). Perhaps as a result there is a broad and conflicting literature on SEA (Sinclair et al., 2017), which makes understanding its effectiveness a challenging task.

Effectiveness is a long-standing issue in impact assessment (Chanchitpricha and Bond, 2013) and has gained considerable traction in SEA research. With few exceptions, most reviews of SEA effectiveness have examined procedural effectiveness – i.e. whether SEA meets certain requirements or ‘good’ practices (Acharibasam and Noble, 2014) – typically under formal directives, approaching SEA as an instrument for assessing PPP impacts. As discussed in the editorial to this Special Issue of *Impact Assessment and Project Appraisal*, there are many more dimensions to effectiveness, including substantive, transactive, normative, and learning, to name a few, and thus many interpretations of what constitutes effective SEA. However, core to any evaluation of SEA effectiveness is the consideration of the underlying features that define its *strategic nature*.

For SEA to be effective it must reflect the most basic, defining attributes of a strategic assessment. Though captured in many ways by different authors, SEA’s most commonly noted strategic attributes can be summarized in four points (Noble and Nwanekezie, 2017). First, strategic is not solely about the object of assessment (i.e. PPPs), rather it’s about ways of thinking about initiatives (Partidário, 2012), the enabling conditions for PPPs to proceed in a more sustainable way, and steering or directing their design and implementation. Second, SEA is about building a more sustainable and resilient future (Slootweg and Jones, 2011), meaning that the

exploration of alternatives or strategic options is core (Gonzalez and Therivel, 2014). Third, key to effective SEA is how it relates to the planning and decision processes it is intended to inform (Pope et al., 2013), and its ability to provide and consider guidance both from higher to lower and lower to higher tiers of decision making (Sinclair et al., 2017). Finally, effective SEA is integrated within the institutional, legislative and administrative contexts in which PPPs are formulated and implemented, thus informing and improving institutional decision-making culture (Hilding-Rydevik and Bjarnadóttir, 2007).

This paper reflects on the effectiveness of SEA in Canada both under the federal Cabinet directive and informal or non-directive-based applications. The objectives are to explore the diversity and state of SEA practice, highlight the multiple dimensions of SEA effectiveness and identify important lessons for shaping the direction of SEA. In the sections that follow we provide an overview of SEA in Canada, followed by a synopsis of SEA evaluations under the federal Cabinet directive. We then present five case study snapshots, illustrating different SEA applications, and conclude with observations and recommendations about the strategic nature of SEA that underscores its effectiveness.

3.2 A Brief Overview of SEA in Canada

Environmental assessment in Canada is legislated federally for certain types of initiatives, but each province and territory has its own separate system of EA. At the federal level, SEA was formally established in the early 1990s by way of a Cabinet directive and separate from project-based reviews, making it one of the ‘first of the new generation of SEA systems that evolved in the 1990s’ (Dalal-Clayton and Sadler, 2005, p. 61). The *Environmental Assessment Process for Policy and Program Proposals* was overseen by the then Federal Environmental Assessment Review Office and later the Canadian Environmental Assessment Agency. In 1999, Canada strengthened its SEA commitment with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*, requiring a SEA when a federal department or agency submits a PPP proposal to a minister or Cabinet for approval, and when the PPP implementation may result in important environmental effects. It was not until 2004 that federal departments and agencies were required to prepare a public statement whenever a SEA had been completed. The most recent update to the Cabinet directive was in 2010, linking SEA to the *Federal Sustainable*

Development Act, establishing that each federal minister is responsible for ensuring that PPPs are consistent with the Federal Sustainable Development Strategy and for reporting on department and agency performance under the strategy.

SEA under the Cabinet directive is approached largely as an impact assessment tool. Emphasis is placed on ensuring that environmental issues are considered at the early stages of decision-making. SEA guidance and application, however, are deeply entrenched in traditional project-based EA principles, with the exception that SEA under the directive has no mandatory provision for public engagement. Parks Canada's (2012) draft guidance on SEA, for example, describes SEA and EA as adopting similar methods and reporting structures but the difference being that SEA is applied at an earlier stage of planning and decision making and encompasses a broader and less detailed set of environmental considerations. Further, the Cabinet directive applies only to national-level PPPs; it does not apply to matters under provincial or territorial jurisdiction. To help expand the scope of SEA application, the Canadian Council of Ministers of the Environment (CCME), an intergovernmental forum for joint action on environmental issues, released a principles and guidance document on 'regional' SEA in 2009, arguing that SEA under the Cabinet directive has been slow to evolve and that its value added has not been fully realized (CCME, 2009). There are no formal systems of SEA at the provincial or territorial level, but many SEAs or SEA-like applications have occurred – some of which are the most advanced and exemplary examples of Canadian SEA.

3.2.1 Effectiveness of SEA under the Cabinet directive

There is no public registry for SEAs, making it difficult to know the number completed and the quality and effectiveness of application. The 2015 report of the Commissioner of Environment and Sustainable Development (CESD) on implementing the Federal Sustainable Development Strategy concluded that ministers were not provided with information about the potential environmental effects for most PPP proposals submitted (OAGC, 2015). The conclusions are not surprising – a previous review of SEA, prepared for the CCME, found that many applications of SEA 'have been disappointing in light of broader SEA good practice principles and criteria,' and that the better examples of SEA have occurred under, often informal, regional planning initiatives and commissioned environmental studies (Noble 2009, p. 66).

Subsequent audits of SEA under the Cabinet directive have shown signs of improvement, though these audits are based largely on procedural compliance and focus on whether the directive was applied rather than on the value of the efforts and outcomes (Table 3.1). Between 2011 and 2016 the CESD audited 15 of the 26 federal departments and agencies that are required to contribute to the Federal Sustainable Development Strategy. Of the 2,820 PPP proposals submitted for approval, only 10% were subject to SEA (OAGC 2015, 2016, 2017). The 2018 audit reviewed all 26 organizations and found that 93% of proposals submitted to Cabinet were assessed (OAGC, 2018). This represents a significant improvement in compliance, likely owing to recommendations emerging from audit results; but compliance does not imply effectiveness. Compliance is increasing amongst federal organizations, but the lack of documentation on SEA application, public reporting of results and follow-up reporting has been a persistent weakness. Understanding the effectiveness of SEA under the directive is challenging given the confidentiality of the issues assessed, the non-participatory approach to SEA and the limited public availability of full SEA reports.

Table 3.1: Synthesis of 2015-2018 federal SEA performance audits conducted by the auditor general of Canada, commissioner of environment and sustainable development.^a

Performance metrics	2015 Audit ^b (2011-2014)	2016 Audit ^c (2013-2015)	2017 Audit ^d (2013-2016)	2018 Audit (2017)
Applying the Cabinet directive ^d	PPP proposals: 1,955 Directive applied: 115 (6%)	PPP proposals: 506 Directive applied: 98 (19%)	PPP proposals: 359 Directive applied: 80 (22%)	PPP proposals: 283 Directive applied: 263 (93%)
Conducting preliminary scans of PPP proposals, when the directive was applied	Ministers were not provided with information about potential environmental effects.	Environmental effects considered, and the scope of assessment commensurate with the level of anticipated effects.	Environmental effects considered, and the scope of assessment commensurate with the level of anticipated effects	Environmental effects considered, and the scope of assessment commensurate with the level of anticipated effects.
Timelines	From a sample of 34 preliminary scans reviewed in detail, only 13 proposals were assessed early. For most proposals it was difficult to determine due to lack of documentation.	From a sample of 31 preliminary scans reviewed in detail, 8 were conducted early. For most proposals it was difficult to determine due to lack of documentation.	From a sample of 43 preliminary scans reviewed in detail, 5 were conducted early. For most proposals it was difficult to determine due to lack of documentation.	Not reported in this audit.
Public reporting	No organizations consistently reported on their SEA practices or prepared public statements.	Parks Canada was the only organization that conducted detailed SEAs and issued public statements.	All but one organization reported each year on its SEA practices	Not reported in this audit.
Meeting Sustainable Development Strategy (SDS) commitments	No organizations made satisfactory progress toward meeting SDS commitments	Over 50% of the preliminary scans reviewed considered SDS goals and targets, but only Parks Canada issued public statements on how PPPs affected affect progress toward SDS goals.	90% of the preliminary scans reviewed considered SDS goals, but only Public Health Agency of Canada made satisfactory progress in meeting SDS commitments to strengthen their SEA practices.	All 26 organizations made satisfactory progress in strengthening their SEA practices, implementing recommendations from previous audit reports.

^a The 2018 audit reported on proposals submitted to Cabinet but excluded proposals submitted to individual ministers for approval.

^b Federal entities included in audit: Agriculture and Agri-Food Canada, Canada Revenue Agency, Canadian Heritage, Fisheries and Oceans Canada.

^c Federal entities included: Department of Justice, National Defence, Parks Canada, Public Services and Procurement Canada, Veterans Affairs Canada.

^d Federal entities included: Atlantic Canada Opportunities Agency, Canada Border Services Agency, Canada Economic Development for Quebec Regions, Public Health Agency, Public Safety, Western Economic Diversification Canada.

^e Results include number of PPP proposals submitted to an individual minister for approval, to Cabinet, and submissions to Treasury Board.

3.3 SEA Snapshots from Practice

Below we present five cases of SEA external to the Cabinet directive that serve, at least partially, to unveil Canadian SEA practice given the limited access to Cabinet directive SEAs. The cases were purposefully selected to illustrate the diversity of practice and the multiple dimensions of effectiveness. The cases are illustrative, not analytical and draw on documentation coupled with our insights from having been involved in different capacities (as practitioners, researchers and expert reviewers) in the cases presented.

3.3.1 Wood Buffalo SEA: Substantive perspective

At 44,807 km², Wood Buffalo National Park (WBNP) is the largest national park in Canada and a UNESCO World Heritage Site, owing to its outstanding universal values (OUV) including salt plains, gypsum karst, Great Plains boreal grasslands, migratory waterfowl and the Peace-Athabasca Delta – the largest inland freshwater river delta in North America. In 2014, the Mikisew Cree First Nation (MCFN), whose traditional territory includes WBNP and the Delta, petitioned the World Heritage Committee to have WBNP added to the List of World Heritage Sites in Danger (IEC, 2018). In 2015, the World Heritage Committee asked Canada to undertake a SEA of the cumulative impacts of development (e.g. hydroelectric dams, oil sands, mining) on WBNP OUVs (UNESCO, 2015). Parks Canada initiated and led the SEA, supported by a consulting team. The SEA began in December 2016 and was completed May 2018. The overall goals for the SEA were to protect the OUVs of WBNP, to maintain or restore its ecological integrity, and to maintain or restore Indigenous ways of life in WBNP. The specific objectives for the SEA included to: i) improve the identification, recognition and management of cumulative effects impacting WBNP; ii) inform the scope and support the effectiveness of project-level EAs; and iii) influence the development and implementation of an action plan for the protection of WBNP's world heritage values.

The SEA was the first attempt to quantify the cumulative impacts of surrounding development on WBNP, with a primary focus on the Peace-Athabasca Delta (IEC, 2018). The SEA developed a set of desired outcomes to operationalize OUVs – for example: ensuring that flow regimes and water quality maintain the ecological functioning of the Delta; and Indigenous

peoples have access to the Delta and are confident enough in the health of the Delta to maintain traditional use through hunting, fishing, gathering and cultural activities. Using these desired outcomes, a set of valued components (e.g. seasonal flows, sediment loads, access) were established and used to assess cumulative impacts. Based on the pathways of effects and trends observed for valued components from climate change and past industrial development, it was determined whether desired outcomes for the Delta were being met.

The SEA showed several adverse baseline trends, for example: less variable flow rates on the Peace River due to increased flow regulation and climate change; and reduced seasonal flows in the Athabasca River due to climate change and water withdrawals. It was determined that none of the desired outcomes for the Delta was being met. Future conditions were then projected, considering reasonably foreseeable development around WBNP in conjunction with climate change. It was determined that none of the desired outcomes for the Delta were likely to be met and that its world heritage value was declining. There were 44 recommendations made to address or mitigate adverse trends, including the development of a water release strategy from hydroelectric projects in neighboring jurisdictions and a water balance assessment for the Athabasca and Peace Rivers (IEC, 2018).

The SEA was designed to facilitate several substantive outcomes for WBNP, including trickle down guidance for project EA – e.g. effects management for the Frontier oil sands project, located 30 km south of WBNP. SEA results were provided to the federal EA review panel for the Frontier project, who are expected to issue recommendations in late 2018 on whether the proposed project will proceed. Parks Canada is also developing an action plan that builds on the SEA's output. The action plan will address Indigenous partnerships in park management, environmental flows, monitoring, project EA and oil sands mine tailings pond risk assessment, among others. The action plan will be jointly implemented by the governments of British Columbia, Alberta, Northwest Territories and Canada.

A limitation to the SEA was that initiating new studies was not within the terms of reference. The SEA relied on existing information, meaning considerable uncertainty in many aspects of the assessment. Information collected from project EAs also did not 'tier-up' effectively to the SEA, given that most had not assessed cumulative effects on WBNP world heritage values.

This meant a disconnect between existing project EAs as input to the SEA; however, it helped ensure that the SEA provided clear guidance on cumulative effects for future projects, including the desired outcomes and valued components for the Delta.

3.3.2 Fundy Tidal SEA: Pluralist perspective

In 2007, the province of Nova Scotia proceeded with a SEA of offshore renewable energy for the Bay of Fundy. The SEA was initiated in response to pressure to permit the development of tidal energy. The SEA was carried out in cooperation with the province of New Brunswick, and in consultations with the federal government, as all three jurisdictions have some roles to play in regulating energy projects in the Bay of Fundy. The SEA is an example of inter-jurisdictional cooperation in assessment, particularly between provinces. Nova Scotia and New Brunswick cooperated on gathering background information to inform their respective processes through a jointly-commissioned report. Each jurisdiction then conducted its own process and made its own separate decisions. The role of the federal government could have been much stronger, particularly given its regulatory role with respect to fisheries and transportation in the Bay of Fundy. It essentially played an observer role, even though it was requested by the provinces to become more actively involved (Doelle, 2009, 2015).

The Nova Scotia SEA process was placed in the hands of an independent organization, the Ocean Energy Environmental Research Association (OEER), a research collaboration among local universities funded by the province. A total of \$300,000 was made available for the SEA, and OEER was given one year to complete its work. OEER designed a process that consisted of: i) an interactive website to provide information and seek input throughout the SEA, and a regularly published newsletter; ii) community forums, informal meetings with stakeholders and regular meetings of an SEA steering committee; iii) a consultant to serve as the SEA process-lead, chair public meetings and write the assessment report under OEER's direction; iv) two rounds of participant funding for community-based research and to provide opportunities for community groups to discuss the potential arrival of this new industry; v) a report on the state of knowledge of the proposed technologies, the receiving environment and potential interactions, and the potential socio-economic impacts of renewable energy development; and vi) a roundtable of

interested stakeholders that met with members of the OEER sub-committee monthly to identify issues and seek consensus recommendations (AECOM, 2014; OEER, 2008; Doelle, 2009).

Early efforts to engage the public were designed primarily to identify key issues to be addressed through the SEA. The SEA steering committee decided that the scope of the SEA would be limited geographically to the Bay of Fundy and substantively to ocean renewable energy. The process otherwise remained open to any issue relevant to informing decisions about whether, where, and under what conditions offshore renewable energy should be permitted or encouraged in the Bay of Fundy. The outcome of the SEA was a consensus report of the stakeholder roundtable. Consensus was possible despite the short time frame because all participants shared full control over the scope of the SEA, the process and the outcome. The process was assisted by a general recognition that while tidal energy posed risks to existing uses and natural systems, it offered the potential to provide a long term, sustainable supply of energy (Doelle, 2009).

The SEA focused on how to understand and minimize negative impacts, how to determine whether tidal energy would offer net long-term benefits to the province, and how to ensure a fair distribution of impacts, benefits, risks and uncertainties. The SEA concluded that tidal development should be guided by sustainability principles developed specifically for the Bay of Fundy. A key principle was that development of a tidal energy industry should proceed incrementally, and that key issues are addressed at each step before deciding whether to proceed to the next level of development. As a starting point, the SEA concluded that pilot projects could be tested in the Bay of Fundy under specified conditions – including that the pilots be used to fill information gaps about potential impacts. A second key condition was that turbines tested at this stage could not remain in the water for more than 2 years (OEER, 2008; Doelle, 2009).

A key success of the SEA was that it engaged those affected and interested early and throughout the process. The combination of public meetings at the start and the conclusion of the process, detailed stakeholder engagement throughout and the commitment to inform and seek the support of those represented by roundtable members, resulted in a consensus report that received broad support – even from sectors that were initially opposed to tidal development. Key limitations included funding and time, and the failure to continue the public engagement effort through the implementation of the recommendations (Doelle, 2009).

3.3.3 Baffin Bay-Davis Strait SEA: Knowledge and Learning perspective

Change is not new to the Arctic. Nunavut Inuit have developed and used new tools and adapted to changing ways of life over the last two centuries. But with climate change and growing industry interest in finding oil and gas resources on or in Nunavut's offshore areas, the territory is facing accelerated change. Nunavut's oil and gas potential is attracting national and international attention. Estimates of undiscovered and discovered conventional resources range from 18 to 267 billion barrels of oil and 180 to 1,228 trillion ft³ of gas. Nunavut communities and the territory have little experience with the oil and gas industry. Oil spill response and environmental damage control in an Arctic setting are not yet fully developed or understood. Climate change is adding unknown risks to Arctic exploration and production, and the required capacity to manage oil and gas activity in Inuit and non-Inuit communities and at various levels of governments remains limited.

The Nunavut Impact Review Board (NIRB) was appointed by Indigenous and Northern Affairs Canada (INAC) (now Crown-Indigenous Relations and Northern Affairs Canada) to lead the SEA, scheduled for release in 2019. NIRB's SEA report will inform the INAC minister's decision regarding the oil and gas moratorium in Canadian Arctic waters, to be reviewed in 2021. The learning aspects of the SEA have been ongoing since 2015, when the Nunavut government hosted a multi-stakeholder summit to answer the question: Is Nunavut ready for oil and gas development? (Croal, 2015). The summit was held 3 years before the SEA's launch and provided a foundation for the transformational learning that is now part of the SEA process, namely that: i) SEA would be a valuable decision support and community engagement tool to identify issues that must be addressed before oil and gas exploration could be considered in the Baffin Bay and Davis Strait region; ii) more educating is needed on overlapping jurisdictional and transboundary issues concerning the federal and Nunavut governments, including links to land claims; iii) the potential impacts from seismic surveys and the potential benefits to communities must be better identified and explained to Nunavut communities; iv) communities, including youth, must be fully involved in all aspects of the debate concerning oil and gas exploration and development; v) Inuit Qaujimagatuqangit (IQ – traditional knowledge) must be respected and used in decision making; and vi) Nunavut stakeholders and regulators must be helped to learn by networking and meeting with organizations and individuals who have experience with the oil and gas sector (Croal, 2015).

Summit participants representing federal and territorial government regulators learned that Inuit communities need more information and knowledge about all aspects of oil and gas operations, especially the seismic industry. There is confusion about the potential effects of seismic on marine life, the benefits for local communities and the ability of seismic studies to detect oil and gas reservoirs. Regulators also learned that there is an immediate need for more education on the jurisdictional issues relating to land and marine management that would be affected by oil and gas development. Although the summit results, which served as a scoping document for the SEA, ensured that much knowledge generation and learning is occurring about oil and gas scenarios that may be suitable for Nunavut's environment, the extent of learning that is occurring through the SEA is constrained. INAC and NIRB are undertaking the SEA in absence of considering alternatives to oil and gas development – the SEA so far consists of an oil and gas scenarios analysis versus also alternative economic development futures. That said, the SEA has been instructive in informing stakeholders and regulators on what skills and competencies will be needed if an oil and gas industry is initiated, and facilitating learning about the what, why and how of an oil and gas industry in Nunavut. Individual and organizational learning is providing a necessary foundation from which to make informed decisions in the future concerning development options.

3.3.4 Manitoba Hydro Regional Cumulative Effects Study: Transactive perspective

Since the late 1950s, more than 35 hydroelectric generation, conversion and transmission projects have been developed in northern Manitoba by Manitoba Hydro, a provincially-owned electrical utility. The generating capacity of the current 15-dam hydroelectric complex is 5,228 MW, with a 695 MW project under construction. An additional 10 dams totaling 4,295 MWs are identified for potential development. In 2012, in its EA report on the Keeyask generating project, Manitoba Hydro (2018) reported that the regional environment had been substantially altered by past development. Concerned that future hydroelectric developments would be superimposed on this disrupted environment, the Manitoba Clean Environment Commission (CEC) (Manitoba CEC, 2004) and the Consumers Association of Canada (Gunn and Noble 2012) issued calls for a comprehensive, regional-scale strategic assessment of the region, inclusive of developments in other sectors such as mining and forestry, to establish a baseline for cumulative change and provide direction for future project reviews.

The Manitoba government initiated a Regional Cumulative Effects Assessment (RCEA) in 2014. The assessment was led by Manitoba Hydro in partnership with the Manitoba government and was completed in 2015. The RCEA is an unprecedented process in Manitoba and was an opportunity to assess the cumulative effects of past, present and future land uses and development in northeastern Manitoba. It emerged as an opportunity to demonstrate strategic leadership in determining a desired nature and pace for development and informing subsequent hydroelectric EAs and decisions. The influence of the RCEA on these activities will not be realized for several years, but insight into its current and potential transactive effectiveness is possible given the scope of the assessment. Although ostensibly intended to guide and help shape future practice and decisions, the RCEA's terms of reference did not explicitly call for a strategic approach; the assessment was retrospective in its analysis of environmental change. Many elements of good practice retrospective analysis were present for certain water and land-based study components (e.g. water quality, intactness), but attention to prospective analysis was absent. Without future-focused scenarios to help anticipate and respond to cumulative impacts (CCME, 2009), the value of the RCEA is primarily as a regional baseline for benchmarking future change. The challenge, however, is that at present the RCEA is not explicitly connected to either 'upstream' regional planning or 'downstream' project-based EAs through any formal institutional or regulatory framework.

Previous EAs in the region were found to be disjointed, with few common baseline indicators used across assessments to understand the legacy effects of development and to assess and monitor the cumulative effects of proposed development (Noble et al., 2017; Hackett et al., 2018). The RCEA in part addresses this challenge, providing new information that can translate to greater consistency in assessment data and indicators across EAs, and thus improved understanding of cumulative effects. The assessment included seven wildlife species (caribou; moose; beaver; seals; polar bears; Lake Sturgeon; beluga whales) and eight broader components, such as intactness, water quality and terrestrial habitat; but historical and current data were scarce or absent for most components. Other potentially important components to understanding cumulative change, such as species diversity or cultural ecosystem services, were not captured. The RCEA and public hearings also proceeded largely in absence of public consultation and Indigenous engagement (NHFC, 2017; CEC, 2018). This is a major limitation to the assessment

(Blakley and Olagunju, 2017) and, arguably, will be a constraint on the transactive effectiveness of the RCEA regarding the acceptability and interpretation of the baseline information generated for use in future EAs and decision processes.

3.3.5 Federal Climate Change SEA: Normative perspective

Canada is preparing to initiate a potentially groundbreaking SEA on the implications of its climate change mitigation commitments for project assessments (Government of Canada, 2018). While this assessment has been promised and is poised to play an important role in both climate policy and SEA practice in Canada, it has not yet been formally mandated and established. The discussion here is therefore focused on the SEA needs to be faced, rather than the accomplishments delivered. The SEA is needed to provide project-level guidance under pending federal assessment legislation. Under the new *Impact Assessment Act*, expected to be in force by mid-2019, decision-makers must consider the extent to which each assessed project ‘contributes to sustainability’ and ‘hinders or contributes to’ meeting Canada’s climate commitments. However, Canada, like many other countries, has not yet translated its *Paris Agreement* climate commitments into an adequate suite of specific policies, pathways, budgets and other directives for compliance. A strategic-level assessment of the climate commitment implications for project decision-making will have to fill a large gap in analysis and understanding, as well as law and policy, between Paris and projects.

As a party to the *Paris Agreement*, Canada is committed to do its share to limit global average temperature rise to well below 2°C relative to pre-industrial levels and to pursue efforts to limit the increase to 1.5°C in the context of sustainable development. To determine what that entails for decision makers, project proponents and other project assessment participants, the climate commitments for SEA will need a mandate and capacity to answer three core questions: i) what do the Paris Agreement’s temperature goals imply for global and Canadian greenhouse gas (GHG) reduction targets in light of ‘fair share’ principles and feasible pathways; ii) what is needed to raise Canadian climate change mitigation ambitions to the Paris Agreement level, and ensure sufficiently strengthened and clarified targets, delineated pathways (e.g. for activities in specified climate-significant sectors), GHG pricing regimes, and introduction or revision of other applied tools to inform assessments of particular undertakings; and iii) how should these needs and tools

be translated into well-specified and authoritative requirements (e.g. a suite of climate tests) for effective application under assessment law?

The SEA will have to be established and operate in a manner that is open, expert, consultative and independent. Given the tight timeline to provide guidance for application as soon as mid-2019, the assessment will also need to proceed with dispatch. That may entail a staged or even continuous assessment, the first phase of which aims only to deliver interim working guidance, leaving more specific objectives and analytical approaches to be elaborated later. For practical application, even the working guidance delivered by the SEA will need to include specifics on a variety of matters. These include what categories of projects should be subject to assessment on climate grounds, what GHG emissions and sink effects should be attributed to individual projects, what other climate related information should be required for assessment purposes, how the climate implications of proposed projects and alternatives should be compared, and how climate considerations should be integrated with other sustainability concerns in the overall evaluation of proposals.

Answers to these questions depend on credibly supported positions on decarbonization deadlines, delineated pathways (e.g. for activities in specified climate-significant sectors), allocation of responsibilities (e.g. though establishment of ‘carbon budgeting’ as the United Kingdom has done), means of evaluating GHG-related costs (e.g. though GHG pricing sufficient to drive the needed transition and/or means of calculating the social cost of anticipated emissions), and treatment of climate-related criteria in broader sustainability-based frameworks of criteria for overall evaluations, among other foundations for defensible decisions. A SEA process that addresses all the questions and negotiates all the controversies with openness and legitimacy will be difficult and delicate.

Canada has made some domestic commitments to climate change mitigation efforts, notably including the negotiated interjurisdictional *Pan-Canadian Framework on Clean Growth and Climate Change* and the longer-term *Mid-Century Long-Term Low-Greenhouse Gas Development Strategy*. In neither case, however, are the promised or implied mitigation efforts enough to meet Canada’s Paris commitments (Gibson et al., 2018). The Canadian government continues to approve new GHG-emitting projects with life expectancies well beyond 2050.

Pushing a profound long-term transition that entails considerable near-term disturbance will be challenging, especially given Canada's regionally important and politically powerful hydrocarbon sector, and the constitutional complexities arising from the overlapping jurisdiction of Canadian federal, provincial, territorial and Indigenous authorities. Canada's climate SEA will be a major test of vision and responsibility.

3.4 Discussion

The case study snapshots illustrate a diverse range of SEA operating outside the Cabinet directive and reflecting multiple dimensions of effectiveness beyond procedural compliance and assessing PPP impacts. That said, the cases also illustrate that the effectiveness of SEA, based on substantive, pluralist, knowledge and learning, transactive, and normative attributes is mixed (Table 3.2). For example, although many cases were intended to influence higher level PPPs or inform subsequent project EA decisions, few delivered on this objective or contained the formal or legislative means to do so. The Wood Buffalo SEA, for example, was intended to avoid environmentally harmful impacts and inform the development of new mechanisms or instruments to ensure this. The SEA did provide strategic direction for a regional Action Plan and guidance to project EA in terms of impact mitigation and understanding project cumulative effects, but it lacked specific legislative mechanisms to ensure influence over subsequent decisions. The Fundy Tidal SEA similarly provided specific direction to the development of a tidal energy sector but lacked legal authority to direct specific project reviews – especially ones that may involve federal fisheries legislation. The anticipated federal climate change SEA, in contrast, could be highly ambitious with aims to influence broad policy as well as individual project assessment and may indeed contain the legislative means to do so under the *Impact Assessment Act*.

The Fundy Tidal and Baffin Bay SEAs provided for effective public and stakeholder engagement and at least partly provided for cross-jurisdictional cooperation. Fundy Tidal illustrates the ability of SEA to establish forums for communication and collaboration, which are also critical to SEA's trickle-down influence. In the Fundy Tidal case, even though lacking participation post SEA (i.e. during PPP implementation), the SEA provided specific guidance and criteria for development of the tidal industry, initiated a governance model for tidal energy development, and resulted in a consensus report involving even those who were initially opposed

to tidal development. In contrast, for the Wood Buffalo case, the lack of early engagement during scoping caused delays in identifying relevant issues that the SEA needed to address. For Baffin Bay, knowledge transfer and learning amongst participants, facilitated through early engagement, was a key strength of the SEA. Early engagement and scoping practices were instrumental to the SEA in knowledge generation and facilitating new learning outcomes about the oil and gas industry.

For all cases examined, there was a noted absence of the consideration of future alternatives or scenarios beyond the specific sector at hand. Although often characterized as a procedural element, the consideration of alternatives is key to learning, to the potential normative effectiveness of SEA (i.e. sustainability outcomes) and, arguably, to ensuring substantive outcomes that account for cumulative effects. That said, even though limited to baseline or retrospective analysis, Baffin Bay and Wood Buffalo did provide for an understanding of baseline cumulative change and potential threats to valued components. The Wood Buffalo SEA also delivered a set of baseline indicators to be used in project reviews for understanding and monitoring cumulative change. Although cumulative change was assessed qualitatively, even understanding the general direction of change (e.g. increasing or decreasing) provides valuable context to understanding and interpreting the significance of subsequent project-based impacts. In the Manitoba case, although data were sparse for most indicators, the RCEA provided a partial solution to an ongoing challenge –fragmented project EA reviews with no common baseline. Results from the RCEA may translate to more coordinated and efficient project EAs, though the strategic direction provided by the RCEA to guide decisions about appropriate project development is limited due to the lack of futures assessment and lack of a participatory approach.

The case of Canada's climate SEA is an incomplete story, yet it illustrates perhaps the most complex of SEA topics and approaches and demonstrates what is required of SEA to ensure normative outcomes for such ambitious strategies as meeting climate change commitments, and the potential value of SEA in filling important policy gaps. The climate change assessment is expected to contribute to sustainability goals. However, there are some concerns about whether these and other normative outcomes can be achieved in the climate change case due to the likelihood of cross-jurisdictional tensions at the implementation stage. Environmental impacts,

such as GHGs, are transboundary in nature, requiring the cooperation and collaboration of government and stakeholders across the country.

Notwithstanding the diversity of the above cases, a common challenge to their effectiveness is that applications such as these are limited by their ad hoc nature (Doelle, 2009), and disconnected from a larger and formal system of open and integrated policy, planning and development decision making (Noble 2008; White and Noble, 2013) – i.e. there is often nobody to tell, nobody is required to listen, and thus few opportunities to learn. Though learning is possible no matter the context, SEA is likely to be rather ineffective in absence of a clear and formal connection to decision processes. SEAs must be more than one-off studies; SEA must be integrated within the institutional, legislative and administrative contexts in which PPPs are formulated and implemented and decisions taken (Hilding-Rydevik and Bjarnadóttir, 2007) – an important feature that was largely missing in the cases we examined. To be effective, it is essential that SEA ‘tier-up’ to higher, and ‘trickle-down’ to lower, levels of decision making (White and Noble, 2013). SEA directives or legislation must set out clear expectations for how the results of SEA feed into higher level decision-making; how changes in high level policy inform SEA; and how lower-tiered PPPs and project initiatives and decisions are to be responsive to SEA (Doelle, 2009). Further, if SEAs are to indeed produce authoritative guidance for project assessments and other decisions, the SEAs must be rigorous, open, fair and accountable. Those qualities depend on substantive characteristics (e.g. an expansive and expandable scope) as well as process characteristics (e.g. transparency and commitment to learning). SEAs without such qualities are unlikely to resolve much.

In addition to the more conventional approach to SEA – assessing PPPs – an effective *system* of SEA must also provide for: a project-flagged SEA, where a policy gap, or outdated or unworkable existing policy is identified during the course of a project assessment, and SEA is used to update the policy or fill the policy gap; and a policy off-ramp SEA, where a policy gap is identified independent of a project assessment, which could result from the emergence of a new type of activity or from new understanding of the implications of well-established activities – such as new science on climate change (Doelle and Sinclair, 2006; Gibson et al., 2010). Noble and Nwanekezie (2017) extend this argument, suggesting that SEA must also shape or help formulate strategic initiatives, particularly within the context of land use policies or plans in resource regions,

and weigh the distribution of risks and opportunities; and be used to assess the institutional arrangements that either enable or constrain the success of PPPs and sustainability transitions. Currently, many of these key windows of opportunity to effectively apply SEA in ways that influence strategic decisions are still being missed (Noble and Nwanekezie, 2017), and the potentials to use SEA to help fill gaps arising from absent or obsolete policies on important issues (e.g. energy sustainability) are still not being maximized (Gibson et al., 2015).

Table 3.2: Key outcomes and effectiveness attributes by case^a

	Wood Buffalo SEA	Fundy Tidal SEA	Baffin Bay & Davis Strait SEA	Manitoba Hydro RCEA	Federal Climate Change SEA ^b
Influenced higher level PPPs and informed/streamlined future project-level development (S)	✓ [Action Plan emerged]	✓			Expected
Facilitated cross-jurisdictional cooperation (P)	Informed cross-jurisdictional strategy	Partly, at the scoping stage			Likely [aspirational]
Early and ongoing public and stakeholder engagement in the process (P)	✓ [limited at the scoping stage]	✓ [missing during implementation stage]	✓		Uncertain
Knowledge transfer and learning amongst participants (K&L)			✓		Uncertain
Identification of cumulative environmental impacts (S)	✓ qualitative		✓	For some components, but limited data	Likely, for GHG emissions
Provided a set of common baseline indicators to improve future EA effectiveness and efficiency (T; S)	✓			✓	Likely [attention to commitments]
Explored future alternatives/scenarios beyond a single sector (K&L; N)					Uncertain
Led to a strategy to achieve sustainable development goals (N)	✓ [Action Plan emerged]	✓			Expected
Completed for relatively low cost (<\$500,000) (T)	✓	✓		✓	Uncertain
Completed within a short time frame (i.e. less than 24 months) (T)	✓	✓		✓	Expected

^a (S) substantive, (P) pluralist, (K&L) knowledge and learning, (T) transactive, (N) normative

^b Because the federal Climate Change SEA is promised but not yet initiated, it is not yet clear how well its mandate and delivery will address the evident needs identified in the case discussion. The table attempts only to distinguish between what is more or less likely in terms of SEA effectiveness.

3.5 Conclusion

There is no universal model for SEA, though current approaches under the Cabinet directive are restrictive and limit the potential effectiveness of SEA. Part of the challenge is rooted in how SEA is approached under the directive – as an impact assessment tool, reflecting the traditional principles and practices of project EA but applied to PPPs. There is nothing wrong with applying SEA to assess the potential impacts of PPPs – it is an important model of SEA – but SEA based solely on traditional EA thinking comes up short on facilitating strategic choices to achieve broader sustainability goals and objectives (Noble and Nwanekezie, 2017). There are other, more strategic, more participatory and more effective models for SEA. Effective SEA is necessarily responsive to strategic-level thinking (Partidário, 2015; Blakley and Olagunju, 2017; Doelle, 2018). Effective SEA implies shaping the formation of PPPs and institutional priorities; informing strategic-level decisions on an ongoing basis; and facilitating transitions in institutions and decision-making practices toward the achievement of more sustainable futures (Fundingsland Tetlow and Hanusch, 2012; Partidário, 2015; Noble and Nwanekezie, 2017). Federally, with a new *Impact Assessment Act* pending adoption in 2019, there is an opportunity for improvements to the effectiveness of SEA in Canada. The proposed *Act* makes explicit reference to regional and strategic assessments and the opportunity for cooperation with other jurisdictions in doing so (i.e. provincial, territorial and Indigenous); however, it lacks basic scope and process requirements, and is silent on the nature and authority of resulting decision-making and adequate guidance on how the results are to be used in future policy and project decisions (Doelle, 2018). External to the federal context, highly promising ad hoc experimentation with various forms of SEA continues, but the institutional arrangements to ensure effectiveness and impact are significantly lacking.

3.6 References

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CHAPTER FOUR

Transitions-Based Strategic Environmental Assessment

This chapter presents the key principles and components, including the strategic questions to be asked in the transitions-based SEA conceptual model. The aim is to provide methodological guidance that could be adopted to critically assess the institutional and governance context surrounding the development and implementation of proposed sustainability initiatives. This manuscript has been published in a peer-reviewed special issue of *Environmental Impact Assessment Review*.

Abstract

Strategic environmental assessment (SEA) is emerging as an important tool for sustainability transitions, yet there has been limited research conceptualizing transitions-based SEA. If SEA's primary goal is to facilitate strategic change and guide decision-processes toward sustainability, an assessment framework that accounts for the multi-dimensional factors and relationships influencing transition processes seems highly relevant. This paper advances the transitions-based SEA design – an approach to SEA that is focused on the institutional environment and policy context for the development of strategic initiatives including institutional commitments, supporting policies, and opportunities. We do so within the context of energy transitions, bridging strategic planning theories, decision making, and transition management. Building on existing SEA frameworks that advance strategic thinking, the paper presents the foundational principles and strategic questions to be asked in a transitions-based SEA design. The framework was developed based on a review of sustainability transitions and SEA literature supplemented by expert input. The SEA design focuses on the guiding vision for transitions, the institutional context and governance arrangements, opportunities and risks of proposed sustainability pathways, progress indicators for on-going transition management, and impacts of the exogenous landscape. The framework defines a new functionality for SEA, pushing the boundaries of what SEA can

achieve, and should accomplish, as a strategic assessment tool while also challenging conventional thinking and practice beyond its application to policies, plans and programs.

4.1 Introduction

Value conflicts, disparate objectives, rigid institutions, and politics and power struggles pose challenges to sustainability transitions (Wallington et al., 2007; Butler et al., 2015). Poor articulation of these challenges results in policy that is largely ineffective in enabling transitions toward more sustainable futures (Bale et al., 2015). Sustainability transitions are “long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption” (Markard et al. 2012, p. 956). Research in strategic environmental assessment (SEA) has evolved toward a recognition of the need to understand and assess the strategic nature and complexity of decision-making processes for tackling sustainability challenges. The emergence of “strategic-thinking” in SEA is based on the notion that SEA can be repositioned as a tool to facilitate sustainability transitions by focusing on the decision context of environmental problems, including governance and institutional arrangements (Slunge and Tran, 2014; Monterio and Partidario, 2017; Noble and Nwanekezie, 2017). Assessments of this nature, however, require an understanding of the peculiarities of sustainability transitions, including actors and networks, socio-technical change, institutional and political structures, and the challenges posed by path-dependencies and lock-ins within socio-technical systems (Markard et al., 2012; Geels et al., 2017).

Attempts to address these complex perspectives through SEA directs attention to key questions such as: How can SEA enable fundamental policy shifts within complex socio-technical systems? What are the obstacles to enabling such transitions? What capacities exist, or innovations are required, in institutional and policy environments to facilitate transitions? Where are the windows of opportunity to influence strategic decision-making? Answers to these and related questions require assessment frameworks that account for the complex institutional arena and governance conditions of decision processes and the key elements or factors that either constrain or enable significant reform in policy development for achieving desired futures (Jiliberto, 2011; World Bank, 2011; Partidario, 2015; Monterio and Partidario, 2017). A major challenge, however, is that notwithstanding various recommendations on how to improve SEA, there has been limited

attention to the possibility of changing its fundamental approach. Rather, improvements have focused largely on more analytical methods, better technical and spatial information, or more collaborative stakeholder analysis (Geneletti, 2015; Therivel et al., 2016). As a result, despite the growth of good-practice examples, capacity building, improved public participation, and greater knowledge sharing, improvements to SEA systems have often resulted only in *incremental* rather than the *radical* changes needed to facilitate sustainability transitions (Fundingsland-Tetlow and Hanusch, 2012; Therivel et al., 2016). Arguably, SEA practice remains constrained by well-established and resilient institutional arrangements that approach SEA based on the traditional principles and methodologies of project-based impact assessment (IA) (Noble and Nwanekezie, 2017). Such approaches, though valuable for assessing and mitigating the impacts of a proposed policy or initiative, often neglect the non-linear dynamics and broader socio-political processes of sustainability decision-making (Lobos and Partidario, 2014; Geels et al., 2017).

To address these limitations, the traditional IA-based model of SEA must be complemented with more strategy-based approaches that are better suited to the complexities of the institutional and governance contexts that SEA seeks to influence (Slunge et al., 2009; World Bank, 2005; Partidario, 2007, 2012, 2015). This paper proposes an assessment approach that frames SEA in the broader context of socio-technical transitions for sustainability. First, the paper provides a brief review of advancements in SEA and the extent to which they promote strategic-thinking. A conceptual framework of key elements and strategic questions to be asked in a transitions-based SEA design is then proposed. The aim is to provide methodological guidance to critically assess the institutional and governance context surrounding the development and implementation of sustainability initiatives. The paper concludes with a brief discussion of the implications and limitations of applying transitions-based SEA in practice. In doing so, this paper adds to the growing body of research suggesting that the strategy-based approach could re-conceptualize SEA as an instrument of agency (see Giddens, 1984) to address recurring institutional and governance challenges that impede sustainability transitions.

4.2 The Need for Transitions-Based SEA

Strategic decision-making refers to a process of intervention in addressing societal problems through planning and policy making (Lyhne, 2011). SEA as a strategic-decision support

tool should ideally facilitate effective policy making and guide sustainability decisions; yet, achieving this goal at the policy level remains elusive. More than a decade ago, Nitz and Brown (2001) warned that SEA has failed to realize its potential in promoting policy outcomes that are sustainability oriented, emphasizing the importance of understanding the policy-making context and re-orienting SEA toward better integration with policy processes. On the other hand, in most jurisdictions where SEA has been institutionalized, decision-makers are concerned that a fully integrated and rigorous SEA process at the policy level will in fact constrain political choices, perhaps owing in part to a limited understanding of the strategic role of SEA (Sheate et al., 2001; Turnpenny et al., 2008). We have witnessed years of sustained debate between SEA theorists on the strategic role of SEA (Owens et al., 2004; Nilsson et al., 2005; Bina, 2007; Cherp et al., 2007; Wallington et al., 2007; Partidario, 2009, 2012, 2015; Bidstrup and Hansen, 2014; Noble and Nwanekezie, 2017) and how to improve its added-value as an applied governance and environmental sustainability integration tool (Slunge et al., 2009; Slootweg and Jones, 2011; Jiliberto, 2011; Slunge and Loayza, 2012; Monterio and Partidario, 2017; Cape et al., 2018). Emerging from these debates is recognition that the diverse interpretations and significance of the term ‘strategic’ has much to do with the role of SEA and the approach to assessment rather than the level (i.e., projects versus policies) of application.

Wallington et al. (2007) provide two distinct conceptualizations of strategy in the context of SEA. The first interpretation, underscored by the tenets of a traditional IA, conceptualizes strategy as procedural and about the deliberate formulation of plans, programmes, and policies (PPP) including assessing the potential impacts of PPPs. The effectiveness of strategy is measured by SEA’s impact or influence on the PPP or PPP assessment decision (Cherp et al., 2007; Wallington et al., 2007). In the second interpretation, strategy is conceptualized as transformative and transcends the formulation of individual PPPs to focus on assessing and influencing elements of the decision context and decision-making processes toward sustainability. This latter conceptualization of strategy is especially important, as sustainability transitions require far-reaching and long-term transformations in interdependent socio-political, cultural, and technical systems (Geels et al., 2017). When strategy is defined by its transformative attributes, SEA can be an agency of long-term changes in the range of values, worldviews, behaviours and practices of actors and institutions, which, often indirectly, affect the setting of individual PPP agendas

(Wallington et al., 2007). Achieving such transformations requires that SEA is also a tactical and politically aware process when defining and prioritizing strategic issues (Ahmed and Sanchez-Traina, 2008; Partidario, 2009; Jiliberto, 2011).

The renewed focus on redefining the role of strategy in SEA is evident in the growing but fragmented literature addressing the role of decision context. Several authors have adopted a strategic view to address the governance dimension of decision-making (Jackson and Illsley, 2007; Ahmed and Sanchez-Traina, 2008; De Mulder, 2011; Monterio and Partidario, 2017); the role of actors in decision processes including effective stakeholder collaboration and participation (Vincente and Partidario, 2006; Gauthier et al., 2011; Partidario, 2012); the role of institutions in strategic decision-making (Turnpenny et al., 2008; Slunge et al., 2009; Slunge and Tran, 2014); and the importance of policy learning, politics and power in SEA (Slootweg and Jones, 2011; Cashmore and Alexsson, 2013; Hansen et al., 2013). For example, Meuleman (2015) examined the relationship between IA and governance and noted that understanding the dynamics of governance systems and conditions under which IA operates is vital to its success, highlighting the opportunities and constraints of governance systems in shaping IA and decision outcomes. Similarly, Monterio and Partidario (2017) acknowledge that integrating a governance dimension in SEA enhances its capacity to legitimate decisions and adjust the development context to promote sustainability transformations. Likewise, Slunge and Loazya (2012) noted that sustainability reform in development sectors will require significant changes and adjustments in institutions, and the effectiveness of an SEA process is dependent on adequate institutional and governance capacities. Hansen et al. (2013) highlighted the importance of understanding power dynamics in SEA and how it influences the role of actors in strategic decision-making including how actors influence decision processes through formal and informal interactions. Finally, Cashmore and Alexsson (2013) examine the role of power in institutions and explain how power relations can influence the dominant choice of IA approach and, consequently, assessment outcomes.

4.2.1 Existing Strategy-based SEA Models

There are two existing models of strategy-based SEA: the “strategic-thinking” model and “institution-centered” model (Table 4.1). The strategic-thinking model conceptualizes SEA as a

decision-oriented instrument focused on assessing the strategic processes surrounding development initiatives rather than assessing individual PPPs (Partidario, 2007, 2012). The underlying premise is that, beyond the assessment of impacts, attention must be paid to the dynamics of the institutional, socio-political, and biophysical contexts of assessment. Strategic-thinking SEA seeks to enhance sustainability integration into decision-making through: i) creating enabling decision environments and enhancing capacities that can nurture desired development trajectories; ii) assessing the opportunities and risks of alternatives; iii) promoting institutional cooperation and coordination while enabling positive dialogue among stakeholders; and iv) ensuring that environmental concerns are proactively integrated into all stages of the policy-making process (Partidario, 2012).

The strategic-thinking approach is focused on defining the context and strategic focus, identifying sustainability pathways and guidelines, and ongoing evaluation and engagement. Nine key elements or building blocks define the assessment framework (Table 4.1) (Partidario, 2012). Establishing strategic direction and ensuring that SEA is focused on the macro-policies and the environmental and sustainability issues that are of primary importance are key attributes (Partidario 2007, 2012). The inclusion of a governance framework ensures consideration of the network of interrelated institutions, organizations, and stakeholders all of which have the capacity to influence the course of strategic decisions. Focused on the assessment of opportunities and risks of strategic options, the intent is that SEA is better positioned to articulate the impacts, merits and drawbacks of fostering certain development paths (Partidario, 2012; Monterio and Partidario, 2017; Noble and Nwanekezie, 2017).

Table 4.1: Existing Strategy-Based SEA Frameworks

Model	Strategic Elements	Theoretical Background	Common Elements	Gaps
<i>Strategic-thinking SEA model</i> ⁴	<ul style="list-style-type: none"> ▪ Critical decisions factors (CDF) ▪ Strategic Reference Framework (SRF) ▪ Institutional & Governance Framework ▪ Strategic Options/Alternatives ▪ Opportunities and Risks ▪ Decision Windows ▪ Stakeholder Engagement/Continuous Dialogue ▪ Follow-up 	<ul style="list-style-type: none"> ▪ Complex systems thinking ▪ Good governance ▪ Policy analysis 	<ul style="list-style-type: none"> ▪ Institutional and Governance Framework Analysis ▪ Policy Context Analysis ▪ Prioritizing environmental and sustainability issues ▪ Stakeholder Engagement ▪ Opportunities and Risks of Sustainability Pathways ▪ Windows of opportunity ▪ Policy Learning 	<ul style="list-style-type: none"> ▪ Assessment process, manner of decision-making, and sources of knowledge are still inherently technical-rational ▪ Limited articulation of actor-stakeholder dynamics with respect to the political and power relationship dimensions ▪ Little or no attention is paid to assessing the impacts of broader exogenous landscape influences that shape the outcomes strategic transitions ▪ Limited characterization of critical factors that enable or constrain policy or plan implementation in the context of transitions to desired futures
<i>Institution-centered SEA model</i> ⁵	<ul style="list-style-type: none"> ▪ Policy Formation/Implementation ▪ Windows of Opportunity ▪ Environmental Priority Setting ▪ Institutional Assessment ▪ Stakeholder Representation ▪ Social Accountability 	<ul style="list-style-type: none"> ▪ Policy analysis ▪ Political theory ▪ Organizational learning/ Capacity building ▪ Institutional analysis 		

⁴Partidario, 2007, 2010, 2012

⁵ World Bank 2005, 2007, 2011; Ahmed and Sanchez-Triana, 2008; Slunge et al, 2009; Slunge and Loayza, 2012

The strategic-thinking model has been adopted in the development of national strategies and plans to guide environmental and sustainability decisions (Partidario, 2009, 2010; Gallardo et al., 2016), including the 2009 Portuguese Strategy for Integrated Coastal Zone Management (PS-ICZM). In this case, SEA was used for the preparation of a national strategy to address the challenges and opportunities arising from the multiple and conflicting uses of coastal ecosystems in Portugal, and to ensure clearer articulation between coastal zone management and the planning and management of maritime space and sea conservation (Partidario and Lobos, 2009; Partidario, 2010).

The PS-ICZM case provides insight to the role of critical decision factors in informing decision processes at all stages of policy formulation, implementation, and monitoring (Partidario and Lobos, 2009), and to assess different management strategies and compare the risks and benefits of policy options. The PS-ICZM also informed the development of other related strategies and plans, such as the Maritime Spatial Plan for Portugal, thus, demonstrating the role of a strategy-based SEA approach in inducing policy-learning and long-term change processes. However, the PS-ICZM assessment process was still largely influenced by well-established institutional structures aligned to the dominant IA-based approach - it was informed by an EU legal framework dominantly focused on biophysical impacts, a technical-rational assessment of opportunities and risks, and a focus on outcomes rather than also the nature of the decision-making context.

The second model of SEA, institution-centred SEA, was proposed by the World Bank (2005) to address the shortcomings of policy-level SEA, following previous experiences with integrating environmental concerns in development policy (Slunge et al., 2009). Institution-centred SEA seeks to integrate environmental considerations in the formulation and implementation of policies while emphasizing the role of institutions, enabling active stakeholder dialogue, and identifying windows of opportunity to influence decision-making. Guided by the principles and practices of organizational learning and capacity building, the framework addressed an important gap in SEA - the role of institutions and governance arrangements in framing policy and sector reforms, particularly in developing countries (Slunge et al., 2009; Slunge and Loazy, 2012). Institution-centred SEA seeks to address three fundamental issues: how to effectively

integrate environmental concerns into policy formulation and implementation; assessing the institutional and governance framework that underscore environmental and social development initiatives; and assessing the complexities between the social, political, and environmental dimensions of policies (Ahmed and Sánchez-Triana, 2008; Slunge et al., 2009). The institution-centred SEA framework (Table 4.1) is thus intended to strengthen institutional capacities and enhance social accountability, while ensuring that environmental and related socio-political issues are addressed and prioritized in policy and plan formulation and implementation. Core to institution-centred SEA is that key decision moments or windows of opportunity are targeted, where SEA has the distinct opportunity to add-value to decision-making and direct policy dialogue toward more sustainable outcomes (Slunge et al., 2009). The focus is on such strategic questions as: Do existing systems or institutions have the capacity to manage the environmental priorities identified by the SEA? Who will be impacted by proposed policies and to what extent? How do the decisions to nurture certain development trajectories come about?

The institution-centred SEA framework has been adopted in the design and implementation of several national and sectoral policies, primarily in developing countries (Slunge and Loazya, 2012), emphasizing the integration of environmental, economic, social, and institutional considerations in policy dialogue regarding the use of natural resources. One example is the institution-centred SEA of forestry sector reform in Kenya. In 2005, Kenya ratified a new Forests Act promoting the sustainable use of forests for national development. Implementation of the Act presented several institutional challenges and opportunities (World Bank, 2007). The purpose of the SEA was to inform policy dialogue and to strengthen the implementation processes, in addition to providing guidance on the sustainable management of forests resources. A situation analysis was conducted to identify and prioritize environmental, social, institutional, and governance issues underlying the implementation of the Act (Slunge and Loazya, 2012), followed by an analysis of the risks and opportunities facing forest environments and impacts on the livelihood of local communities (World Bank, 2007). A political economy analysis was also conducted to identify potential winners and losers and the obstacles to the reform process. Emerging from the SEA was a Forest Policy Action Matrix (World Bank, 2007; Slunge and Loazya, 2012), serving as a tool to hold government and stakeholders accountable to sector reform and to commitments under the new Forests Act. The SEA effectively raised attention to key environmental and social priorities

and encouraged good governance and accountability in the forest sector; however, post-evaluation revealed that limited institutional capacity and the persistence of informal rules created administrative obstacles constraining the SEA's effectiveness (Slunge et al., 2010).

4.2.2 Enabling Sustainability Transitions

The above examples and literatures emphasizing institutional and governance perspectives in IA suggest the strategy-based SEA paradigm is still evolving. Existing SEA frameworks are yet to fully articulate the relevance of understanding the co-evolving, institutional and socio-political dynamics of sustainability transitions. Sustainability transition processes rarely proceed in linear and organized pathways (Verbong and Geels, 2007); they are characterized by strong path-dependencies, stability and lock-in within socio-technical systems. Attempts to understand these complex relationships require a shift in focus toward the broader, non-linear socio-technical and socio-political processes that influence fundamental changes in established development sectors (Verbong and Geels, 2007; Cherp et al., 2016; Geels et al., 2017). It is difficult to assess whether transition visions and pathways can be realized without paying attention to changes in the broader socio-technical system.

Transitions in any socio-technical system (e.g. energy sector) involves interplay between multiple actors on multiple levels with competing values, goals, and belief systems. Such transformations also involve significant changes and adjustments in socio-technical systems. These socio-technical systems are characterized by technologies, governance systems, institutions, markets, user practices, knowledge types, and various other sub-elements that are closely connected and mutually dependent (Geels 2011; Cherp et al., 2016; Markard et al., 2016). Elements of socio-technical systems evolve over long periods of alignment, de-alignment, and restructuring resulting in path dependence, lock-in and resistance to change (Hulbert et al., 2011; Geels et al., 2017). Ultimately, transitions take place when a radical disruption occurs in the socio-technical system resulting in a new system configuration (Lawhon and Murphy, 2011). With the primary objective of positioning SEA as a tool to achieve desired sustainability transformations, understanding the relationship(s) between these transition elements allows for the development of assessment processes that account for the complex, multi-dimensional factors influencing development trajectories (Lawhon and Murphy, 2011). A systemic framework is required that can

address strategic questions related to the implications of transitioning to more sustainable development paths, including the trade-offs, obstacles, risks, and the opportunities and capacities that can be nurtured to achieve desired futures.

Key insights can be gained from the sustainability transitions literature for the development of a strategy-based framework, particularly in terms of the interplay of the strategic elements of transitions and the governance processes of transitions. We do not suggest that all strategy-based SEA approaches must incorporate socio-technical transitions thinking; but it does provide a foundation to conceptualize SEA based on sustainability transitions framing. SEA scholars are increasingly translating ideas from theoretical perspectives related to politics and power, policy analysis, complex systems theory, decision theory, and organizational learning as they have become increasingly useful in understanding the dynamics of strategic decision-making (Dalkmann et al., 2004; Nilsson et al., 2005; Partidario, 2012; Geneletti, 2015).

Two prominent ontological frameworks: *the multi-level perspective* (MLP) and *transition management* (TM) guide our understanding of the dynamics of transitions, system innovation, and transition governance (Geels, 2011; Verbong and Geels, 2007; Loorbach, 2010). The MLP conceptualizes transitions as a multi-dimensional interplay of three analytical levels – niche, socio-technical regime, and the socio-technical landscape – interacting within a nested hierarchy (Geels, 2005; Geels and Schot, 2007). Niches represent protected spaces where innovations and learning emerge that radically differ from those present in the incumbent socio-technical regime. These niche innovations are purported as more sustainable alternatives that are likely to proliferate given the right enabling conditions (e.g. political support) (Geels et al., 2017). The established social-technical regime constitutes the institutions, rules, norms, technologies, including the incumbent actors with their interests and capacities. The socio-technical landscape represents the wider exogenous environment that influences both regime and niche dynamics, and typically directs transitions and incremental changes in technological development trajectories (Geels, 2005; Lawhon and Murphy, 2011). The exogenous landscape consists of socio-political values and beliefs, coalitions, worldviews, and the built environment that supports everyday societal functions (Kemp and Loorbach, 2003). Hence, in an SEA context, the MLP directs our understanding toward how innovations in PPPs come about, and what enabling conditions and capacities are required to foster more sustainable development trajectories. Insights can be gained about the implications of

broader landscape activities on the long-term viability of strategic initiatives, including identifying and addressing institutional challenges and constraints within existing regimes that pose obstacles to realizing sustainability goals.

The TM framework adopts a deliberative governance approach to guide and foster transitions toward realizing defined sustainability goals. It provides an analytical lens to assess how societal actors can address complex, multi-faceted sustainability issues at different levels of decision-making (Kemp and Loorbach, 2006). Underscored by the premise of “long-term thinking for shaping short-term policy-design,” the framework proposes four types of governance activities that can influence sustainability transitions: strategic, tactical, operational, and reflexive (Loorbach, 2010: 168). Strategic activities entail the broad processes of vision and strategy development, including long-term goal formulation and anticipation. Strategic activities are crucial for facilitating transitions as they create opportunities to clearly define sustainability objectives (i.e., social, economic, environmental, and political), identify opportunities to influence strategy formulation early on in decision-making, and understand the implications of and uncertainties surrounding desired future development initiatives (Loorbach, 2010). Tactical activities are interest-driven activities relevant to the dominant structures of a socio-technical system, and thus include rules and regulations, institutions, organizations and networks, infrastructure, and routines. Tactical activities direct attention to the position and capacities of individual actors that focus on achieving desired goals within a specific context but may or may not be willing to contribute to the overall long-term sustainability vision of a system, resulting in institutional fragmentation and, as such, pose an obstacle to integrating long-term sustainability policies (Kemp and Loorbach, 2006; Loorbach, 2010).

Operational activities refer to experimental activities and actions that have a short-term horizon and are conducted in the context of innovation projects and programs. Innovation, in this sense, constitutes all societal, technological, institutional, and behavioral practices that introduce or operationalize new structures, cultures, routines, or actors (Loorbach, 2010). Reflexive activities involve assessments, monitoring, and evaluation of ongoing strategies including ongoing socio-political changes. In part, they are located within existing institutions established to monitor and evaluate, but they are also socially embedded. Reflexive governance activities are crucial given the uncertainties that underscore development trajectories. Through reflexive activities windows

of opportunity to continually explore new concepts, designs, or new development paths are identified, thus, preventing lock-in in the socio-technical system (Loorbach, 2010). Both the MLP and TM theoretical frameworks provide structural models of sustainability transitions conceptualized as the outcome of the interlinkages of complex multi-actor and multi-level processes, and a better understanding of such relationships could enhance the governance capacity to manage transition processes (Geels and Schot, 2007; Loorbach, 2010).

The outcomes of sustainability transitions are, however, fundamentally unpredictable. A major critique of both the MLP and TM framework is the less than clear articulation of power relations between actors (Shove and Walker, 2007; Lawhon and Murphy, 2011). Power struggles and political conflicts are inherent in sustainability decision-making given that adopting certain development trajectories will entail re-distribution of resources or result in limited access to certain resources (Avelino and Rotmans, 2009). The depth and impacts of political conflict in transitions is often underplayed; conflicts arise even in a well guided, purposeful, and coordinated transition management process. There are risks, winners, and losers when a certain transition path is replaced by another (Avelino and Rotmans, 2009; Geels, et al., 2017). Nonetheless, both frameworks provide key insights to transitions thinking for SEA. These include the adoption of a multi-dimensional framing in assessing system dynamics, actor behaviour, and the overall change processes influencing development trajectories; and the adoption of a deliberate governance approach and long-term perspective in analyzing transition pathways, among others.

4.3 Toward a Transitions-based SEA Approach

A transitions-based SEA approach is about informing and reforming the decision processes required to facilitate fundamental changes in the socio-technical, organizational, institutional, and governance systems of any development sector requiring significant sustainability transformations (Cherp et al., 2016; Markard et al., 2016). Two features of a transitions-based approach are prominent. First, it significantly secedes from the operational premise of the traditional IA-based SEA model and is focused on assessing the decision environment including the institutional and policy contexts surrounding the development of strategic initiatives (Slunge et al., 2009; Jiliberto, 2011; Partidario, 2012; Noble and Nwanekezie, 2017). True sustainability transformations are

brought about by decisions that enable extensive changes in institutional, political, socio-economic, and cultural dimensions in addition to technical ones (Markard, 2011; Cherp et al., 2016). Second, it specifically seeks to identify the critical factors and conditions that can enable, impede or change the course of a development trajectory. Rather than focus on choosing the most suitable alternative or developing selection criteria for assessing alternatives, as is typically the approach in SEA (White and Noble, 2012), attention is focused on the capabilities, constraints, opportunities and risks of transitioning from one development trajectory or state to another.

A broad range of SEA approaches and methodologies exist, depending on the conceptualization and role of SEA in the policy or decision-making process (Noble and Nwanekezie, 2017), but the transition-thinking paradigm has been rarely explored in SEA literature. If SEA's primary goal is to facilitate strategic-change and guide decision processes toward sustainability, an assessment framework that accounts for the multi-dimensional factors and intricate relationships influencing sustainability transitions seems highly relevant. Three contributions of the transitions paradigm thus appear significant to SEA: (i) the inclusion of a multi-dimensional and multi-level framing to understand system dynamics, actor behaviour, and the overall change processes influencing development trajectories (Geels, 2011; Lawhon and Murphy, 2011; Geels et al., 2017); (ii) the adoption of a deliberate governance approach and long-term perspective in analyzing transition pathways, including a focus on the governance activities that influence the outcomes of transitions (Loorbach and Rotmans, 2010); and (iii) the need to reform institutional structures that influence and support long-term regime changes (Slunge and Loayza, 2012).

To better situate these ideas within an SEA context, consider for example a jurisdiction seeking to transition its energy systems having been faced with recurring energy challenges such as energy insecurity, unstable supply, high energy costs, socio-political disputes about energy supply, in addition to climate change impacts and the need to meet greenhouse (GHG) has reduction targets. The necessary transition pathways sought are driven by the primary goal of adopting more reliable, secure, efficient, robust, and lower GHG-emitting energy systems. This could involve a shift from a fossil fuel-based centralized energy system to a more decentralized and renewables-dominated system; or from a coal-based carbon emitting energy system to other low-carbon energy sources. As is often the case, the transition might involve the gradual

introduction of renewable energy to the existing fossil fuel-dominated energy mix, rather than a wholesale, rapid transition.

Each desired transition pathway triggers different development trajectories and policy options, and constraints, in addition to different strategies to support a range of innovative energy technologies (Meadowcroft, 2009). Under the transitions-based approach, SEA serves as a decision-support instrument to reconcile the multi-faceted issues requiring attention in the energy decision-making context. Emphasis is placed on the capacity of existing institutional frameworks to support a new renewables-integrated energy regime, for example, through the assessment of the institutions, organizations or agencies that will have to be reshuffled, reformed, destabilized or created to support the implementation of select renewables policies, programs, or infrastructure. SEA would also assess the distribution of opportunities and risks for societal actors given that choices will be made that likely favour some patterns of development or investment over others and, accordingly, benefit some actors over others. As Meadowcroft (2009) explains, there may be immediate consequences - positive or negative - for certain individuals or groups, industries or jurisdictions compared with longer-term and more distant consequences for others.

Building on the foundational principles of SEA (i.e. strategically focused, exploratory of alternatives, nested, and sensitive to PPP and decision contexts) (e.g. Bina 2007, Partidario, 2012; Noble and Nwanekezie, 2017), we present five additional principles that are essential to a transitions-based SEA approach.

4.3.1. Guiding vision

Guiding visions are central to the effective governance of sustainability transitions and the coordination of long-term change processes (Loorbach and Rotmans, 2010; Hunt and de Laurentis, 2014). They often reflect the dominant framing of the aspirations, desired futures, and long-term goals of a given sector, government, or community – for example, a vision for a renewables-dominated energy landscape that reduces GHG emissions and creates new social and economic opportunity. A vision for transition is crucial to understanding the decision-context and establishing the enabling conditions for strategic change. In a transitions-based approach, SEA focuses on articulating the vision, drivers, and selective pressures for strategic change, including

the preconditions required for coordinating such change. Without a guiding vision, progress toward transitions will be hindered and long-term sustainability objectives will not be fulfilled (Smith et al., 2005; Partidario, 2012; Hunt and de Laurentis, 2014). As such, the focus of assessment is not simply on articulating the objectives of individual PPPs, but rather on evaluating a range of alternative visions for the future, establishing an overarching guiding vision, and identifying the range of opportunities that work towards achieving that vision (Partidario, 2012).

4.3.2 Dynamic processes and complex interactions

Sustainability transitions entail complex, multifaceted, uncertain, long-term change processes (Markard et al., 2012). Changing landscape contexts, changes in rationales and preferences regarding sustainability, changes to policy processes, and changes in regimes and regime constituents all influence the impacts and outcomes of transitions to varying degrees (Flanagan et al., 2011). Conflicted and unstable interactions often persist between stakeholders and policy makers stemming from contradictions between existing legislation and practices, political aspirations, and competing sustainability objectives (Slunge et al., 2009). Central to the transitions-based approach is that for SEA to be effective at influencing decision outcomes, it must acknowledge the dynamic nature of sustainability decision-making and the complex interlinkages of actors and domains across multiple scales (Slunge et al., 2009; Wittmayer et al., 2014). The SEA process must therefore be accommodating of the co-evolving, complex relationships between key elements and characteristics of transitions. This means that SEA must also be flexible to changing decision contexts and sensitive to the socio-political realities of policy making processes while constantly scanning for opportunities to positively influence decision-making. The dynamic nature of sustainability transitions calls for a SEA process that is open and anticipatory of unplanned barriers and obstacles, including institutional resistance to change (Lobos and Partidario, 2014), and always scanning alternative pathways and opportunities in light of emergent uncertainties and unplanned occurrences.

4.3.3 Institution-centered

Policy-level issues in SEA are fundamentally institution-based. Institutions entail formal governance arrangements, informal rules, organizational structures, behavioural norms, codes of

conduct, knowledge types and belief systems – all of which influence societal interaction (Ostrom, 2005; Bridges, 2016). In SEA terms, the institutional context entails the varied objectives, policies, regulatory obligations, levels of responsibility, and implementation norms relevant to the strategic focus of assessment (Partidario, 2012). Complex policy issues that resurface in environmental policy and planning including implementation difficulties are mostly influenced by complexities in the institutional environment and the system of governance (Briassoulis, 2004). The ways in which the capacity of institutions can be enhanced will likely play an important role in the outcomes and pace of sustainability transitions. Significant changes and adjustments in institutional arrangements are thus required to achieve sustainability transformations (Turnpenny et al., 2008; Slunge et al., 2009; Cherp et al., 2016). The role of SEA is to identify the institutional variables that directly or indirectly influence the outcomes of policy and plan-making in any decision context (Fundingsland-Tetlow and Hanusch, 2012; Noble and Nwanekezie, 2017). The focus should be on a comprehensive analysis of the capacity of relevant institutions (e.g. regulatory, economic, political) to support a sustainability-oriented regime change. SEA should assess the gaps, strengths and weaknesses, opportunities and constraints within existing institutional arrangements needed to support proposed transitions from one development trajectory to another.

4.3.4 Politically-sensitive

Strategic decision-making is intrinsically a political process. Politics underlie the behaviour and activities of both government and non-governmental actors (Meadowcroft 2009, 2011). The decision of governments to explicitly pursue (or not) certain policy or development trajectories over others, the intention (or not) to provide relevant regulatory support for certain sustainability initiatives, and the intention of actor groups to strongly encourage or discourage certain development initiatives are driven by political considerations (Meadowcroft 2011). Stakeholders engaged in transition activities often have strong positions and vested interests arising from concerns regarding the future implications of system change; intervention by the state may significantly disrupt established entitlements resulting in socio-political conflict and struggles (e.g., mandatory implementation of a federal carbon pricing across Canadian provinces), and vice versa – increasing local authority over such matters as energy production can have implications for state power and resources. Irrespective of the political intent, however, government

intervention and institutional reforms will always be required to bring about the necessary adjustments needed for sustainability transitions (Cashmore and Axelsson, 2013; Aklin and Urpelainen, 2018).

Transitions-based SEA calls for continuous and deliberative efforts to identify windows of opportunity to influence strategic decision-making and effect positive change in the policy and political arena (Doelle, 2018; Noble et al., 2019) As Slunge et al. (2009) explain, windows of opportunity exist throughout the policy-making process and across institutional arrangements that can be strategically explored to influence the outcomes of policy and development decisions. Being able to identify key decision moments where SEA can influence outcomes is crucial to the overall effectiveness of the assessment process (Dalkmann et al., 2004; Partidario, 2012, 2015). Transitions-based SEA examines the capacity of the existing political environments to support sustainability transformations. This includes assessing the collective policy sphere (i.e., the portfolio of subsidies, taxes, relevant regulatory frameworks), not just individual policies, to identify the approaches that will be most useful in encouraging or discontinuing certain development regimes. More importantly, SEA must address the political circumstances under which sustainability-based transition policies are likely to be adopted and thrive in the long-term; and what alliances are most beneficial for encouraging transitions at different levels of decision making (Meadowcroft 2011).

4.3.5 Relationship(s) between actors

Transitions processes are multi-actor processes involving a range of actors, each with vested interests and stakes, functioning in different capacities while seeking to influence the overall outcomes of sustainability decisions (Farla et al., 2012; Wittmayer et al., 2014). The role of actors and the way in which interactions unfold between actors are vital perspectives that must be explored in SEA. Interactions between actors involved in development decisions are often riddled with conflict, with some having the capacity from the onset to be more influential in the decision process while others are marginalized. Changing interactions between actors including the associated changes to their roles and responsibilities can provide new opportunities to collaboratively deal with sustainability issues (Wittmayer et al., 2017). Moreover, individual actors or specific actor groups do not always possess all the ability to adequately address sustainability

challenges (Wittmayer et al., 2014). Different relevant actors with varying perspectives, solutions and ideas need to be actively engaged throughout the decision process. In doing so, SEA can serve not only to engage the perspective of relevant actors in a fair and open process, but also to explore their dynamic interaction, needs, and capacities. Actors who appear more sustainability-oriented and proactive in adopting new ways of thinking can be useful in facilitating strategic-change (Wittmayer et al., 2014). As Doelle (2009) illustrates in the case of the Bay of Fundy tidal energy initiative, Canada, SEA can be an effective process to find consensus solutions even amongst seemingly diverse and conflicting interests. Through the SEA process, it is possible to explore which interests exercise the most power in facilitating change including the potential to influence their thinking about sustainability issues or to shift power relations between actors (Avelino and Wittmayer, 2016).

4.4 Conceptualizing a transitions-based SEA framework

The following sections present the building blocks of a transitions-based SEA framework (**Figure 4.1**). The framework was conceptualized based on a review of scholarly literature and supplemented by input on framework components from a small sample of leading SEA experts and practitioners. Our review of scholarly literature drew primarily on the foundational principles of sustainability transitions and transitions theory (e.g. Verbong and Geels, 2007; Loorbach 2010; Markard et al., 2012; Cherp et al., 2016), and emerging scholarship on ‘strategic thinking’ in SEA and advancing SEA purpose and practice beyond the traditional PPP impact assessment model (e.g. Bina, 2007; World Bank, 2005, 2011; Partidario, 2012; Noble and Nwankezie, 2017). Our review of the literature focused on four main themes that cut across SEA and transitions research, namely analyses of institutional and governance contexts in strategic-level decision making; multi-dimensional and multi-level frameworks for analyses of system interactions, actor behaviour and overall change processes in socio-technical and policy transitions; deliberative governance approaches to analyzing transition pathways; and opportunities, risks, and obstacles to socio-technical and policy transitions. The literature was supplemented by informal discussions with international experts engaged in SEA research and practice. This included in-depth discussions with academic experts and practitioners during the International Association for Impact Assessment 2017 Annual General Meeting held at Montreal, Canada, and a presentation and discussion of framework components with a small group of senior-level government SEA

practitioners and managers at Environment and Climate Change Canada. These discussions were not formal interviews per se, but rather peer input and guidance to shape the key elements of a transitions-based SEA framework and to determine the types of questions to be asked.

To provide context, and to help illustrate the types of questions that a transitions-based SEA would explore, we situate the framework within the energy resource sector - specifically renewable energy transition. In Canada, the energy sector is at a crossroads. Federal commitments to climate change mitigation, national carbon pricing, and a renewed federal interest in renewable energy are setting the foundation for energy transition (Potvin et al., 2017). In the province of Saskatchewan, with the highest per-capita GHG emissions in Canada (Environment and Climate Change Canada, 2018), about 30% of the province's electricity generation is from coal-fired plants and other fossil-fuel based sources are expected to continue to play a role in Saskatchewan's energy future (SaskPower, 2017). The provincial government's current *Climate Change Strategy* sets out a goal of increasing renewable electricity generation capacity from 25% of the current mix up to 50% by 2030 (Government of Saskatchewan, 2017). It should not be assumed, however, that all aspects of renewable energy systems can be plugged-in to current policy and regulatory processes (Hanna et al., 2016). Concerns have been raised about emissions reduction, energy affordability, growing electricity demand, high capital investments, distributional equity for remote communities, and regulatory and policy changes needed to support the changing energy landscape (SaskPower, 2017; Dolter and Boucher, 2018).

In Ontario, in contrast, the province appears to have pioneered some progressive clean energy policies including a complete phase-out of coal from its electricity generation system (Harris et al., 2015). Ontario's transition is occurring in significant part in response to landscape-level pressures to address climate change, to combat the negative impact of coal-fired electricity generation on human health, and the need to build a more resilient electricity system (Harris et al., 2015; Martens, 2015). The ability to create supporting policies and pass legislation at the provincial level, strong political support for the transition, the presence of key actors and networks championing the coal phase-out campaign, the limited reliance on coal within the electricity generation mix, and the availability and affordability of natural gas as a primary substitute for coal all facilitated the transformation of Ontario's electricity sector (Harris et al., 2015; Martens, 2015). The perceived success of renewable energy transitions in Ontario may hold important lessons for

the province Saskatchewan. We use this context to illustrate the types of questions that should be asked in a transitions-based SEA framework to support energy transition.

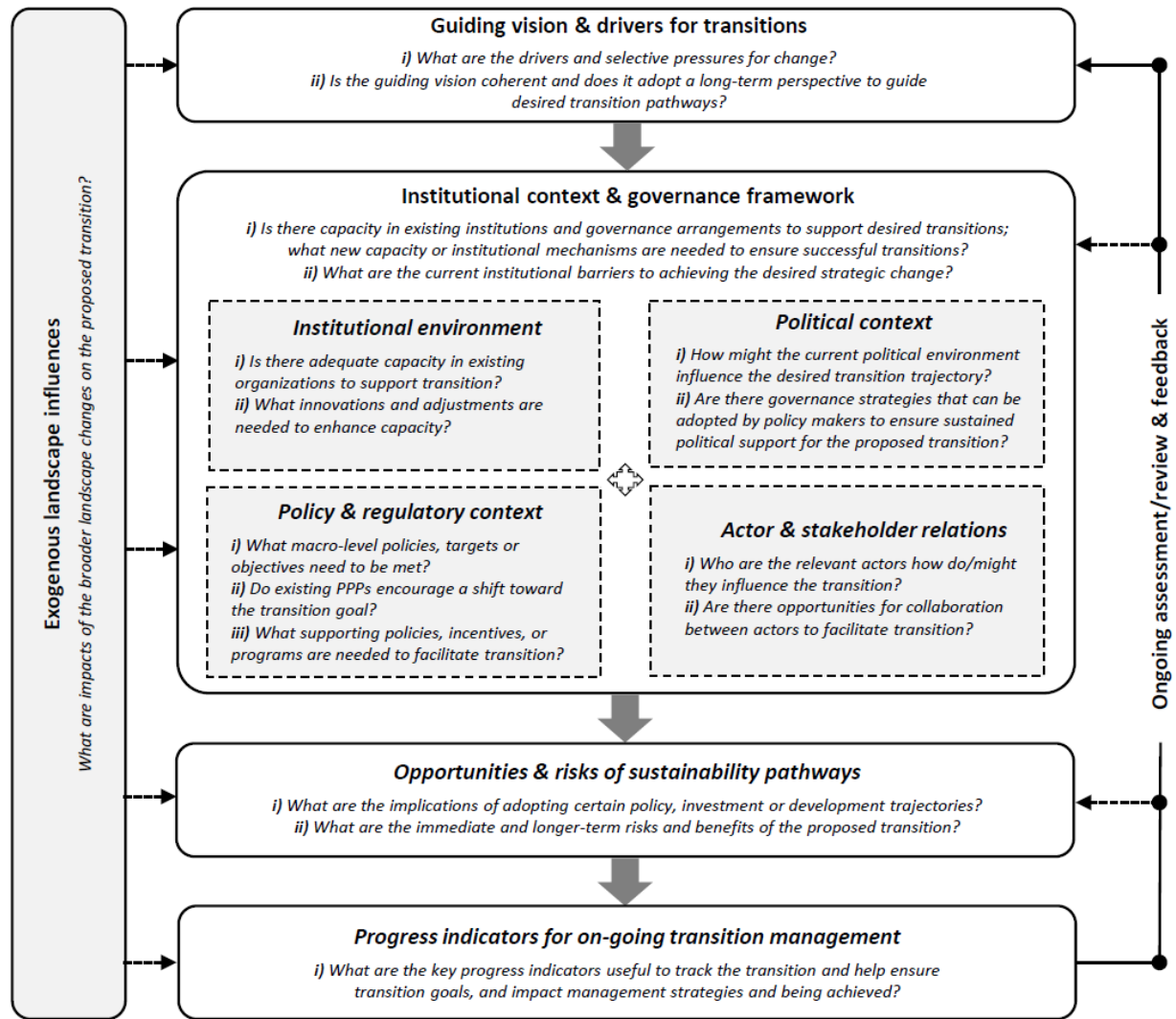


Figure 4.1: Conceptual Framework for a Transitions-Based SEA Approach

4.4.1 Situation assessment of the guiding vision for transitions

The first step in a transitions-based approach is a situation assessment of the guiding vision for transition. Guiding visions are central to the formation of robust strategic initiatives, and accordingly effective PPPs. Transition management emphasizes the importance of long-term visions (Loorbach, 2010) and such visions can come in many forms – they can be general or detailed, government-wide or sector-specific, formal or informal, and transformational or incremental in character (Bregha et al., 1990). In the example above, for Saskatchewan, the vision is a future electricity mix that is based on up to 50% renewable sources by 2030. The key SEA questions to be asked include:

- *What are the drivers and selective pressures for change?*
- *Is the guiding vision coherent and does it adopt a long-term perspective to guide desired transition pathways?*

In the energy sector, transitions are often guided by broader societal goals of reducing GHG emissions, improving energy security, or achieving a low-carbon future (Cherp et al., 2016). In the Canadian context, for example, at least at national and provincial scales, transition is currently driven largely by global calls to combat climate change, the need to ensure security of supply, and the need to increase energy generation from cleaner sources (National Energy Board, 2019). The first question in transitions-based SEA thus involves identifying the drivers and policy or landscape pressures influencing transitions in the energy sector. Such assessment is undertaken to understand how such pressures have emerged and perpetuated current regimes, what have been the past barriers to change, what might be the necessary pre-conditions for transitioning, and if desired futures are articulated in a guiding vision (Partidario, 2012; Noble and Nwanekezie, 2017).

The second question is about assessing the coherence and comprehensiveness of the guiding vision. It involves assessing how translatable the guiding vision is in relation to the prevailing paradigms around the strategic issue to be addressed, and whether it conflicts with the goals of other interacting policy domains (Smith et al., 2005). For example, is a 50% renewables generation target realistic in the absence of specific strategies on how to achieve this target, or with current institutional arrangements? Does a vision for clean energy and low-carbon transitions

conflict with other plans to significantly increase energy production activities in the oil and gas sector for economic growth? Part of assessing the comprehensiveness of the guiding vision is also understanding how well the vision represents the diverse needs of the relevant stakeholders/communities of interest, conforms to public sentiment, and provides clear and plausible solutions to strategic issues (Smith et al., 2005; Hunt and de Laurentis, 2014; Arnold and Hanna, 2017). The aim is to undertake an initial broad-brush assessment of the energy landscape needs to identify how a renewables vision fits into broader energy sustainability goals (e.g. Partidario, 2012).

4.4.2 Assess the institutional and governance context

Strategic issues often transcend the roles and responsibilities of any single agency or interest group, and weak inter-agency engagement and poor cooperation can constrain SEA and successful achievement of transitions. Indeed, SEA implementation difficulties are most obvious at the institutional level where the interplay between formal and informal norms occur (Slunge and Tran, 2014). Rigid institutions can pose barriers to transition processes and policy reforms needed to implement strategic change. Meuleman (2015) also points out the importance of the governance context in which an SEA system is embedded. Governance arrangements determine the conditions in which an SEA process takes place and, as such, the success or failure of the assessment process. The overarching questions to be addressed when assessing the institutional and governance context thus include:

- *Is there adequate capacity within existing institutions and governance arrangements to support desired energy transitions, and what new capacity or institutional mechanisms (e.g. policies, instruments, regulations, incentives) are needed to ensure successful transitions?*
- *What are the current institutional barriers to achieving the desired strategic change?*

Facilitating renewable energy transitions, for example, and ensuring long-term viability, requires articulation of the institutional needs and opportunities, including the required supporting policies, financial and human capacity needs, as well as adequately addressing obstacles to implementing renewable energy as a dominant part of energy mix. The institutional and

governance context assessment involves identifying the capacities and constraints within the existing assemblage of institutions, the administrative cultures, the laws and regulations, the assemblage of policy approaches/instruments, the political approach, and the capacities and constraints among the relevant actors and stakeholders (Slunge et al., 2009; Slunge and Tran, 2014; Meuleman, 2015, Monterio and Partidario, 2017).

4.4.2.1 Institutional context

An important part of tackling complexity in policy environments is reducing the complexity within institutions and identifying what institutional contexts are favourable to achieving transition goals (Slunge et al., 2009; Meadowcroft, 2011). Institutions (*in terms of 'organizational structures'*) can serve as a means for sustainability-oriented governments to disperse power, roles, and responsibilities needed to achieve sustainability goals. Yet, rigid institutions have been known to create obstacles to change, generating conflict particularly for new entrant institutions seeking to promote strategic innovations. Assessing the organizational context is important for ensuring the support of those departments or agencies whose cooperation, and future PPPs, are important to realizing the strategic vision or goals – or at least for identifying and managing competing mandates within, between, or across government departments and agencies (World Bank, 2005; Slunge et al., 2009). In assessing organizational capacity, the primary strategic questions are:

- *Is there adequate capacity within existing organizations to support the proposed energy transition?*
- *What innovations and adjustments are needed to enhance capacity?*

Addressing these questions involves first assessing the current capacity within existing institutions to manage large-scale sustainability transformations. Capacity can be assessed in terms of the human, financial, infrastructural, and socio-political resources within and outside the organizational boundaries (European Commission, 2005). In the Saskatchewan case, for example, electricity production and delivery is the sole responsibility of SaskPower - a government-owned utility and Crown corporation. Assessing capacity within the organization to achieve desired transition goals would mean assessing the informal processes or structures that currently pose a

barrier to renewable energy development in the province (e.g. Richards et al., 2012). It could also include assessing the role and capacity of other non-governmental and private institutions for energy development (e.g. Indigenous-owned and operated production and distribution, public-private partnerships), not just government-owned utilities. The goal is to identify opportunities to create an overall enabling environment to get the job done. This could be in the form of creating new organizations that can independently accelerate significant uptake of renewables and pursue required technological innovation, or in the form of discontinuing certain activities that pose barriers within redundant institutions such as changing current institutional arrangements supporting SaskPower's monopoly of the electricity market that restricts private production and distribution (Slunge et al., 2009; Meadowcroft, 2011).

4.4.2.2 Policy and regulatory context

Policy and regulatory arrangements determine how energy programs and projects proceed and, in turn, can accelerate or slow down the pace of transitions (Slunge and Tran, 2014). In Canada, that energy development obligations remain under provincial jurisdiction further creates key opportunities for provinces to implement tailor-made policies and regulatory arrangements that can foster renewable energy initiatives. For example, Ontario's renewable energy transition, which involved a phase-out of coal-generated to address health concerns in the province while also combating climate change, was accelerated in part by capacity at the provincial level to pass legislation to phase-out coal as well as to implement supporting policies for renewables development (Harris et al., 2015). The primary strategic questions about the policy and regulatory context are thus:

- *What are the macro-level policies, mandates, targets, or regulatory objectives that need to be met?*
- *Do the existing policies, plans, and programs for energy development encourage a shift toward or away from the transition goal?*
- *What supporting/complementary policies, incentives, or programs are needed to facilitate the desired energy transition?*

These questions are about assessing the capacity of the existing policy and regulatory framework to support proposed renewables transition. They are also about understanding the level and form of governance activities needed to guide the transition process (Loorbach, 2010). In our illustrative example, this stage of the SEA process would explore how SaskPower's mandates, targets, and objectives for renewable energy development in the province are currently being met. It would also mean assessing if the existing policy and regulatory environment provides the required support in the form of favorable regulations, incentives, and legal and permitting processes that foster clean energy development. It is equally important to understand how current clean energy policies in the province align with national energy policies. For example, consider the impact of the Federal Climate Change Policy requiring the phase-out of fossil-based generation to reduce GHG emissions and the promotion of clean energy across Canada, which may prove significant in influencing energy decision making at provincial scales. Finally, attention would also focus on the adequacy of other administrative procedures that govern the implementation of clean energy projects (e.g. pre-development, implementation, and monitoring procedures), not just within SaskPower.

4.4.2.3 Political context

Energy sector reforms are driven in large part by political processes involving negotiations, compromises, or the building of coalitions with powerful interests particularly when landscape pressures encourage threats to incumbent political systems (European Commission, 2005; Geels et al., 2017). To date, addressing political resistance, power struggles, and how to foster political willingness among regime actors remains a major challenge in renewable energy transitions. The key strategic questions include:

- *How might the current political environment influence the desired energy transition trajectory?*
- *Are there likely governance strategies that can be adopted by policy makers to ensure sustained political support for the proposed energy transition?*

Assessing the political context involves understanding how the existing political regime will influence (i.e. support or discourage) renewable energy transformations. It will involve

identifying what is feasible (rather than optimal) in terms of the political conditions under which desired sustainability policies are likely to be adopted and to thrive in the long-term (Meadowcroft, 2011). In Ontario's electricity system reform case, for example, a somewhat unified political discourse on phasing out coal facilitated buy-in from all political parties regarding renewable energy development. This was crucial in not only accelerating desired transitions but ensuring that the renewables agenda was sustained and remained a priority irrespective of political affiliations (Harris et al., 2015). In Saskatchewan, in contrast, where the political dispensation has in the past always favored the continued exploitation of fossil fuels for economic gain over clean energy development (Prebble et al., 2015, 2018), it is important to understand how the political context will impact on proposed renewable energy developments in the province, and whether or not the renewables discourse will remain a priority in the long-term.

4.4.2.4 Actor and stakeholder relations

A key part of assessing the political context is understanding stakeholder relationships, strategies, and capacity needs in order to identify and address, to the extent possible, potential conflict, power struggles, diversity of opinions, and inclusion. The key strategic questions include:

- *Who are the relevant actors in the transition process and how have they influenced the transition?*
- *Are there opportunities to pursue collaboration between actor groups to facilitate the desired energy transition?*

Intended or not, the politics of energy transitions creates winners and losers, and governments are continually faced with the challenge of attempting to balance several values and objectives to accommodate diverging interests (Lawhon and Murphy, 2011; Meadowcroft, 2011). It is thus important to assess how proposed strategic initiatives will impact regime actors, for example: will transition to a renewables-dominated energy sector encourage a reconfiguration of regime actors including their decision-making capacity? It is also important to assess the strategies currently adopted by these stakeholders in pushing for a renewables transition and what opportunities exist to strengthen the role of such actors. Likewise, it is important to consider the role of other key actors that have adopted strategies to discourage transitions away from fossil-

based energy production such as the oil and gas industry players, key politicians, and ministries with conflicting mandates that promote policy inaction on tighter clean energy regulations in the province (e.g. the Ministry of Economy) (Olive et al., 2018). Conflicts and power struggles will likely persist between new entrant energy actors and existing regime actors; the intent of SEA is to understand and identify opportunities to address these, or at least mitigate these concerns.

4.4.3 Opportunities and risks

This stage of the SEA concerns the distribution of opportunities and risks associated with alternative energy sustainability pathways or alternatives, and potential opportunities and implications in terms of relative costs and benefits (Partidario, 2012). By focusing the assessment on opportunities and risks, versus impacts per se, SEA can help identify better directions or pathways toward better outcomes. The key strategic questions are:

- *What are the implications of adopting certain energy policy, investment or development trajectories?*
- *What are the immediate and longer-term risks and benefits of the proposed energy transition?*

The choices made about transitions can result in important consequences not just for key stakeholders but for all of society (Meadowcroft, 2009). There are practical consequences particularly for those individuals or groups that will be directly affected by the outcomes of the different choices about energy futures in varying capacities (ibid.). Transitions-based SEA acknowledges the importance of trade-offs and the assessment of a range of possible alternatives as opposed to solely focusing on unavoidable risks and how to manage mitigable effects (Partidario, 2012). The assessment process should also account for the impacts of evolving trends and uncertainties (such as changes in energy policy priorities at the federal level or changes to climate change policies in the international scene) and their implications for the desired energy transition path.

Assessing the distribution of opportunities and risks requires identifying the policy and regulatory risks associated with changes in the level and forms of support available for immediate and long-term investment in the proposed energy development (Bolton et al., 2016). It is also

important to re-assess the guiding vision to establish what the current policy priorities are in terms of energy development in the region. In the Saskatchewan case, for example, if energy security is of primary importance in the electricity sector in the short term, then a large-scale shift towards renewables without the appropriate electricity mix may result in immediate reliability issues and have negative cost implications for communities that rely strongly on traditional fossil-based electricity supply sources such as coal and diesel. Likewise, if clean energy and GHG emissions reduction are of utmost importance in the region, then continuing a coal-dominated energy supply path with secondary innovations in carbon capture and storage (CCS) will result in failure to achieve emissions reduction targets.

4.4.4 Guidance for on-going transition management

Identification of context-based strategies and progress indicators to guide on-going transition processes is essential. The focus is on developing key indicators to measure progress toward transition targets in the short, mid- and longer-term (Arnold and Hanna, 2017). The key strategic question is:

- *What are the key progress indicators useful to track the transition and help ensure transition goals, and impact management strategies and being achieved?*

The inclusion of progress indicators can allow for repeated processes of continued learning, experimentation, adjustments and adaptation, iterative interaction between stakeholders including the collaborative reassessment of guiding visions (Slunge and Loayza, 2012). Thus SEA must include the identification of key indicators and targets that can be examined in the short, medium, and longer term to track progress toward energy transition goals. Transition processes are dynamic and likely to evolve overtime, presenting new opportunities to facilitate the transition that ought to be maximized. In Saskatchewan's case, for example, the number of renewable energy projects deployed across province could serve as a useful indicator to track the progress of the transition. Such progress indicators can also provide input for future policy development that could further accelerate the pace of transitions.

4.4.5 Exogenous landscape influences

Geels et al. (2017) describe exogenous influences in socio-technical transitions as “activities that comprise both slow-changing trends (e.g., demographics, ideology, spatial structures, geopolitics) and exogenous shocks (e.g., wars, economic crises, major accidents, political upheavals)” (p. 465). These landscape influences can act as driving forces that can accelerate or restrain the transition process. The overarching strategic question is thus:

- *What are impacts of the broader landscape changes on the proposed energy transition?*

Not all issues can be scoped-in to SEA, but it is important to be constantly scanning for significant exogenous influences, or ‘game-changers’, that may affect the strategic course of SEA. Such issues or circumstances are what Cherp et al. (2007) refer to as emergent or unexpected issues or events – they cannot be controlled, but they can be instrumental to the nature and shape of the SEA process and influence. Such exogenous influences, or emergent factors, may include, for example, new agency, national or international policy or institutional commitments or obligations; significant changes in market conditions; technological innovations that may provide new options or solutions to environmental challenges; or new discoveries that may require revisiting certain assumptions, objectives, or reassessing the opportunities. Radical changes in the landscape can also open up new windows of opportunity to, for example, explore alternative development visions, involve new stakeholders with perspectives that can promote real change, or on the other hand bring to halt a transition path if changing landscape conditions suggest that such a development trajectory could face insurmountable political obstacles.

Consider, for example, the impact of fluctuations in energy prices (e.g. oil), including the immediate and longer-term impacts of supply shocks on Saskatchewan’s economy. A transition goal to “a diversified mix of renewable energy appears well suited to address such vulnerability and increase resilience to energy price shocks” (van de Ven and Fouquet 2017, p. 215). On the other hand, it is important to investigate how an interim rise in oil prices could impact on a renewables development trajectory, and whether a vision to 50% renewables still holds in the face of significant changes in market conditions – such as a sudden hike in oil and gas prices.

4.5 Conclusion

Advancing strategic thinking in SEA has become increasingly important in response to growing calls to enhance SEA's effectiveness as a strategic decision-making tool. An emerging consensus holds that SEA needs more robust frameworks to address sustainability transition challenges than what is currently in place. The interest in this study in conceptualizing the transitions-based SEA approach stems from the need to address this crucial gap. The framework defines a new functionality for SEA, pushing the boundaries of what SEA can achieve, and should accomplish as a strategic assessment tool while also challenging conventional thinking and established practice beyond its application to PPPs. Efforts have been made to advance more strategic forms of SEA to improve practice (Partidario 2009; World Bank, 2005), but missing has been a conceptual framework and underlying principles that reshapes SEA specifically for enabling sustainability transitions - where the focus is on the higher-level institutional and governance issues, challenges, and possibilities rather than assessing and mitigating the impacts of individual PPPs. The intent is not to replace the application of SEA to PPPs or to undermine the value of IA-based approaches, but rather to complement and strengthen such applications. Moreover, repeated reforms to IA seeking to address big picture sustainability issues have only resulted in the reinforcement of project-based systems that are over-burdened with issues and expectations they are not sufficiently designed to address (Noble, 2019). There is indeed an urgent need to shift attention towards reforming higher-order assessment approaches that are perhaps better suited to address complex sustainability problems, as proposed with the transitions-based SEA framework. By showcasing a novel conceptual SEA approach that can guide sustainability transitions decisions, the study aims to increase the visibility of *transitions thinking* in the impact assessment field.

There are however some important research implications for advancing the transitions-based SEA approach. First, methodologically, the framework draws largely on theoretical conceptualizations in the literature about the strategic elements that should be included in such SEA design that are yet to be applied in practice. The framework also draws on insights from a relatively limited number of existing SEA models that currently advance strategic thinking. As such, there is a need for future research focused on empirical application of the transitions-based model to understand how the framework might be applied in practice, as well as to identify

potential framework limitations or deficiencies. Practical application will likely bring forth other important questions and opportunities to advance transitions-based SEA.

Second, effective implementation of transitions-based SEA will require key adjustments to existing institutions and governance arrangements depending on the context of application. This may pose a significant challenge given that current SEA practice continues to be constrained by well-established and resilient institutional arrangements, including working ideologies and protocols that are strongly consolidated with conventional project-like SEA approaches (Noble et al., 2019). In Canada, for example, SEA application remains largely limited to assessing the implication of PPPs in the context of subsequent project-focused regulatory impact assessments, failing to address broader questions around the sustainability implications of strategic initiatives (Doelle, 2018). The policy-based system for SEA federally in Canada, under the Cabinet Directive, has thrived for decades with only modest changes to overall approach to SEA and with limited opportunities for reform (Noble et al., 2019). At the provincial level, the absence of any formal requirements for SEA may likely pose an additional barrier to adopting the framework. Yet, within these contexts, and in absence of rigid legislative requirements for SEA, key opportunities do exist to explore more flexible and innovative approaches to SEA.

In conclusion, the transition-based SEA framework conceptualized in this paper provides for a more holistic assessment of the decision-making environment, bringing to light complex yet significantly relevant dimensions that would otherwise be overlooked under traditional SEA approaches and practices. Ultimately, the aim is to widen the capability of SEA to foster sustainability transformations - a much touted benefit of SEA (Partidario, 2015), but a result that is rarely seen in practice (Gibson et al., 2010; Noble et al., 2019) as it is ideally designed to. A new set of ecological pressures, particularly those stemming from climate change and low-carbon transitions, require a radical re-consideration of approaches, methodologies and tools designed to address sustainability concerns about future development trajectories. SEA should not just be about technological solutions to sustainability transitions and mitigating the impacts of PPP choices, but rather enable and influence shifts in socio-political interests, institutions, and actors who shape the decision context.

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CHAPTER FIVE

Strategic Environmental Assessment for Energy Transitions: a case study of Renewable Energy Development in Saskatchewan, Canada

This Chapter presents an empirical application of the transitions-based SEA framework using the case of renewable energy transitions in Saskatchewan, Canada. The intent is to demonstrate how the framework can be applied to critically assess the decision environment including the capacity needs, opportunities and risks, as well as the obstacles within existing institutions, policy and governance arrangements to enabling successful low-carbon transitions. This manuscript has been published in a peer-reviewed special issue of *Environmental Impact Assessment Review*.

Abstract

With attention on the renewable energy sector to meet low-carbon transition goals, the need for more coordinated approaches to planning, carefully thought-out decision processes, and long-term policy designs to guide transitions is of increased importance. Despite repeated calls to advance more strategic forms of impact assessment in energy planning, decisions about renewable energy development are still predominantly approached on a project-by-project basis. Using renewable energy transitions in Saskatchewan, Canada, as a case study, this paper demonstrates how a transitions-based strategic environmental assessment (SEA) framework can be applied to assess the capacity needs, opportunities, risks, and obstacles in existing institutions and governance arrangements for low-carbon transitions. Results show significant benefits, opportunities, and risks in renewable energy transitions. Opportunities exist to address energy security concerns and promote distributed generation, but perceived risks include the immediate economic impacts of transitioning away from a fossil-based economy, reliability risks owing to the intermittent nature of renewables, and political uncertainty about the future electricity landscape. Results show the need for clear transition goals and implementation strategies, including full commitment to the transition agenda. For transitions-based SEA, results highlight the need for transparency and accountability to ensure effective implementation and the difficulty in establishing new assessment

regimes. Lessons highlighted from the Saskatchewan case are broadly relevant for addressing low-carbon transition challenges and opportunities in other jurisdictions.

5.1 Introduction

The transition to a low-carbon economy will require significant changes across key economic sectors including transport, manufacturing, mining, forestry, and agriculture, among others. It is widely acknowledged that renewable energy systems are key to achieving low-carbon transitions; however, despite increased growth in renewables uptake, the rate of progress towards decarbonization remains slow (Cherp et al., 2016; Geels et al., 2017; Burke and Stephens, 2018). Transition efforts have been frustrated by rigid institutions, politics and power struggles, value conflicts, disparate objectives, and overall lack of leadership (Bale et al., 2015; Burke and Stephens, 2018). These complexities manifest in social, political, and cultural processes that transcend simple techno-economic fixes and improvements (Geels et al., 2017). Addressing such complexities requires “highly effective interventions embedded in strong institutions and well-coordinated governance mechanisms” (Cherp et al., 2011, p. 79; Monterio and Partidario, 2017).

Decision-makers are increasingly confronted with two key questions: what are the capacity needs in institutional and policy environments to foster low-carbon transitions, and how can the right conditions be put in place to accelerate the uptake of cleaner energy systems? As attention turns to the renewable energy sector to meet low-carbon transition goals, there is a need for comprehensive and coordinated approaches to energy planning and assessment of long-term policy designs to guide transitions (Geibler, 2013; Oldreive, 2013; Fischer et al., 2020). The impediments to renewable energy transition are largely socio-political – encompassing the social, political, regulatory, and institutional aspects of energy policy development and implementation (Sovacool, 2009). Several studies have examined the barriers that hinder progress toward renewable energy transitions (Richards et al., 2012; Geibler, 2013; Lauber and Buschmann, 2013; Burke and Stephens, 2018), arguing that greater attention needs to be paid to the transformative capacity within institutions, supporting policies, governance and ownership structures, collaborative opportunities among stakeholders, and the impacts of transitions on the economy and society (Cherp et al., 2016; Feurtey et al., 2016; Rosenbloom et al., 2018).

The energy sector may be an obvious candidate for the application of strategic environmental assessment (SEA), to help establish or re-define the institutional and policy environment needed to fast-track renewable energy transitions (Jay and Marshall, 2005; McMaster et al., 2020; Mulvihill et al., 2013). SEA was first introduced in the late 1980s as an impact assessment process for policies, plans, and programs, complementing traditional project-focused environmental impact assessment (Wood and Djeddour, 1989). Formally instituted in more than 60 countries (Fundingsland Tetlow and Hanusch, 2012), SEA has received much research attention in offshore hydrocarbon development (Bonnell, 2020), natural gas sector-wide planning (Lyhne, 2012), electricity supply futures analysis (White and Noble, 2012), and renewable energy development programs (Oldreive, 2013; Fischer et al., 2020). In practice, however, the added value of SEA as a sustainability transitions tool has yet to be fully realized (Partidario, 2015; Gibson et al., 2016; Noble et al., 2019). Part of the challenge is that the dominant focus of SEA in the energy sector remains identifying, assessing, and finding ways to manage the likely impacts of energy policies, plans and programs within existing institutional structures (Mulvihill et al., 2013; Doelle and Sinclair, 2019); missing is a more agency-based approach to SEA in shaping and enabling low-carbon energy transitions (Pang et al., 2014; McMaster et al., 2020).

Despite scholarly arguments that energy transitions need to be addressed at the strategic levels of decision making (Lyhne, 2011; White and Noble, 2012; Fidler and Noble, 2013; Mulvihill et al., 2013; Larmorgese et al., 2015; Fischer et al., 2020), many jurisdictions have been slow, and in some cases reluctant, to do so – continuing to rely instead on processes that assess and then reinforce pre-determined policies and plans (Atlin and Gibson, 2017; Olagunju and Blakley, 2017). Many scholars have thus argued that SEA needs to distance itself from the traditional impact assessment paradigm (Jiliberto, 2007) and focus more on the institutional and governance complexities of strategic decision processes in the energy sector, thereby facilitating transitions in institutions, sectors, and policies toward more sustainable energy futures (Doelle 2009; Partidario, 2015; Gibson et al., 2016; Noble and Nwanekezie, 2017). Empirical applications of SEA in the renewable energy sector do exist, but such a distinct transitions-based approach to SEA has rarely been explored in the literature and remains largely untested (Noble and Nwanekezie, 2017).

This paper demonstrates a transitions-based SEA approach for achieving low-carbon energy futures. We do so based on a case study of renewable energy transitions in Saskatchewan,

Canada, by assessing the institutional and governance conditions that actively shape and facilitate, or constrain, energy transitions. Although situated in the Canadian context, the lessons for advancing a transitions-based SEA design in the energy sector are applicable to other jurisdictions. In the sections that follow we first provide context to the case study, followed by the principles of transitions-based SEA and study methods. Results are then presented, followed by a discussion of the lessons and observations for advancing transitions-based SEA in the energy sector.

5.2 Transitions-based SEA

SEA has received much attention in the energy sector, but the dominant approach under legislated or directive-based systems, such as the EU Directive 2001/42/EC and the Canadian federal Cabinet Directive, is on identifying and assessing the impacts of policies and their alternatives (Noble et al., 2019); SEA is distanced from shaping the formulation or implementation of policies or strategic initiatives. Meeting the long-term challenge of energy sustainability requires a socio-technical restructuring of energy systems (Miller et al., 2015), putting energy transitions firmly at the centre of strategic planning and energy policy development and decision-making. Introducing transitions-thinking to SEA provides an opportunity to redefine the role of SEA as an agency of change in the energy sector, rather than solely an impact assessment tool for already proposed or existing policies and initiatives. SEA is most valuable when it is conceptualized as a driver of fundamental change in decision making processes and structures (Kirchoff et al., 2011).

Informed by the multi-level perspective (Geels et al., 2017), transition management (Loorbach, 2010), and strategy-based thinking (Partidario, 2015), a transitions-based approach to SEA redirects attention from assessing impacts toward understanding how innovations in energy policies and sectors emerge, the institutional capacities and enabling conditions required to disrupt existing norms, and the long-term viability of strategic initiatives within the broader social-technical landscape. Transitions-based SEA conceptualizes SEA as agency, operating within a complex and multi-level structure of governance, institutional arrangements, actors, and interactions (Nwanekezie et al., 2021). Whilst traditional approaches to SEA focus on assessing the potential impacts of policies, plans, and programs, transitions-based SEA is about informing and reforming decision processes to enable fundamental changes in organizational, institutional,

and governance systems for socio-technical energy systems transformations (Cherp et al., 2016; Markard et al., 2016). This means an SEA process that: assesses the socio-technical and political system dynamics, actor behaviour, and change processes that influence institutional and development trajectories (Geels, 2011; Lawhon and Murphy, 2011; Geels et al., 2017); explores transition pathways, including the governance activities that influence longer-term outcomes of transitions (Loorbach and Rotmans, 2010); and seeks to reform the institutional structures that influence and support regime change (Slunge and Loayza, 2012).

Five core elements inform transitions-based SEA, comprised of several questions to guide assessment application (Table 5.1) (Nwanekezie et al., 2021). Collectively, assessment is focused on the institutional and governance contexts that may need to be destabilized, reformed, or established to support the development and implementation of new energy strategies, policies, and programs (Slunge et al., 2009; Jiliberto, 2011; Partidario, 2012); the factors and conditions, including relationships between actors, that enable, impede, or change the course of a development trajectory (Cherp et al., 2016; Slunge and Loayza, 2012); and the opportunities and risks of transitioning from one energy trajectory or state to another. These assessment components are by no means exhaustive, rather they are a starting point for the analysis of complex energy transition issues that are often overlooked in traditional SEA design and application. Transitions-based SEA is based on the notion that true sustainability transformations can only be achieved when SEA is focused on the decision environment underlying strategic initiatives; where the gaps, strengths and weaknesses, opportunities and constraints to transitions can be identified and the conditions established to enable long-term change.

5.3 Case Study and Methods

From GHG emissions reduction to energy security and affordability, and improved energy access for remote communities through decentralized systems, renewable energy transitions remain an attractive option for jurisdictions seeking to diversify their electricity generation away from a high dependence on coal, oil, and natural gas (Mulvihill et al., 2013; Mercer et al., 2017; Inglesi-Lotz and Thopil, 2019). This is especially the case in Canada, where the urgency to transition to a low-carbon economy and meet climate policy objectives is coupled with need to

ensure energy security for northern and remote off-grid communities and support continued energy resource development.

Table 5.1: Key elements and steps of Transitions-based SEA

Framework element	Assessment step	Strategic question(s)
<i>Guiding vision</i>	<ul style="list-style-type: none"> Situation assessment of the guiding vision for proposed transitions 	<ul style="list-style-type: none"> What are the drivers and selective pressures for change? Is the guiding vision coherent and does it adopt a long-term perspective to guide desired transition pathways?
<i>Institutional and governance context</i>	<ul style="list-style-type: none"> Assess the institutional and governance context Assess the relationship and interactions between relevant actors and stakeholders 	<ul style="list-style-type: none"> Is there adequate capacity within existing institutions and governance arrangements to support the desired energy transition? What are the current institutional barriers to achieving the transition goals? What new capacity or institutional mechanisms (e.g. policies, instruments, regulations, incentives) are needed to ensure successful sustainability transitions? Who are the relevant actors in the transition process and how have they influenced the course of the transition? Are there opportunities to pursue collaboration between stakeholder groups to facilitate the desired outcomes?
<i>Opportunities and risks</i>	<ul style="list-style-type: none"> Assess the opportunities and risks of sustainability pathways 	<ul style="list-style-type: none"> What are the implications of adopting a renewable-focused energy pathway? What are the immediate and longer-term risks and benefits of the proposed energy transition?
<i>Progress indicators for on-going transition management</i>	<ul style="list-style-type: none"> Identify the progress indicators for monitoring the transition progress 	<ul style="list-style-type: none"> What are the progress indicators useful to track the transition and help ensure transition goals, and impact management strategies are being achieved?
<i>Exogenous landscape influences</i>	<ul style="list-style-type: none"> Assess the impacts of the broader exogenous landscape 	<ul style="list-style-type: none"> What are the impacts of the broader landscape changes on the proposed energy transition?

Source: Based on Geels, 2005, 2011; Loorbach, 2010; Nwanekezie et al., 2021; Partidario, 2012; Slunge et al., 2009; Slunge and Loayza, 2012; World Bank, 2005, 2011.

The Canadian federal government recently introduced the *Impact Assessment Act* (IAA 2019) in a bid to reform and strengthen impact assessment to tackle matters considered to be of national interest (Doelle and Sinclair, 2019). The new *Act* has been heavily criticized, however, for providing limited direction on how strategic-level undertakings relevant to decarbonization and climate change mitigation commitments will be assessed and implemented (Doelle and Sinclair, 2019; Gibson et al., 2019). The need for more strategic-oriented assessments to guide energy decision-making is even more evident at the provincial level, where fragmented efforts and siloed approaches to energy planning, often poorly aligned with federal energy and climate policy objectives, have failed to generate sustainability-enhancing outcomes (Prebble et al., 2018). A few

Canadian provinces have taken promising action toward incorporating renewable energy as part of their electricity mix (Harris et al., 2015; Martens, 2015), and with increasing pressure from the federal government to adopt more stringent decarbonization strategies more jurisdictions are actively pursuing a renewables development vision, locked-in by mandatory targets (Dvorak, 2016). However, most jurisdictions are still at a crossroads in energy sector reform and transition (Beck and Robertson, 2019; Olive, 2019).

5.3.1 Renewable Electricity Development in Saskatchewan, Canada

Transition processes are context dependent and often best explored using a case-study approach from which broader lessons can be extracted (Laes et al., 2014). The focus of the case study is Saskatchewan, Canada. A western prairie province, Saskatchewan has a land base of approximately of 588,243 square kilometers and a population of approximately 1.1 million, of which more than 35% reside outside a census metropolitan or agglomeration area (Statistics Canada, 2020). Mining, oil and gas, agriculture, and forestry comprise one-third of the province's GDP (Government of Saskatchewan, 2019). Saskatchewan is also the second highest GHG emitter per capita in Canada. In 2017, the province's per capita emissions were 67.7 tonnes of CO₂e, more than three-times the national average of 19.6 tonnes per capita (Canada Energy Regulator, 2020). The province's electricity sector accounts for nearly 20% of provincial annual GHG emissions (Canada Energy Regulator, 2020).

Saskatchewan has remained at a crossroads in its energy sector. How to implement decarbonization strategies while balancing economic development priorities is one of the most daunting challenges facing the provincial government (Hulbert et al., 2011; Richards et al., 2012; Prebble et al., 2018). Decision-making on greening the electricity sector is highly conflicted, and the abundance of coal, which has traditionally been used to generate affordable electricity while fueling economic growth in the province, has stabilized a regime of energy generation from emission-intensive sources (Martens 2015; Prebble et al., 2015). However, increasing pressures attributed to growing energy demand, aging electricity infrastructure, and the need to address climate change commitments and adhere to recent national decarbonization policies are collectively disrupting the existing regime (Martens, 2015; SaskPower, 2017; Prebble et al., 2015, 2018). There is now a growing recognition of the need to explore alternative energy sources,

including increased renewable electricity generation capacity. Political commitments to economic growth have also kept small-scale nuclear energy on the agenda as a possible future electricity generation alternative (Prebble et al., 2018; Saskatchewan Chamber of Commerce, 2018).

In 2017, the Government of Saskatchewan presented its climate change mitigation strategy and plan to transition toward a low-carbon economy (Government of Saskatchewan, 2017). Detailed in the strategy is a goal to increase renewables electricity generation capacity to 50% of the provincial total by the year 2030. At the forefront of the renewable energy agenda is Saskatchewan Power Corporation (SaskPower), a publicly owned Crown utility with primary responsibility for the generation, transmission, and distribution of electricity across the province (Hulbert et al., 2011). SaskPower already operates a diverse electricity generation portfolio, with renewable energy capacity at approximately 25% of total generation capacity, including wind, solar, and hydropower (SaskPower, 2017). Meeting the province's 50% renewables target will require the utility to double its renewable energy capacity over the next decade (SaskPower, 2017). This transition will likely have significant implications for stakeholders, institutions, and the public both in the immediate and longer-term. Key investment decisions will have to be made about new energy sources, rebuilding and replacing aging power infrastructure, and improving transmission capacity and modernizing the grid (Prebble et al., 2018; Saskatchewan Chamber of Commerce, 2019). Despite recent investments in renewable energy in the province, there has been limited analysis of the institutional capacity needs, obstacles, opportunities, and risks associated with the desired transitions. The primary approach to planning and assessing the impacts of new energy plans and developments in the province is largely project-based; there is no formal SEA system for the assessment of strategic initiatives (Noble et al., 2019).

5.3.2 Data Collection

The transitions-based SEA components and questions presented in Table 5.1 guided our assessment of the Saskatchewan case. Attention focused on the institutional variables that are likely to influence the outcomes of proposed renewable energy transitions in Saskatchewan. Specifically, the analysis focused on the:

- guiding vision and drivers of renewable energy transitions in the province;

- capacity needs and obstacles to transitions in existing institutions and governance arrangements;
- opportunities and risks of adopting a renewable energy trajectory;
- progress indicators to guide on-going transition management; and
- the impacts of change in the broader exogenous landscape on the proposed energy transition.

Data were gathered using in-depth semi-structured interviews with key actors (Table 5.2). Participants were selected based on their expert knowledge of and experience working in provincial electricity sector development, planning, policy, and decision-making. The sample size is small, but meaningful, as participants were purposively selected using an iterative sampling design with the goal to engage individuals with intimate knowledge of the sector and significant interest and influence in the future of energy development in the province.

Table 5.2: List of Study Participants

Sector	Description	Number of participants (n)
<i>Provincial government/Crown utility</i>	Participants from Saskatchewan Power Corporation (SaskPower)- the Crown utility representatives from the provincial government	2
<i>Industry</i>	Renewable energy developers/project proponents within the province	4
<i>Indigenous services</i>	Representatives from First Nations Power Authority (FNPA) and Peter Ballantyne Cree Nation (PBCN) directly involved with community-based renewable energy projects	4
<i>Academia</i>	Academic experts knowledgeable about clean energy development trends in Saskatchewan	5
<i>Environmental non-governmental organization (ENGO)</i>	Advocacy groups seeking to advance low-carbon energy transitions in Saskatchewan	2
<i>Legal/Private consulting</i>	Legal practitioner consulting with project proponents on EA processes, approvals and permitting for new renewable energy	1
	Total	18

Interview questions were based on those set out in the transitions-based SEA framework (Table 5.1), adapted to the Saskatchewan context, and explored each of the five framework

elements relevant to the decision and policy context guiding renewable energy transitions in Saskatchewan. A detailed interview guide is provided in Appendix 2. Where applicable, document analyses of relevant renewable energy plans, policies, and programs were used to validate or supplement certain information or claims presented by interviewees. All interview data were recorded, transcribed verbatim, coded using NVivo© 12 software, and analyzed according to the pre-determined themes and elements identified in the framework. Despite being grounded in a framework and pre-determined set of discussion themes, the interview process remained flexible to accommodate other emerging themes and ideas proposed by participants not already covered in the framework.

5.4 Results

Interviewees highlighted several drivers of transitions, capacity needs, and institutional barriers, including perceived opportunities and risks of adopting a renewables-focused electricity development path. Results are presented below and categorized under the main elements of the framework. Important to note is that our analysis provides perspectives of the emergent transition process based on a rapid assessment of the decision environment rather than a comprehensive assessment of the broad spectrum of complex change processes, which will have to be adequately captured through on-going studies and assessments.

5.4.1 Understanding the guiding vision for renewable energy transitions

Growing environmental awareness, current and prospective federally-driven environmental regulations, and the declining cost of renewables were identified by participants as the primary drivers and pressures influencing renewable energy transitions in Saskatchewan. Most interviewees believed that a growing awareness of the impacts of climate change among individuals in the province is strengthening the agenda for low-carbon energy transitions. There was also consensus on the urgent need to address the environmental impacts of fossil-based electricity generation, specifically reducing the high levels of GHG emissions reported for the province. Most frequently highlighted was the exogenous, and stringent, environmental regulations being put on provinces by the federal government as a means to regulate GHG emissions and decarbonize electricity generation systems across Canada. As explained by an industry participant, “one of the biggest pressures for change is the introduction of the carbon

tax, and the federal landscape for pushing the provinces in that direction”. In 2019, the federal government under its Pan-Canadian Framework, imposed a minimum carbon tax on all fossil fuel-based energy generation sources in those provinces yet to effectively regulate their GHG emissions (Bahn and Vaillancourt, 2020). Participants indicated that the Government of Saskatchewan is, albeit grudgingly, under increasing pressure to adopt an applicable carbon price, and more importantly to clean up its electricity generation sources. One government participant and another from academia identified the federal government’s Equivalency Agreement with Saskatchewan to retire most of its coal-fired power plants by 2030 as an additional, and significant regulatory driver of transition.⁶ Half of participants also identified declining costs and the current economic viability of renewables as another driver of transitions in the province, though likely of secondary importance.

Most all participants agreed that the proposed renewable energy vision for the province was a step in the right direction given its potential to make Saskatchewan’s electricity system significantly more sustainable. Participants from academia and ENGOS in particular noted the opportunity to address key energy sustainability issues in the province, particularly energy access and affordability issues in the North. However, a few interviewees felt the 50% renewable electricity generation capacity goal set by the province was too ambitious and unlikely to be achieved under current policy and institutional arrangements. One participant from the FNPA cited the ambiguity of the generation capacity target as a likely impediment, explaining that a target of “up to 50% renewables by the year 2030” does not indicate any defined value or threshold, and to date the provincial government is yet to clearly communicate its plans on how the target will be met.

Ten participants indicated that the 50% was comprehensible and that the province has the resource capacity to achieve it. However, they also highlighted the need for clearer political direction on what the goal really is and specifically how the province would achieve it. As explained by one participant from academia, “SaskPower has all the expertise they need to build

⁶ See Government of Canada (2019). Canada-Saskatchewan equivalency agreement regarding GHG emissions from electricity producers. <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/agreements/equivalency/canada-saskatchewan-greenhouse-gas-electricity-producers.html>. The Agreement allows the province the flexibility to transition to a cleaner electricity system including exploring more CCS options for its coal-fired generation, as long as it achieves its federally mandated emissions reduction levels by 2030.

a low carbon or zero carbon electricity system, so I have no doubt that they have that capacity - what they need is clear political direction as to what the goal is. Are we in Saskatchewan trying to get to zero emissions? If so, the political leaders need to let SaskPower know so they can make the decision to get it there”.

5.4.2 Exploring the institutional and governance context

5.4.2.1 *Institutional barriers and capacity needs*

Most participants agreed that there was inadequate capacity within existing institutional and governance arrangements to support renewable energy transitions. Identified obstacles and capacity needs ranged from an uncertain regulatory environment to inadequate infrastructure for large-scale renewables deployment. An interviewee from SaskPower noted the perceived uncertainty in the regulatory environment and ambiguity around the future of electricity development in the province as possible barriers to long-term planning for renewable energy on the part of the utility. As explained by the participant: “there’s uncertainty about what the regulations are going to be. I work in the generation planning area, and for me I’d rather know one way or another...what the rules are, and I can make an efficient plan to do it. But if I’m on the fence and trying to balance two divergent potential regulatory futures, you end up going half-way or maybe middle of the road, which is cutting your losses or it’s managing the risk”.

Other participants expressed similar concerns over regulatory hurdles in obtaining approval for renewable energy projects and the uncertainty it creates, particularly for small-scale developers seeking to invest in renewables in Saskatchewan. An industry participant explained that developers are often faced with excessive delays in getting renewable energy projects approved and that the patchwork regulatory system has meant that developers have to get through several “unnecessary” permitting and approval processes and engage different levels of authority; the process could be streamlined across jurisdictions to get renewable energy projects approved and implemented much faster. Concerns around SaskPower’s transparency in its administrative processes and protocols was also repeatedly raised. As one industry participant explained, “they are being very tight in terms of what rates are they’re willing to pay to developers to get that construction on-line. It’s not the easiest of business cases for developers to invest in renewables here in Saskatchewan”. In response, an interviewee from SaskPower argued that the project

approval delays currently faced by developers are due to careful risk mitigation being undertaken on the part of the utility to avoid rushing through decision-making.

For some other participants, the lack of a dedicated institution or agency to oversee low-carbon transitions in the province was a likely barrier to achieving the desired transformation sought in the sector. An ENGO participant suggested the need for a separate or independent agency other than SaskPower to oversee low-carbon energy transitions in the province, and to take ownership of the process to that ensure commitments made are followed through. As explained, “there’s no one in government at the moment who is fully dedicated that has given the responsibility to work on that transition; there’s no department of energy transition in the provincial government [and] I’m not aware that there is a technical expert’s team assigned to that.” A participant from academia similarly suggested that the responsibility for managing climate change issues and energy transitions in general in the province should not be housed entirely within the Ministry of Environment; it requires collaborative input from key government institutions such as the Ministry of Energy, the Ministry of Finance, in addition to the Crown utility (SaskPower) and other key stakeholders.

Lack of expertise and trusted experience to demonstrate, operate, and maintain renewable energy structures in the immediate and longer-term was identified as another institutional barrier impeding renewable energy transitions in the province. Industry participants in particular spoke of the perceived capacity gap in terms of the lack of in-house experience that SaskPower and the provincial government can rely on to make sound decisions about its future electricity generation landscape. This concern was echoed by a participant from the FNPA who highlighted that “SaskPower doesn’t necessarily have the experience to understand the grid really quickly...there needs to be a quicker way to move those projects through the process. Right now, it could take anywhere from eighteen months to two years to do an introspection study...it’s a construction project that takes all of three weeks, so I don’t know why studying it has to be two years”. The minority of participants suggested that existing human capacity was adequate to foster renewable energy development in the province over the longer-term.

A final challenge raised was the lack of a reliable and robust transmission system to promote deeper penetration of renewable energy in the province. Some participants believed

SaskPower's current transmission plans and grid connectivity fall short of what is needed to meet future demand for utility-scale renewable power supply and that there is a need for the utility to critically re-evaluate its long-term transmission plans in line with proposed generation expansion options. Grid integration remains one of the biggest challenges affecting the diffusion of renewable energy projects in Saskatchewan. As one industry participant explained "I think the biggest barrier would be the transmission infrastructure ...and getting power from the renewable source to the load".

5.4.2.2 Gaps in existing regulations and supporting policies

Participants indicated that the provincial government already has some effective policies to support renewable energy development; however, there are gaps that must be addressed. An ENGO participant highlighted that smaller-scale developers in the province were not getting adequate support to invest in renewable energy projects, owing to SaskPower's current procurement policies. Request-for-proposals for wind energy development, for example, are said to be targeted at larger-scale developers or projects with an expected capacity of up to 200 megawatts, with limited investment opportunities for smaller-scale wind generation projects.

Other participants questioned the long-term economic viability of some of the Crown utility's existing renewable energy programs. Industry and ENGO participants suggested the need to update programs such as the Net Metering and the Power Generation Partner Program (PGPP) to make them more economically sustainable. For example, the current Net Metering structure allows IPPs to get back full-rate credits (~14 cents per kWh) for excess power generated and sent back to the grid. As explained by an industry participant, "such rate structure is economically unsustainable for SaskPower given the associated costs required to maintain the grid and power lines. SaskPower should really only be crediting back a certain percentage of the rate". Recent revisions to the Net Metering program allows credits for excess power at 7.5cents/kWh as opposed to the previous structure (SaskPower, 2019). Another participant also noted that with current caps to generation capacity (up to 1MW) under the PGPP and regulatory restrictions that allows only SaskPower to transmit electricity in the province, the program remains economically invaluable to IPPs. The issue of restricted access to transmission lines was re-iterated in relation to the Open Access Transmission Tariff (OATT) program and participants again questioned SaskPower policy

regarding how IPPs gain access to transmission lines, highlighting the barrier it poses to a number of otherwise viable renewable energy projects.

Other participants identified the need to revisit policies that currently determine how local communities access the much-needed utility-scale renewable energy projects. As stated, “there is still a bit of patchwork on how Indigenous communities are being engaged and consulted on renewable energy transitions in the province”. A participant from the FNPA explained that while the Net Metering Program allows communities to generate their own power, it only permits a generation capacity of up to 1MW of power per project (previously 100 kilowatts) and a total generating capacity capped at 10MW each year.

Related to the above was the expressed need to re-assess current legislation supporting the role of SaskPower as a sole regulator of the electricity market in the province. As stated in the Power Corporation Act (1978), the utility currently holds exclusive franchise for the transmission and distribution of electricity in the province and operates as a publicly owned monopoly. Participants suggested the need to transition to some form of mixed ownership rather than a monopoly to increase competitiveness and open up the electricity market to new actors particularly to other local and international actors seeking to invest in Saskatchewan's renewable electricity market. A participant from academia explained that “SaskPower could play more of a facilitator role rather than a sole regulator of electricity development in the province”. Likewise, another participant from the FNPA commented that a change in the role of SaskPower would mean that communities can take a bit more of a leadership role and have more responsibility in the energy transition. “I think the true energy transition is going to be distributed, it's not going to be centralized and people powered. It is going to be communities that are driving the change”.

5.4.2.3 Impact of the political context

Most participants felt there was a growing acceptance of the renewable energy discourse by all political parties in Saskatchewan, driven in part by broader legislative changes at the federal level. A number of participants believed that renewable energy transitions will move forward in the province and that the political environment will have little or no influence on the transition trajectory in the long-term. As one government participant highlighted, “SaskPower is under contractual obligation to meet the terms of the Equivalency Agreement and renewable energy

development must be part of that transition”. Other participants, however, expressed concern that the current provincial government may not be fully committed to a complete low-carbon energy transition. Many interviewees reported there wasn't a lot of positive signals from the provincial government indicating an interest in moving to a different energy economy. A participant from academia even raised the likelihood of abandonment of the renewable energy discourse if governments and policy priorities change after each four-year cycle.

An ENGO participant referred to the dichotomy of economy versus the environment and the need to maintain economic security as being the underlying political ideology of the current Saskatchewan government, despite the proposed 'green policies' in the Prairie Resilience document. On the whole, participants stressed the need for clearer political direction on the specifics of the proposed transitions. As described by a participant from academia, “what they need is clear political direction as to what the goal is. Are we in Saskatchewan trying to get to zero emissions? If so, the political leaders need to let SaskPower know so they can make the decision to get it there”.

5.4.2.4 Actors and Stakeholder needs

There was a consensus among participants that key stakeholders are not getting adequate support to promote the renewables agenda. Participants believed opportunities exist within and outside the province to promote stakeholder collaboration on renewable energy generation. From Indigenous communities to government institutions that significantly influence public policy in Saskatchewan, participants felt that improved institutional collaboration is necessary to speed up the pace of transitions. For example, the opportunity for SaskPower to increase its hydroelectricity capacity sourced from the adjacent province of Manitoba was repeatedly suggested by participants from academia. Since SaskPower already buys low-cost hydroelectricity from Manitoba Hydro, also a Crown corporation, participants felt that Saskatchewan could increase its generation capacity by building new transmission lines for stronger connection to neighboring provinces. Another participant, however, pointed out that such inter-provincial partnership on energy supply could have real public policy implications that ought to be adequately researched. For example, “would there be any political backlash to the idea of relying on Manitoba for electricity generation in the longer-term?”. On the other hand, such collaboration could open up new possibilities for

renewable energy within Saskatchewan, since hydroelectricity capacity from Manitoba could serve as a backup to address perceived risks of intermittency from wind and solar.

Another needed collaboration identified by participants was a partnership between First Nations and rural municipalities in the province. Indigenous participants noted the recently signed memorandum of understanding between SARM, FNPA, and the University of Saskatchewan, and the potential collaboration between Saskatchewan Indigenous communities and rural municipalities to enhance their roles in renewable energy policies, processes, ownership, and production. Overall, participants were in agreement that SaskPower needed to explore and pursue innovative partnerships with other key government institutions, industry, and ENGOs within and outside the province if it is to achieve its energy transition targets.

5.4.3 Opportunities and Risks

Several opportunities and risks were identified by participants (Table 5.3). The creation of green jobs and a clean energy economy were cited as the most notable opportunities of transition. Industry participants commented that a growing renewables industry is a key opportunity to transition communities that are likely to be most impacted by the transition away from fossil fuel-based generation. Participants believed that the creation of green jobs could even offset the anticipated loss of jobs attributed to reduced investment of the fossil fuel industry. For some participants, an economic boost for remote Indigenous communities through the provision of green jobs would address key issues around poverty generally experienced in the North. These participants equally linked distributed generation as key to localized renewable energy deployment that could facilitate job creation within remote communities, while allowing such communities to harness locally available clean energy resources. That said, the longer-term sustainability of jobs that would be created by the industry was also questioned. A participant from academia highlighted that “an aspect that needs to be carefully scoped out is whether there would be enough production and demand in Saskatchewan to create and sustain a viable market for renewable energy technologies – for example - in the form of local manufacturing of wind and solar technology components”.

Participants equally believed transition was a key opportunity for the provincial government to address its climate change commitments and achieve a clean energy economy. The

province's climate change plan, detailed in the Prairie Resilience document, falls short of what is required to urgently address GHG emissions and broader climate change issues (Prebble et al., 2018). Participants noted that a transition to a renewables-dominated energy landscape is a significant step in the right direction in addressing such commitments.

The prospective risks of transitioning were also raised. Two participants from academia pointed out the environmental costs associated with renewable energy transitions, explaining that renewables are not always a net benefit. There are real externalities in the form of ecological and social costs associated with the production of renewable energy technologies, especially for wind and solar PV, that need to be considered. Industry and government participants were more concerned about the reliability risks associated with renewable electricity generation. As explained by a SaskPower participant, "assessing the reliability of renewables is a key aspect of the transition that has significant policy, social, and economic implications - in particular, the operability and long-term viability of renewable energy systems and the capacity to sustain a strong electrical grid remains a challenging aspect of the transition that SaskPower seeks to address". Similarly, an industry participant reiterated that "SaskPower needs to clearly understand how adding more intermittent generation from wind and solar will impact on the reliability of the grid, how much capacity is required from other energy sources (e.g. natural gas) to augment the baseload during peak periods, and what advancements have been made with battery storage technology". Participants were in agreement that SaskPower and the provincial government need to carefully weigh the immediate and longer-term risks and consequences of changing the equilibrium of the current electrical grid system with a significant influx of renewables.

A few participants expressed concern about the likelihood of the provincial government digressing completely from a renewable energy trajectory to other alternative energy pathways (e.g. small-scale nuclear). These participants viewed continued discussions on a likely nuclear future for the province as a potential political risk, particularly if government policies and strategies become influenced by strong political actors who are keen on a different energy future for the province. A higher number of participants were, however, more concerned about the immediate and longer-term risk of transitioning away from a fossil-based economy. Participants were in agreement on the need to create a just and equitable transition given that there are real

consequences for communities and individuals who rely on the current fossil-based economy for their livelihood – such as those communities directly impacted by federal regulations to phase out coal fired plants by 2030. Participants noted the uncertainty and lack of policy direction on how these communities are being prioritized in the overall transition. Indigenous participants emphasized the risks for remote communities, currently characterized by a high degree of dependence on imported fuel/diesel electricity including significantly high energy costs. The concern was about the likelihood of even higher electricity tariffs and affordability issues for such communities, owing to the current uncertainty of future electricity prices in a renewables-based system.

Table 5.3: Opportunities and Risks of renewable energy transitions in Saskatchewan

Opportunities	Risks
<ul style="list-style-type: none"> • Creation of green jobs 	<ul style="list-style-type: none"> • Long-term sustainability of renewable energy jobs
<ul style="list-style-type: none"> • Growth in the renewable energy industry with increased opportunities for new investors 	<ul style="list-style-type: none"> • Environmental costs and reliability risks associated with electricity generation from renewables
<ul style="list-style-type: none"> • Opportunity to address energy poverty issues in the North 	<ul style="list-style-type: none"> • Immediate and longer-term risks of transitioning away from a fossil-based economy
<ul style="list-style-type: none"> • Promote localized distributed generation 	<ul style="list-style-type: none"> • Uncertainty around future energy costs particularly for remote Indigenous communities
<ul style="list-style-type: none"> • Significant opportunity to address climate change commitments and transition to a clean energy economy 	<ul style="list-style-type: none"> • Policy priorities and direction may change with the political values of the ruling party

5.4.4 Progress indicators for on-going transition management

There was a consensus among participants on the importance of indicators to monitor the progress of on-going transitions. GHG ‘emissions intensity’ was repeatedly identified as a useful metric to track emissions reduction linked to increased renewables deployment. Industry participants identified ‘available renewable energy capacity’ as another useful indicator to track how much capacity within the electricity mix comes from renewable sources. One participant from academia suggested ‘actual energy production from renewables’ as a more suitable metric than available capacity, explaining that “without clearly identifying how energy is actually being produced from renewable sources versus fossil-based sources, especially when we take into account periods of intermittency, there may still be no net GHG emissions reduction”. Likewise, a participant from the FNPA highlighted that it was equally important to track how many northern communities still relied on diesel generation versus renewable sources for their electricity generation. Another Indigenous participant went further to explain that “a really important

indicator of progress, or success I guess, (is) are those projects owned by communities?”, explaining that “it is one thing to have a community located next to a project, but another if they get to participate in that project, influence that project at all...so, that’s a big piece of impact”.

‘Employment levels’ including the number of jobs created by the renewable industry was a transition progress indicator identified by most all participants. As explained, the number of jobs within the renewable energy sector is a useful indicator to assess the contribution of the renewable industry to Saskatchewan’s economy. ‘Education and training opportunities’ was also linked to employment levels as an important metric to track how much skill set is being produced within the renewable energy industry. A few participants also identified local GDP impacts over the lifetime of renewable energy projects as an important socio-economic indicator to track progress toward overall transitions goals. Lastly, a participant from academia highlighted that ‘tracking land-use impacts’, for example, through assessing the amount of land area impacted by wind and solar versus the amount of land area impacted by coal mining and natural gas production, was a perspective that needed to be further explored in monitoring and measuring transition success.

5.4.5 Impacts of broader exogenous landscape influences

The impacts of exogenous landscape changes and developments on the proposed transition in Saskatchewan were also discussed. Several participants believed that the renewable energy trajectory in Saskatchewan could be impacted by changes in market prices of fossil-based energy generation sources. For example, some industry participants noted that current and forecasted prices for natural gas may continue to plummet owing to oversupply experienced in various jurisdictions, and such low prices could influence the government of Saskatchewan’s future policy direction on continued/increased reliance on natural gas for its electricity generation as a more viable option. In contrast, if natural gas prices increase dramatically in a growing era of comparable to low costs of wind and solar, then renewable energy would remain a viable option. These participants also noted the impact of the proposed carbon tax on natural gas, since implementing the carbon tax would mean natural gas plants will pay a full carbon price on every ton of emission, thereby impacting negatively on the cost desirability of natural gas as an option.

Participants also suggested that current global technological innovation and advancements in renewable energy technologies, including improvements to battery storage, will positively

impact influence Saskatchewan's transition goals, and the availability and accessibility to the right technology will continue to make renewables a more attractive option for the provincial government. An ENGO participant went further to explain that international trade agreements and tariffs for promoting the adoption of renewable energy technologies will also likely influence positive growth in Saskatchewan's renewable energy sector.

Finally, participants noted that the current federal government's climate change policies have had a significant impact in moving the renewable energy agenda forward in Saskatchewan. Some participants cautioned, however, that a future change in political leadership at the federal level may result in a reversal of such already impactful policies like the carbon tax. Another industry participant pointed out the importance of national/international policies like carbon pricing in potentially funding renewable energy projects. As highlighted by one participant: "If there is a carbon tax, and if that money is actually earmarked for renewable energy, that is a huge influence on the developers of renewable energy projects...because it allows for those projects to access some funding or some loans that otherwise wouldn't be available if it wasn't for something like the carbon tax".

5.5 Discussion

Supporting meaningful, long-term transitions requires a shift away from assessing specific policy impacts towards identifying and enabling pathways and solutions for desirable change (Hölscher et al., 2018). There is no 'one-size-fits-all' blueprint for addressing sustainability transition problems. What we attempt to demonstrate in this study is the value of approaching SEA as a transitions-based assessment framework, addressing recurring decision issues that are otherwise overlooked under the traditional impact assessment-focused SEA approach. Results show significant opportunities to foster renewable energy transitions in Saskatchewan, and equally highlight key capacity needs and obstacles to achieve desired transitions. Importantly, our analysis identified several important policy and practice implications relevant to the Saskatchewan case, and more broadly for advancing SEA as a framework for energy transition-based assessment. Although the Saskatchewan context may not necessarily reflect the transition concerns facing every jurisdiction, the lessons highlighted are relevant for addressing low-carbon energy transitions issues in general.

5.5.1 Implications for Renewable Energy Transitions

The transitions framework application emphasized the importance of undertaking a situation assessment of the guiding vision for proposed transitions. Highlighted is the need for clear political direction on transition goals and implementation strategies as crucial for successful outcomes. Without strong leadership and full commitment to the overall transition agenda, the renewables vision, goals, and targets may gradually be abandoned (Gillingham et al., 2016). As observed in the case study, while the Government of Saskatchewan has indicated strong interest in pursuing a renewable energy vision for the province, the absence of well-defined targets and implementation strategies will likely hinder or halt the progress of the desired energy transition. Key decisions on how to achieve the 50% renewable electricity capacity target by 2030 are yet to be made, suggesting the provincial government is yet to fully commit to the transition process (Hulbert and Eisler, 2020).

Dolter (2015) and Hurlbert et al. (2020) identify two enduring concerns underlying a lack of government commitment to renewable energy transitions: knowledge gaps and competing energy policy priorities. Knowledge gaps particularly around renewable energy technologies and large-scale deployment could be a reason for reluctance to fully commit to transition. Previous studies have identified knowledge gaps as a precursor for other political and policy barriers impacting renewable energy transitions (IRENA et al., 2018), including in the Saskatchewan context (Richards et al., 2012). As observed in our study, there are still certain aspects of renewables transition that are yet to be fully scoped - owing in part to knowledge gaps around how traditional utility-scale centralized power generation compares to smaller-scale decentralized generation based on grid resiliency and economies of scale. However, incomplete knowledge about technology or renewable energy investments in general is not a sufficient barrier to commitment to energy transition processes. As the SEA framework proposes, transition should be approached as an on-going process allowing for continuous needs assessment, feedback, learning, and adjustment (Nwanekezie et al., 2021).

Competing energy policy priorities can equally pose a barrier to clearly defining the transition vision. As highlighted in the case study, the provincial government has strong interest in a nuclear energy trajectory, specifically small-scale modular reactors, given Saskatchewan's

large reserves of high-grade uranium ore (Hulbert and Eisler, 2020). Such a policy decision will likely have a significant influence on the outcomes of proposed renewable energy transition. Across many jurisdictions, renewables continue to face competition from other electricity supply alternatives, especially subsidized fossil fuel options (IRENA, et al., 2018). As such, there is a need for strong government support to ensure the renewables vision is actualized in the midst of other competing energy policy trajectories.

Successful energy transitions also require changes and adjustments to supporting policies, rules and regulations (Harris et. al., 2015; Martens, 2015). Any consideration to transition from centralized toward decentralized generation to accommodate a higher capacity of renewables will require enabling regulatory frameworks, particularly those that establish and support the right to generate and sell electricity (IRENA et al., 2018). The case study highlighted the need to amend current legislation supporting the role of the province's energy corporation - SaskPower - as sole regulator of the electricity market. As argued, while the *Power Corporation Act* has historically been important in creating a stable electricity market in Saskatchewan, attention must be given to how its current monopolistic structure poses a barrier to entrepreneurs actively seeking to invest in Saskatchewan's renewable electricity market. SaskPower may have to assume more of a facilitator role rather than sole regulation of the electricity market to allow room for private sector investors, including community-owned renewable energy projects (e.g. IRENA et al., 2018). As Corneli and Kihm (2016) suggest, "continued improvements to distributed energy generation will likely erode or even end the dominant monopoly structure of electricity utilities"(p.1). As such, "there is a need for new regulatory frameworks that can support distributed energy generation to preserve the continued social benefits of grid connectivity"(ibid). In practice, however, changing legislative frameworks within deeply entrenched institutional arrangements faces opposition from established political actors who support electricity market monopoly. While the proposition for mixed regulation could potentially be beneficial in jurisdictions like Saskatchewan, concerns have been raised that de-regulation towards mixed ownership will create a greater number of competitors in the electricity market, ultimately resulting in higher electricity prices for consumers in the province (Canadian Centre for Policy Alternatives, 2015).

5.5.2 Implications for Advancing Transitions-based SEA

Effective institutions make sustainability transitions possible (Slunge et al., 2009; World Bank, 2011). If SEA's primary goal is to facilitate strategic-change and guide decision processes

toward sustainability, then a framework that is focused on reforming institutional and governance structures to support long-term sustainability transitions is highly relevant. The framework application brought to the fore key institutional and governance issues, such as the general lack of coordination between the informal and formal decision processes guiding renewable energy development Saskatchewan, including a disconnect between the project-focused environmental assessment regime and the broader policy-level processes guiding energy sector decision-making in the province. These institutional gaps are often complex to address and are as such overlooked under traditional project-based SEA approaches. However, by integrating the sustainability transitions and strategic thinking framing in energy policy and planning, SEA is repositioned here as agency in reshaping institutional structures, enhancing capacity, and overall, creating the right decision-making context to facilitate successful energy transitions (Hansen et al. 2013; Partidario, 2012, 2015; Monteiro et al., 2017).

There are, however, likely practice implications of advancing transitions-based SEA. Successful implementation of the framework will require open and transparent decision processes, clearly defined objectives, accountability in processes and realistic opportunities for full stakeholder involvement (Mulvihill et al., 2013; Gillingham et. al., 2016; Atlin and Gibson, 2017). Yet, lack of transparency remains an enduring concern in environmental assessment that is often difficult to address (Lobos and Partidario, 2014; Bond et al., 2015). As the case study highlights, transparency issues particularly when interfacing with policy makers, creates a level of uncertainty and distrust in the process, especially for prospective developers. Without evident openness and effective communication with relevant stakeholders and the public, decision outcomes will likely be questioned (McMaster et al., 2020). In energy decision-making, there are often multiple jurisdictions involved in deliberations about politically sensitive issues with competing opinions, thereby creating much resistance to openness. Efforts must still be made to promote transparency and accountability to limit conflicts within such already highly adversarial decision contexts (Atlin and Gibson, 2017).

Difficulty in establishing new assessment regimes will likely pose an obstacle to advancing transitions-based SEA. Across many jurisdictions, project-based assessment regimes remain dominant with few mechanisms to address the recurring sustainability challenges experienced at higher levels of energy sector decision-making. The dominant ideology still holds that project-

level assessments are sufficient to address complex sustainability concerns in energy development. In Canada, for example, the regulatory system for SEA under the Cabinet Directive has thrived for decades with only modest changes to the framework (Doelle, 2018). Likewise, the absence of formal legislative requirements for SEA in some jurisdictions will likely pose an obstacle to advancing such an ambitious SEA design. Nonetheless, as a necessary first step, asking the right strategic questions about energy policy priorities at such critical decision-making juncture will likely set any jurisdiction on a transition path with longer-term success.

5.6 Conclusion

This study sought to demonstrate how the transitions-based SEA framework can be applied to critically assess the decision-making context that underlie the development and implementation of strategic energy initiatives. The findings strengthen the argument for the transitions-based SEA approach as being both useful and necessary for addressing the complexities of low-carbon energy transitions. What the Saskatchewan case demonstrates is that renewable energy transition is essentially a political struggle and efforts to shift away from fossil-based generation toward decarbonization will not prove effective without changes and adjustments to current dominant energy systems (Geels et al., 2017). Critical choices will have to be made about desired energy pathways and what SEA provides is a distinct approach to transitions-based assessment that can guide such choices toward more sustainable outcomes. There is also a need for future research to test the applicability of the transitions approach in other sectors and jurisdictions to identify aspects of the framework that ought to be refined to effectively address contextual issues arising within those jurisdictions. As with any conceptual framework, certain components of the framework may only be an abstract representation of real issues on the ground, thus, there is a need for policy makers and practitioners to remain flexible to context when applying the framework. Finally, for scholars and proponents of *strategic-thinking about SEA*, there is a need for on-going research to continually push the boundaries of what SEA can achieve beyond the confines of legal mandates and deeply entrenched institutional arrangements that currently pose a barrier to its effective implementation.

5.7 References

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CHAPTER SIX

Conclusion: A Renewed Agenda for Strategic Environmental Assessment

6.1 Introduction

This research builds on growing scholarly debates on the need to advance SEA theory and practice in order to maximize SEA's potential as a strategic decision-making tool. With increasing emphasis being placed in recent years on transitioning SEA away from its project EIA roots, SEA theorists have argued for the need to conceptualize SEA as a process designed to facilitate transitions toward sustainability (Partidario, 2015; Gibson et al., 2016; Noble and Nwanekezie, 2017). The thesis was premised around the need to address the limitations of current SEA practice, in terms of SEA's inability to interact intimately with the broader policy and planning processes it seeks to influence (Partidario, 2012; Noble and Nwanekezie, 2017). If SEA's primary goal is to facilitate strategic change and guide decision-processes toward sustainability, assessment approaches that account for the multi-dimensional factors and relationships influencing transitions are both useful and necessary (Lawhon and Murphy, 2011; Geels et al., 2017).

Accordingly, the purpose of the thesis was to advance a transitions-based SEA design – an approach to SEA focused on assessing the institutional environment and policy context for the development of strategic initiatives including institutional commitments, supporting policies, and opportunities. Within the context of energy transitions, the thesis sought to demonstrate how the transitions-based SEA framework could be operationalized to assess the capacity needs, opportunities, risks, and obstacles in existing institutions and governance arrangements for low-carbon transitions. The specific research objectives were to:

1. *Explore the scope of models of SEA that exist, from impact-assessment based to strategy-based approaches.*
2. *Explore the diversity and state of SEA practice in Canada, highlight the multiple dimensions of SEA effectiveness and identify important lessons for shaping the direction of SEA.*

3. *Develop a conceptual framework detailing the principles and characteristics, including the types of questions to be asked in a transitions-based SEA design.*
4. *Demonstrate, using an energy case study, how a transitions-based framework can be utilized to assess the decision environment including the institutional and governance context, in order to identify the opportunities, constraints, and capacity needs for enabling successful transitions.*

Through an in-depth review of scholarly literature, a review of existing theoretical frameworks advancing strategic-thinking about SEA and drawing on expert knowledge and experiences within the EA field as well as the energy sector, this research provided for a distinct conceptualization of SEA as agency of sustainability transitions, a perspective that has rarely been explored in SEA literature. The thesis defines the path for a renewed research agenda and contributes to relevant theory about SEA, as well as low-carbon energy transitions in general. In the sections that follow, the key research findings are presented and discussed, including the implications for SEA practice and directions for future research.

6.2 Summary of Key Findings

6.2.1 Conceptualizing Strategic Environmental Assessment: Principles, Approaches, and Research Directions.

The first manuscript set out to revisit the strategic attributes of SEA and explore the various models of SEA that exist, in response to scholarly arguments on the need to re-examine the strategic nature and role of SEA (Bina, 2007; Partidário, 2012, 2015; Pope et al., 2013). The study was premised around the conceptualization of SEA as a multi-dimensional and multi-faceted assessment process, seeking to clarify exactly how SEA can interact flexibly with the decision context it seeks to inform. Based on an in-depth review of existing scholarly literature, it was first identified that irrespective of context and the nature of application, there are four enduring principles that embody the strategic features of SEA- strategically focused, exploratory of strategic options, nested, and sensitive to PPPs and decision-making contexts.

A key output of this manuscript is the systematic conceptualization of SEA as operating along a spectrum from less to more strategic (i.e. from the dominant ‘impact assessment-based’ (IA-based) approach toward the strategy-based or strategic-thinking oriented approach) depending on the extent to which strategic principles are integrated in the design and implementation. Two

fundamental IA-based approaches were suggested for IA-based SEA: the compliance-based SEA and the EIA-like SEA approaches. Rooted in the traditional paradigms of EIA and project appraisal, the focus of IA-based SEA is often either to appraise the compliance of proposed PPP initiatives with particular policies, regulatory or program objectives, or on a direct assessment of the PPP's potential impacts (Partidário, 2012; Noble and Nwanekezie, 2017). The strategy-based SEA approaches: the strategic futures and the strategic transitions approaches reflect more recent thinking in scholarly literature on the role of SEA beyond the assessment of higher-order PPPs. The focus is on establishing strategic direction beyond the scope of the traditional IA-based approach, with emphasis on PPP formulation, identifying and evaluating alternative futures, and determining the necessary institutional context, and transformations needed to facilitate desirable outcomes (Fundingsland Tetlow and Hanusch, 2012; Partidário, 2012; Noble and Nwanekezie, 2017).

The manuscript concluded with four important research directions that are essential to advancing SEA concept and practice. First, the study acknowledged the continued relevance of IA-based SEA practice under current regulatory provisions, arguing that IA-based SEA can also incrementally direct decision-making toward longer-term sustainable development goals and objectives (Dalal-Clayton and Sadler, 2005). Also emphasized was the need for a diversity of SEA methodologies and tools that are better suited to the full range of SEA approaches, along with appropriate guidance for practitioners on how and when to implement them (Geneletti, 2015). The important role of tiering in SEA in informing and directing next level assessments and decision processes was also highlighted. Lastly, the manuscript pointed to the need for theoretical and practical guidance on how to advance the strategic transitions SEA design – an approach that can help facilitate strategic innovations in PPP formulation, while also enabling transitions in governance and decision-making processes.

6.2.2 Effectiveness of SEA in Canada under Directive-based and Informal Practice.

Effectiveness remains a long-standing issue in impact assessment (Chanchitpricha and Bond, 2013) and has gained considerable traction in SEA research. Some authors have suggested that owing to the diverse, and somewhat conflicting interpretations of SEA in the literature, it is often difficult to understand what makes SEA truly effective (Lobos and Partidario, 2014; Noble and Nwanekezie, 2017; Sinclair et al., 2017). Most appraisals of SEA effectiveness have examined

procedural effectiveness, to ascertain whether SEA complies with certain ‘good’ practices (Acharibasam and Noble, 2014) – typically under formal directives, approaching SEA as an instrument for assessing PPP impacts. However, there are several other dimensions to effectiveness, including substantive, transactive, normative, and learning. Accordingly, the second manuscript of this thesis reflected on the effectiveness of SEA in Canada both under the federal Cabinet directive and informal or non-directive-based applications. The intent was to explore the diversity and state of SEA practice, while also highlighting the multiple dimensions of SEA effectiveness.

SEA under the federal Cabinet directive is still largely approached as an impact assessment tool, and effectiveness evaluated based on compliance. The absence of a public registry for SEAs in Canada further makes it difficult to account for the number of assessments completed, and thus the quality and effectiveness of SEA application. Although more recent audits of SEA applications indicate compliance is increasing amongst federal organizations, the lack of SEA application documentation, limited public reporting of results, including poor follow-up reporting remain persistent obstacles (Noble et al., 2019). These findings are in line with ongoing debates among SEA scholars on the need to pay closer attention to the obstacles and constraints limiting the potential effectiveness of SEA under formal legislative provisions (Acharibasam and Noble, 2014; Noble and Nwanekezie, 2017).

External to the Cabinet directive, SEA and SEA-like practices are occurring in diverse forms across Canada’s provinces and territories. The cases examined in the manuscript represent the more advanced and exemplary applications of SEA, reflecting multiple dimensions of effectiveness beyond procedural compliance and assessing PPP impacts. That said, the cases also illustrate that the effectiveness of SEA, based on substantive, pluralist, knowledge and learning, transactive, and normative attributes is mixed. For example, as observed with the Wood Buffalo and Fundy Tidal SEAs, while these cases were intended to influence higher level PPPs or inform subsequent project EA decisions, they hardly delivered on this objective or contained the formal or legislative means to do so. Likewise, while the case of Manitoba Hydro’s regional cumulative effects study may translate to more coordinated and efficient project EAs, the SEA is still limited by the lack of a futures assessment and lack of a participatory approach (Noble et al., 2019). For all cases examined, there was a noted absence of the consideration of future alternatives or scenarios beyond the specific sector at hand. Although often characterized as a procedural element,

the consideration of alternatives is key to learning, to the potential normative effectiveness of SEA (i.e. sustainability outcomes) and, arguably, to ensuring substantive outcomes that account for cumulative effects (Gunn and Noble, 2012; Noble et al., 2019). Also notable is the case of Canada's climate change SEA, which demonstrates what is required of SEA to ensure normative outcomes for such ambitious strategies as meeting climate change commitments and highlights the potential value of SEA in filling important policy gaps (Atlin and Gibson, 2017; Noble and Nwanekezie, 2017). Yet, concerns exist around whether these and other normative outcomes can be achieved in the climate case due to the likelihood of cross-jurisdictional tensions, particularly at the implementation stage (Gibson et al., 2018).

The manuscript concluded with a reflection on some broader research implications noting that a common challenge to SEA effectiveness is that applications are often limited by their ad hoc nature and disconnected from any larger and formal system of open and integrated policy, planning, and development decision making. This observation has been repeatedly echoed by SEA researchers who suggest that SEA is likely to remain rather ineffective in absence of a clear and formal connection to broader decision processes (Doelle, 2009; Partidario, 2012; White and Noble, 2013). As Doelle (2009) points out, SEA directives or legislation must set out clear expectations for how the results of SEA feed into higher level decision-making; how changes in high level policy inform SEA; and how lower-tiered PPPs and project initiatives and decisions are to be responsive to SEA. Noble and Nwanekezie (2017) further extend this argument, suggesting that SEA must also shape or help formulate strategic initiatives, particularly within the context of land use policies or plans in resource regions, and weigh the distribution of risks and opportunities; and be used to assess the institutional arrangements that either enable or constrain the success of PPPs and sustainability transitions.

6.2.3 Transitions-Based Strategic Environmental Assessment.

The third objective core to this thesis was to advance the transitions-based SEA design, including the principles and characteristics, and the types of questions to be asked in such SEA framework. The manuscript was premised around key research questions emerging from ongoing scholarly debates seeking to advance SEA theory and practice. Attention is directed to key questions such as: How can SEA enable fundamental policy shifts within complex socio-technical systems and regimes? What are the obstacles to enabling such transitions? Where are the windows

of opportunity to influence strategic decision-making?. The intent was to provide methodological guidance that could be adopted to critically assess the institutional and governance context surrounding strategic development initiatives.

The framework was developed drawing on insights from the sustainability transitions literature (Geels, 2005, 2011; Loorbach 2010; Markard et al., 2012), and building on existing conceptual frameworks promoting SEA development beyond application to PPPs (Slunge et al., 2009; World Bank, 2011; Partidario, 2012; Noble and Nwanekezie, 2017). The literature review and document analysis of existing SEA guidance was supplemented with expert guidance from scholars in the EA field as well as and government SEA practitioners. Building on the strategic principles for SEA identified in manuscript 1 (Noble and Nwanekezie, 2017), the paper detailed five principles foundational to the transitions-based SEA approach. These include guiding vision, dynamic processes and complex interactions, institution centered, politically oriented, and relationship between actors. These principles were considered as crucial to understanding the decision-making context and establishing enabling conditions to guide strategic transformations in any development sector (Nwanekezie et al., 2021).

The manuscript further identified five primary building blocks/steps of the transitions-based SEA model and illustrated the types of strategic questions to be asked in each step (Figure 4.1). The basic architecture of the transitions-based SEA framework consists of assessing the: (i) guiding vision for transitions; (ii) institutional and governance context; (iii) opportunities and risks of sustainability pathways (iv) progress indicators for on-going transition management; (v) exogenous landscape influences (Slunge et al, 2009; Partidario, 2012; Nwanekezie et al., 2021). The framework defines a new functionality for SEA, pushing the boundaries of what SEA can, and should accomplish as a strategic assessment tool while significantly challenging conventional thinking and established practice (Noble and Nwanekezie, 2017).

The manuscript also noted some likely research implications and challenges to advancing transitions-based SEA. Effective implementation of the framework will require key adjustments to existing institutions and governance arrangements depending on the context of application. This may pose a significant challenge given that current SEA practice continues to be constrained by well-established and resilient institutional arrangements, including working ideologies and protocols that are strongly consolidated with conventional project-like SEA approaches (Noble et al., 2019). Further, given that the framework relies significantly on theoretical conceptualizations

in the literature about the strategic elements that are yet to be applied in practice, operationalizing transitions SEA will likely be challenged by the realities and limitations of current practice. The paper concluded with suggestions for further empirical application of the transitions-based SEA model to various decision contexts, since practical application will likely bring forth other important questions and opportunities to advance transitions-based SEA while also allowing for the identification of any framework deficiencies.

6.2.4 Strategic Environmental Assessment for Energy Transitions: A Case study of Renewable Energy Development in Saskatchewan, Canada.

Effectively addressing energy transition issues requires long-term commitment, flexible and focused institutions and governance systems, wide involvement of actors with diverse capacities, innovation, transparency in decision-making as well as stronger interlinkages and collaboration between jurisdictions (Markard et al., 2012; Cherp et al., 2016). With increasing attention on the renewable energy sector to meet low-carbon transition goals, there is a crucial need for more coordinated approaches to planning, carefully thought-out decision processes, and long-term policy designs to guide transitions (Geels et al., 2017; Monteiro and Partidario, 2017). However, despite repeated calls to advance more strategic forms of impact assessment in energy sector planning, decisions about new energy development are still predominantly approached on a project-by-project basis (Jay, 2010; White and Noble, 2012).

The final manuscript of this thesis sought to demonstrate how the transitions-based SEA design could be operationalized within the context of low-carbon energy transitions. Using the case of renewable energy transitions in Saskatchewan, Canada, the goal was to demonstrate how the framework can be applied to assess the capacity needs, opportunities, risks, and obstacles in existing institutions and governance arrangements guiding transitions in the energy sector. 18 semi-structured interviews were conducted with participants from the provincial government, renewable energy industry, Indigenous communities, academia, ENGOs, and private consulting. Interview participants were selected based on their knowledge and experience of Saskatchewan's electricity sector development, planning and decision-making including their knowledge of renewable energy development in the province. Interview questions were drafted in line with the types of strategic questions to be asked identified in a transitions-based SEA framework (Figure 4.1). The case application revealed that there are significant benefits, opportunities, and risks in

renewable energy transitions that can be accounted for within an SEA framework. Key opportunities exist to address energy security concerns, promote localized distributed generation, while also addressing energy poverty or poverty in general experienced in the North. Some perceived risks of the proposed transitions pathway include the immediate economic impacts of transitioning away from a fossil-based economy, reliability risks owing to the intermittent nature of renewables, and overall political uncertainty about the future electricity landscape in the province. The results further highlighted some likely practice implications for advancing transitions-based SEA. Successful implementation of the framework will require open and transparent decision processes, clearly defined objectives, accountability in processes and realistic opportunities for full stakeholder involvement (Mulvihill et al., 2013; Gillingham et al., 2016; Atlin and Gibson, 2017). As repeatedly highlighted in the literature, lack of transparency in assessment processes remains an enduring concern that ought to be addressed to ensure effective SEA implementation (Lobos and Partidario, 2014; Bond et al., 2015; Noble et al., 2019). Similarly, the manuscript identified the difficulty in establishing new assessment regimes, which will likely pose an obstacle to advancing transitions-based SEA (White and Noble, 2012). Across many jurisdictions, project-based assessment regimes remain dominant with few mechanisms to address the recurring sustainability challenges experienced at higher levels of energy sector decision-making. Overall the lessons highlighted from the Saskatchewan case are broadly relevant for addressing low-carbon transition challenges and opportunities in other jurisdictions and development sectors.

6.3 Research Contributions

This thesis advances the discourse on the need for a fundamental shift in EA thinking and practice from the dominant technical-rational IA-based paradigm toward more integrative, collaborative, and value-driven approaches (Gibson et al., 2016; Noble, 2019; Partidario, 2015, 2020). As its key outcome, the research has provided a new conceptual understanding of SEA as agency in enabling sustainability transitions, a novel contribution to theory advancement in SEA. The findings of the research suggest the socio-technical transitions framing is an important theoretical perspective that deserves further exploration in SEA research. The transitions-based approach has not only provided a sound heuristic to explain the complex dynamics of the decision environment, but also brings to the fore a new set of assessment elements that are valuable in

understanding how SEA can be operationalized as a tool for sustainability transitions. The five key assessment elements, which form the building blocks of transitions-based SEA include: (i) guiding vision and drivers of transitions (ii) institutional and governance framework (iii) opportunities and risks of sustainability pathways (iv) progress indicators for ongoing transition management (v) exogenous landscape influences (Nwanekezie et al., 2021).

The types of strategic questions the framework proposed holds valuable insight for both EA scholars and practitioners by encouraging deeper reflection about the capacities, constraints, and opportunities within the institutional and governance context that underlie decision-making rather than a focus on desired PPP outcomes and influence. The inclusion of the political context of assessment as the framework suggests is also another important contribution of this study given the limited exploration of the politics and power dynamics in current SEA literature (Cashmore and Alexsson, 2013; Hansen et al., 2013). As the renewable energy case study demonstrates, the framework allows for the exploration of the role of political actors in influencing transition pathways, including how powerful interests in the decision arena can be positioned to facilitate successful transition outcomes. Such assessment dimensions have often been overlooked in EA research and practice (Cashmore and Alexsson, 2013).

On a practical level, the outcomes of this research advances current SEA practice by providing relatable methodological guidance for policy makers and practitioners seeking clarity on how to reconcile complex and multi-dimensional sustainability concerns within a single assessment platform. As frequently observed, repeated reforms to impact assessment in a bid to address big picture sustainability issues have only resulted in the reinforcement of project-based systems that are over-burdened with issues and expectations they are not sufficiently designed to address (Noble, 2019). As such, this research is a significant contribution for EA practitioners and assessment agencies seeking innovative approaches to advance higher-order environmental assessments for effectively address recurring sustainability issues. Importantly, by focusing the assessment on the opportunities, risks, constraints, and capacity needs within the decision context, the research provides relatable guidance on how the framework can be applied in practice, including the flexibility of application to diverse development context.

There are some possible limitations of the research that ought to be acknowledged. The study relied significantly on insights from a limited sample size of experts owing largely to lack of existing research on the subject matter. This could have implications for the overall applicability

of the study findings to other jurisdictions and development sectors. While the choice to focus on energy sector decision-making and low-carbon energy transitions seems highly relevant in demonstrating the value of a transitions SEA design, applying the framework to a different context may raise new questions and perhaps some obstacles to operationalizing the transitions approach. Further, it is unknown whether the perspectives put forward by interview participants will remain translatable in light of a constantly changing decision environment, including the constantly evolving debate in the literature on the role and added value of SEA.

6.4 Recommendations for Future Research

The research points to a number of priority areas that could benefit from further investigation. First, further exploration of the socio-technical transitions theoretical perspective within an SEA context is recommended. Despite the contribution of this thesis, there is still limited knowledge and practical application in this area. As Noble (2019) and Partidario (2020) argue, there is a need for more theoretical approaches that can account for the complexity of strategic decision-making, while also leveraging SEA as a positive instrument for sustainability transitions. Second, there is also a need for further investigation into how SEA can promote changes and adjustments in deeply entrenched institutional structures and governance arrangements. While it is increasingly recognized that SEA holds significant potential in promoting institutional reform (Slunge and Loayza, 2012), further investigation into this subject could lead to better theorization of the institutional conditions that can enhance SEA's effectiveness as a transitions tool.

In the context of energy transitions, more detailed studies will be required to fully engage with the multi-faceted dimensions of renewable energy transitions in different contexts. What the framework currently allows for is a rapid assessment of the key transition issues. Detailed assessment of the economic risks and impacts, for example, will require studies focused on assessing the direct, indirect, and induced economic impacts of the proposed transition. Such assessments cannot be fully captured in a single study.

6.5 References

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APPENDIX I: INTERVIEW RECRUITMENT EMAIL



Dear Sir/Madam,

My name is Kelechi Nwanekezie. I am a doctoral student at the University of Saskatchewan, department of Geography and Planning. My work is supervised by Dr. Bram Noble and Dr. Greg Poelzer and focused on strategic environmental assessment of renewable energy transition in Saskatchewan. The goal is to understand the value and merits of applying a strategic assessment framework to inform energy decision-making and energy transition. I am hoping that you might be willing to meet or talk over the phone about renewable energy development and energy transition in Saskatchewan. Some of the topics I am interested in exploring relate to your views on:

- ✓ The drivers and pressures influencing renewable energy transition in Saskatchewan.
- ✓ The province's 50% renewables goal and whether it is achievable under current policy structures.
- ✓ Capacity within the province to support the desired transition.
- ✓ How the current political environment might influence renewable energy development in the immediate and longer term.
- ✓ The key actors, provincially, driving energy transition and their roles and stakes – including whether the support needed is available to transition and invest in renewables.
- ✓ The opportunities and risks of transitioning to a low-carbon energy regime in Saskatchewan.
- ✓ How we might track progress i.e. how do we know when we have achieved the desired energy future.
- ✓ The key factors that might influence energy transition – for or example: Indigenous rights and ownership, political uncertainty, economic instability, etc.).

I would be very grateful if you would be willing to participate in my research. The conversation may take 30 to 60 mins of your time. Of course, you will not be personally identified in any reports or publications without your permission. If you know of others with whom I should also speak with, sharing their contact information would be much appreciated! Thanks in advance for your kind co-operation. I look forward to hearing from you soon.

Sincerely,

Kelechi Nwanekezie, PhD Candidate, Geography and Planning
University of Saskatchewan, Canada

APPENDIX II: INTERVIEW GUIDE



Setting the context:

1. What are the drivers and selective pressures influencing renewable energy transition in Saskatchewan? (e.g. federal carbon pricing)
2. Does the renewables vision address key energy sustainability issues in the province? (e.g. energy affordability in the north)
3. Do you think the provincial government's 50% renewables goal is achievable under current policy structures?

Assess the institutional and governance context:

4. Within the provincial government, is there adequate institutional capacity to support the desired transition? Institutional capacity specific to the different renewable energy types (either wind, solar or biomass) Does the province have the required institutional structures to support energy transitions?
5. What are the institutional barriers to achieving the desired large-scale renewables deployment? Where are the gaps in existing policy initiatives, plans, and programs? What additional capacity is needed to ensure successful transition to increased renewable energy generation?
6. How might the current political environment influence the renewable energy development trajectory in the immediate and longer term?
7. At the provincial scale, who are the key players directing the course of the transition and how might they help the province make it happen? Are key stakeholders getting the support needed to transition and invest in renewables?
8. Are there opportunities for collaboration between stakeholder groups to enable increased deployment of renewable energy projects? Such collaboration could be different for the different energy types.

Assess opportunities and risks:

9. What are the opportunities and risks of transitioning to a low-carbon energy regime in Saskatchewan? Are there any challenges/opportunities specific to certain types of energy projects?
10. Think in terms of the distribution of risks and benefits. Are the risks/benefits evenly shared? Are there winners and losers?
11. What are the immediate and longer-term risks/benefits of adopting a renewables development path? Risks/benefits would vary over the short vs. long term.

Guidance for on-going transition management:

12. How do we track progress of the transition i.e. how do we know when we have achieved the desired energy future? (How do we measure success in the various contexts? e.g. GHG emission reduction at provincial level vs. energy affordability or increased job opportunities in the North).

Impacts of the broader exogenous landscape:

13. What are the likely impacts of changes in the external energy policy environment on proposed renewables transition? (For example: changes in Indigenous rights, political uncertainty, economic instability at the provincial level)