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Alberta's oil sands reclamation policy trajectory: the role of tense layering, policy stretching, and policy patching in long-term policy dynamics

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As the Canadian oil sands development matures, an increasingly important policy activity is reclamation. Reclamation has received limited attention compared with the broader discussion of oil sands expansion, however, and its past direction and future trajectory are unclear. Recent moves to reform the policy in Alberta have been interpreted simultaneously as a major change and a marginal adaptation to the existing framework. This article employs a historical-institutional perspective to help reconcile this debate and further understanding of changes to Alberta's oil sands reclamation policies over the past half century. It traces the factors and outlines the processes which have driven its evolution since 1963 with special attention paid to the 2011 Oil Sands Progressive Reclamation Strategy, the most recent attempt to reform oil sands reclamation policy. The article reveals a complex long-term pattern of policy development in which processes of 'tense layering' of new initiatives on top of old elements resulted in a constantly shifting policy landscape as existing policy instruments and settings were 'stretched' to cover new circumstances but failed to resolve tensions between successive policy layers. After 1993, however, a more reflective process was put into place in which policy feedback informed alterations intended to reduce or remove tensions between successive layers. Such a policy 'patching' process is shown to have helped resolve tensions associated with earlier stretching of the existing regime and adds to the vocabulary of more general studies of policy dynamics.

Keywords: oil sands; reclamation policy; environmental management; layering; policy patching

1. Introduction: Alberta reclamation policy and theories of policy change

Alberta, Canada, contains the world's second largest petroleum reserve (Woynillowicz, Severson-Baker, and Raynolds 2005). The oil, trapped as bituminous sand deposits, is predominantly concentrated in the northeast region of Alberta. Bituminous sands cover roughly 20 percent of the province's area. Over the next 20 years, oil sands production is projected to double, increasing from 3 million barrels per day in 2010 to over 6 million barrels per day by 2030 (VanderKlippe 2012). Economically, the oil sands dwarf other natural resource sectors in Canada such as forestry and mining. The environmental impacts of oil sands production have been well publicized.

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Little studied to date, however, are reclamation efforts related to this resource. Notwithstanding this, they have increasingly come to the forefront of policy-making as Alberta's oil sands development has matured and shifted from exploration and development phases in the 1960s and 1970s to full-scale operation and production in more recent decades (Perry and Saloff 2011). At the policy level, reclamation became a central area of concern leading up to the release of a short-lived Alberta government Oil Sands Progressive Reclamation Strategy (the Strategy) in 2011.

The four-point Strategy developed by the Alberta Department of Environment and Sustainable Resource Development at this time proposed to update the existing reclamation security policy: the 1993 New Mine Reclamation Financial Security Program (MFSP). The MFSP was part of the Environmental Protection and Enhancement Act, created that same year, which includes four types of financial security deposits, each focusing on various potential risks in the lifecycle of a mine: a Base Security Deposit (BSD), an Operating Life Deposit (OLD), an Asset Safety Factor Deposit (ASFD), and an Outstanding Reclamation Deposit (ORD). The Strategy also advocated enhanced reporting on reclamation performance and recognized the need for an improved reclamation certification process. This involved clarifying the reclamation certificate program, including the application process and provincial expectations on reclamation performance, objectives, and outcomes. Finally, a new tailing management framework was developed as "an integrated management approach for reducing tailings inventory while addressing environmental issues like long-term containment and reclamation" (Government of Alberta 2011, 73).

In this paper we examine a complex long-term pattern of policy development in this sector prior to 1993 in which a process referred to in the policy literature as involving the 'tense layering' of new initiatives on top of old elements resulted in a constantly shifting policy landscape, as existing policy instruments and settings were 'stretched' to cover new circumstances but failed to resolve tensions between successive policy layers. More reflective process put into place after the mid-1990s in which policy feedback informed alterations intended to reduce or remove tensions between successive layers, however, helped resolve these tensions. Such a process of policy 'patching' stands in sharp contrast to earlier efforts and provides an example of how such tensions can be resolved in this and many other policy areas characterized by similar policy development processes.

2. Layering as a policy concept

As Howlett (2009) suggests, policy mixes are common "multi-level, nested phenomena" where design and instrument selection "are all about constrained efforts to match goals and expectations both within and across categories of policy elements" (74) (Figure 1).

The components of such mixes include policy goals and policy means at various levels of generality (Howlett 2009; Kern and Howlett 2009; Cashore and Howlett 2007). This type of multi-tiered policy is also quite common in energy policy-making (Kern and Howlett 2009), but the cross-sectoral and long-term nature of policy-making in the reclamation sector poses challenges for standard models of policy change which were developed in single sector contexts and over much shorter time horizons (Capano and Howlett 2009).[1]

Unraveling this complexity is a long-term challenge faced not only by natural resource managers and planners who wish to understand more about one of the largest

		Policy Content		
		High Level Abstraction	*Program Level Operationalization*	*Specific On-the-Ground Measures*
Policy Focus	*Policy* *Ends or Aims*	**GOALS** What General Ideas Govern Policy Development?	**OBJECTIVES** What Does Policy Formally Aim to Achieve?	**SETTINGS** What are the Specific On-the-ground Requirements of the Instruments
	Policy Means or Instruments	**LOGIC** What General Norms Guide Implementation Preferences?	**MECHANISMS** What Specific Policy Instruments are Used?	**CALIBRATIONS** What are the Specific Ways in Which the Instrument is Used?

Figure 1. Policy mix.
Source: Adapted from Kern and Howlett (2009).

single industrial projects on the planet, but also by students of natural resource and environmental policy, and of policy-making more generally (Table 1). The historical-institutionalist (HI) approach to public policy change is one approach, which is well suited to dealing with these challenges. Central to an HI analysis is the idea that the various components (goals, instruments, and calibrations) of a policy can be seen as a policy mix which has developed in fits and starts over time.

A key concept in such an approach to long-term policy dynamics is the concept of 'layering' (van der Heijden 2011).[2] As applied to policy-making, 'layering' connotes a process in which new elements are added to an existing regime without abandoning previous ones, so that polices accrete in a palimpsest-like fashion (Carter 2012). 'Layering' is especially problematic as incremental changes in the mixture of policy elements over a decade or more can create a situation where the elements can fail to be mutually supportive, incorporating contradictory goals or instruments whose combination creates perverse incentives that frustrate policy goals. When these problems are identified, they set the stage for further rounds of tinkering that may temporarily solve the problems or may make them worse. Incoherence occurs where there are contradictions between these elements (Feindt and Flynn 2009).

The consequence of layering elements over the long term, as Kay (2007) suggests, is often tension between the layers. That is, repeated bouts of layering can lead to both incoherence amongst the goals and inconsistency with respect to the instruments and settings used in a policy area. Legacies from earlier rounds of decision-making affect the introduction of new elements, which then conflict with pre-existing policy components.

Table 1. Historical institutional concepts of policy change.

Historical Institutional Processes	Descriptions
Layering	When new elements are simply added to an existing regime without abandoning previous ones, typically leading to both incoherence amongst the goals and inconsistency with respect to the instruments and settings used.
Tense layering	The interaction effects between two layers and the consequences for the future direction of a policy path.
Policy patching	A form of tense layering that occurs when additional elements are intentionally added to a mix in order to bridge or reduce the tension between existing elements in the mix.
Policy packaging	The process of restructuring existing policy elements rather than proposing alternatives *de novo.*
Stretching	Elements of a mix are extended to cover areas they were not intended to at the outset.
Tinkering	Changing requirements of the instruments (their "settings") and the way that the instruments are implemented (their "calibrations").

This 'tense layering' between the old and the new layers serves to drive policy-making forward so that even in more or less stable periods, changes are continued to be made to policies in the effort to reconcile these tensions.

Processes of tension reduction often involve policy 'patching' (Howlett and Rayner 2013) as additional elements are added to a mix in order to bolster existing elements. Patching efforts are not always successful, however, or may not even be attempted, and over decades or more. Processes of policy 'stretching' (Feindt and Flynn 2009) can occur in which elements of an existing mix are extended to cover areas they were not intended to address. 'Stretching' weakens the resilience of existing arrangements and leaves them vulnerable to failure in the event of further stresses. In many cases it can weaken a policy regime to the point where it may require wholesale change (see Table 1).

As shall be argued later, the past and present trajectory of oil sands reclamation policy in Alberta helps illustrate these processes and afford us insights not only into past and present activity in this sector, but also into the likely future of this pivotal area of environmental planning and management, both globally and regionally.

3. Background: oil sands development

Oil sand is a naturally occurring mixture of sand, clay, water, and bitumen; a heavy and extremely viscous oil. Underlying a 142,200 km^2 area in north-eastern Alberta (Alberta Environment 2011) (Figure 2), the Alberta oil sands contain 1.5–1.7 trillion barrels of potentially recoverable bitumen. At present, economically viable oil sands deposits are concentrated in three distinct areas in northern Alberta known as the "Carbonate Triangle": Athabasca (40,000 km^2), Cold Lake (22,000 km^2), and

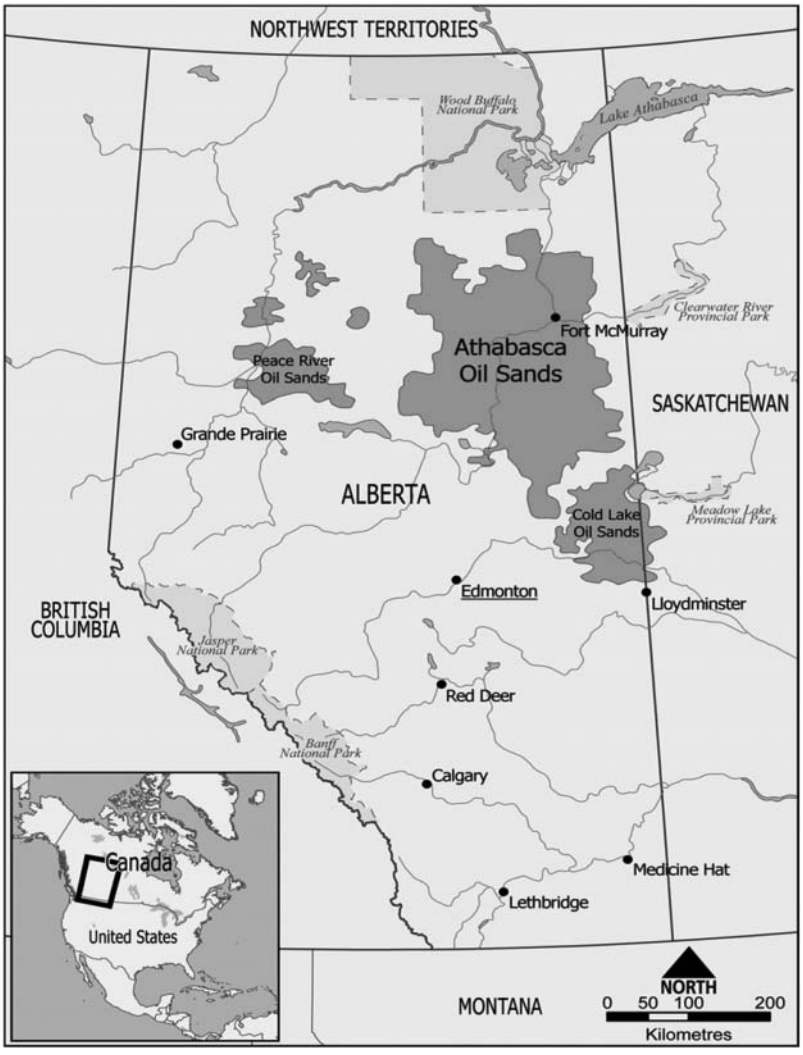

Figure 2. Alberta's oil sands deposits.

Peace River (8,000 km^2). The area under current surface mining activity is a 4,800 km^2 region near Fort McMurray, of which 715 km^2 has been disturbed (Alberta Environment 2011).

The bitumen within Alberta's oil sands is not easily accessed by traditional drilling methods (Radke 2006). Bitumen comprises roughly 10−12 percent of the soil makeup throughout the deposits and exists in a viscous tar-like state (Woynillowicz, Severson-Baker, and Raynolds 2005; Humphries 2008). Open pit and *in-situ* are the two dominant methods of mining in the oil sands. Open pit mining is carried out when deposits are located near the surface. The vegetation and topsoil are removed to expose the bitumen deposit. This method of mining is

effective at removing bitumen deposits; however, it is invasive. *In-situ* mining methods are employed when the deposits are located deeper than 100 m below the surface. Upwards of 90 percent of oil sands can be mined using *in-situ* practices (Woynillowicz, Severson-Baker, and Raynolds 2005). Steam-assisted gravity drainage is the primary form of in situ mining within the oil sands. High-pressured steam is pumped into the ground to release the bitumen from the sands. A second well beneath the steam collects the oil and pumps it to the surface (Woynillowicz, Severson-Baker, and Raynolds 2005). The raw bitumen is too dense and sometimes too high in sulfur to be piped directly to refineries; therefore, it enters the upgrading process, where the objective is to decrease the density or create synthetic crude oil (Gray 2014; Natural Resources Canada 2013).[3] In 2012, approximately 908 million barrels of oil were transported to upgraders and markets through more than 400,000 km of pipelines in Alberta (Alberta Energy Regulator 2013). After this process is completed the product can be piped to refineries and sold.

Upon a mine closing, the industry is required by law to reclaim all land they disturb to equivalent land capability and return the land to the crown. The rapid development of these oil sands has received considerable attention from a growing number of social scientists. Much of this commentary has focused on allegations of negative ecological and socioeconomic consequences of the undertaking, ranging from local land and water damage to implications for global climate change of such a massive carbon-intensive energy project (Davidson and Gismondi 2011). Both Chastko (2004) and Hoberg and Phillips (2011) lament the lack of substantive policy change addressing environment concerns. Similarly, Way (2008) found that local concerns have not been considered in policy formulation efforts.

The sector has some characteristics that set it apart from many other areas of policy-making, such as very long time horizons for investment and harvesting or exploitation activity, often rural locations, and a built-in complexity involving multiple sectors of government activity, from international trade to community, regional and national development and all of the social, economic, cultural and geographical problems and issues they entail. Federal, provincial, First Nations, and municipal government agencies all have responsibilities in connection with this massive industrial undertaking and the current mix of policies reflects the complexity of the issues that policy-makers face in this sector. The Government of Alberta has facilitated multi-stakeholder oil sands involvement through initiatives such as a province-wide Land-Use Framework and the Lower Athabasca Regional Plan (Alberta 2011). These efforts led to the recommendations of the 2011 Strategy.

In 1967, Great Canadian Oil Sands, now part of Suncor Energy Ltd., initiated the world's first large-scale oil sands operation, producing 32,000 barrels of oil per day (bpd) from an expensive process of oil sands mining and refining.[4] In 1978, 109,000 bpd came from the first Syncrude mine (Suncor 2013). As oil prices increased and technology improved, oil sands production began to boom in the early 2000s with production exceeding the 1 million bpd in 2004. By 2013, overall oil sands production averaged 1.9 million bpd with projections of 3.9 million bpd by 2022 (CAPPA 2013). This relatively recent rapid exploitation of its unconventional oil reserves has made Canada one of world's top 10 crude oil producers with the third largest proven oil reserves, behind only Saudi Arabia and Venezuela (US Energy Information Administration 2014; Brownsey 2007).

4. The historical trajectory of Alberta's oil sands reclamation policy: policy layering in action

The purpose of reclamation is to prevent, remove, control, and remedy any type of degradation of the surface and vegetation. Reshaping and re-contouring of the land consists of bulldozing and moving soils to replicate the topographic landforms that were present prior to the disturbance. It is expected that any land that has been disturbed due to oil sands extraction is reclaimed and also remediated to its equivalent land capacity. In Alberta any costs (ranging $10,000–$250,000 per hectare) that accrue during the reclamation process are the responsibility of the mining operator (Foote 2012).

Currently, 66,342 hectares of land are considered to be 'disturbed land in oil sands mining' that will be subject to reclamation activity (Alberta Environment 2011). However, as mines cease activity, this amount is expected to increase substantially in future years. Mines face unique reclamation challenges because of the landscapes that cover the deposits. The Alberta Environmental Protection and Enhancement Act defines reclamation for these projects to be any of the following four options:

> 1) "The removal of equipment or buildings or other structures or appurtenances;" 2) "The decontamination of buildings or other structures or other appurtenances;" 3) "The stabilization, contouring, maintenance, conditioning or reconstruction of the surface of land;" 4) "Any other procedure, operation or requirement specified in the regulations." (Government of Alberta 2014, 2)

There are two types of landscapes defining reclamation throughout the oil sands: wet landscapes and dry landscapes. Dry landscape reclamation has a long history in Alberta and, in many cases, is now a routine process (BGC Engineering 2010). For dry landscapes, the reclamation process proceeds in the following steps: gathering reclamation material, placing of material on site, forming landscapes, fertilizer application and planting vegetation, monitoring, and reclamation certification (BGC Engineering 2010). Gathering reclamation material involves returning nutrient rich topsoil to the disturbed site. The common practice is to remove and store these soils off site until the mine is ready to be reclaimed (BGC Engineering 2010). Once the mining process has been completed the soils are brought back and placed over the disturbed site. Operators will use heavy equipment to design a new landscape on the barren site. After this process is complete native species will be planted on the site and fertilizer will be applied to ensure the successful growth of these plants. The site will then be monitored indefinitely; eventually if standards are met the site will be certified reclaimed (BGC Engineering 2010). Depending on the site conditions this process can take decades to complete, and to date there is only one certified reclaimed site within Alberta (Grant, Dyer, and Woynillowicz 2008).

Conversely, wetland reclamation, which is relatively new in the oil sands involves no well-defined steps. Further complicating matters is the high percentage of wet landscapes present throughout the oil sands deposits. This has led to a combined effort between government, industry, and non-governmental organisatons (NGOs) to conduct research on reclaiming different types of wet landscapes. This collaboration has led to numerous test sites for wetland reclamations; however, there remains a lack of proven methods for reclaiming these disturbed sites. A study conducted by Rooney and Bayley (2011) suggests oil sands reclamation in wet landscapes has failed to match the species diversity and functionality of natural wetlands in the region. Efforts are ongoing in the oil sands to

improve the reclamation of wet landscapes. Government, industry, and NGOs are working together to improve this process.

Additionally, remediation is an expected task that should be completed during reclamation. Remediation is "taking action to reduce, isolate, or remove contamination from an environment with the goal of preventing exposure to people or animals" (Government of Alberta 2011, 16). By completing a cleanup, this allows the land to return to its natural state as chemicals and toxins may have been introduced into the ecosystem due to operations.

Recently Powter *et al.* (2012) and Perry and Saloff (2011) provided detailed overviews of 50 years of Alberta's key oil sands related reclamation legislation, regulation, and policies (Table 2).

Interspersed have been various strategies and planning initiatives that have also influenced reclamation policy change and are highlighted in Table 3.

Table 2. Oil sands reclamation legislation and policies.

Decade	Year	Event
1960s	1963	Surface Reclamation Act
	1963	Land Conservation and Reclamation Council Established
1970s	1973	Land Surface Conservation and Reclamation Act
	1973	Land Reclamation Division established in Alberta Environment
1980s	1980	Minimum reclamation standards released
	1982	Minimum reclamation standards updated
	1983	Concept of equivalent land capability introduced
	1983	Land Surface Conservation and Reclamation Act amended
1990s	1993	Environmental Protection and Enhancement Act
	1993	Conservation and Reclamation Regulation
	1993	Reclamation criteria for well sites implemented
	1994	Reclamation criteria for well sites revised
	1995	Reclamation criteria for well sites revised
	1996	Green Area pilot of well site reclamation certification without inquiry implemented
	1996	Railway reclamation criteria released
	1998	Reorganization of Alberta Environment
2000s	2001	Detailed requirements for assessing contamination implemented
	2001	Draft pipeline reclamation criteria released
	2003	Well site reclamation certification without inquiry implemented on private lands
	2007	Comprehensive remediation guidelines released
	2007	Forest reclamation criteria for well sites released
	2008	Professional sign off of well site reclamation certificate applications
	2009	Remediation Certificate Regulation passed
2010s	2010	Revised well site reclamation criteria released
	2010	Comprehensive remediation guidelines revised
	2014	Alberta Energy Regulator (AER) assumed responsibility for regulation of reclamation and remediation activities

Source: From Powter *et al.* (2012).

Table 3. Major oil sands strategies and land planning initiatives.

Oil Sands Initiative	Description
1995 National Task Force on Oil Sands Strategies	Called for a tripling of oil sands activity.
The Alberta Sustainable Development Plan for the Athabasca Region (Alberta Environment 2001).	Identified progress towards attainment of natural conditions on reclaimed habitats as being a top priority.
2001 Regional Sustainable Development Strategy for the Athabasca Oil Sands Area (RSDS)	Reclamation Working Group (RWG),[7] The Fort McMurray-Athabasca Subregional Integrated Resource Plan (IRP).
1998–1999 Annual Report of the Auditor General	The development of a new Financial Security Risk Assessment Model.
2006 "Investing in our Future: Responding to the Rapid Growth of Oil Sands Development" Report	Known as the Radke report, it was commissioned to current challenges resulting from the rapid pace of oil sands development.
2007 Oil Sands Consultations Multi-stakeholder Committee Final Report	Define a reclamation standard that describes final certification requirement where site conditions are clearly self-sustaining, and where natural succession to a typical boreal ecosystem would occur.
2009 Reclamation Working Group of the Cumulative Environmental Management Association (CEMA)	A Framework for Reclamation Certification Criteria and Indicators for Mineable Oil Sands.
2009 Alberta Energy. Responsible Actions: A Plan for Alberta's oil sands	Require reclamation of tailings to occur at the same rate as (or faster than) the production of new tailings on a regional basis. Require disturbed land to be reclaimed and certified in a timely manner across lease boundaries and the entire project footprint. Require project reclamation requirements and milestones to be met as a condition of further oil sands development. Enhance existing mining liability management programs to further protect Albertans from financial liabilities related to reclamation.
Lower Athabasca Integrated Regional Plan 2011–2021	According to 2008 Alberta's Land-Use Framework (LUF), Cabinet approved the creation of the Lower Athabasca Regional Council.
2011 Oil Sands Progressive Reclamation Strategy	A four-point plan that included improved reclamation certification process, enhanced and transparent public reporting on reclamation performance, a New Mine Reclamation Financial Security, and a Program, and a New Tailings Management Framework.

Source: the authors' compilation.

Considered in detail over the full developmental trajectory, oil sands reclamation policy in Alberta can be seen to consist of an increasingly complex set of components. Most obviously, there are policy goals that have remained reasonably consistent over time and a relatively small number of policy instruments that target the behavior of mining companies in an effort achieve these goals.

The statues, regulations, and guidelines highlighted in Powter *et al.* (2012) and Perry and Saloff (2011) reflect both policy outcomes and processes of policy change which have unfolded in the sector over the past half century. Perry and Saloff (2011), as well as the provincial government and energy industry, argue that the Strategy was a significant departure from the existing policy trajectory. However, the Pembina Institute, the major environmental actor in the oil sands policy community, argues that the new measures were simply an extension of the existing policy and did not go far enough to ensure the province of Alberta would not be left with major responsibilities for remediation in addition to significant un-remediable environmental degradation when the oil sands activity winds down (Lemphers 2011).

In 2012, the Responsible Energy Development Act was passed, which led to the introduction of the Alberta Energy Regulator (AER) in 2014 (Alberta Energy Regulator 2014). This new agency was tasked with regulating energy resource development. The AER was designed not only to "guide and enhance the reclamation process within the oil sands and enforce government policy" but also to operate at arm's length from the government (Alberta Energy Regulator 2014, 8). It remains unclear how the AER will carry out the 2011 Strategy.

As Tables 2 and 3 show, the present era can be traced back to 1963 when Alberta pioneered the replacement of the traditional common law remedies against damage and nuisance by a regulatory regime based on statute (on this general process of environmental law development see Howlett 2001). Despite the fact that earlier initiatives in the sequence of policy development were designed for the reclamation of oil wells and much smaller mining operations lacking the scope and scale of the disturbance created by the oil sands, the trajectory of policy change over the ensuing half century shows significant continuity with these earlier efforts.

Less obviously, there is a tendency to state policy objectives more clearly over time in an effort to provide some strategic direction to policy and a much more varied history of 'tinkering' with the requirements of the instruments (their 'settings') and the way that the instruments are implemented (their 'calibrations') (Cashore and Howlett 2007).

Two instances of policy replacement occurred in this process. The first took place in 1963 with the replacement of the 'non-policy' of relying on common law remedies to enforce reclamation obligations between landowners and leaseholders with a fledgling regulatory regime based on a new statute, the Surface Reclamation Act. The second took place 30 years later with the 1993 comprehensive Environmental Protection and Enhancement Act and the accompanying Conservation and Reclamation Regulation that folded reclamation policy into a broader mix dominated by environmental goals and 'science-based' implementation logic. What happened in the three decades between the two episodes of replacement is crucial for understanding the new policy design in 1993 and, hence, for understanding the significance of the more recent 2011 Oil Sands Progressive Reclamation Strategy and the processes which brought it about.

4.1. The 1963 act

As Powter *et al.* (2012) note, the Surface Reclamation Act (1963) was primarily directed at the growing problem of oil wells on private agricultural land in the settled part of the province. It was followed in 1969 by an amendment to the Public Lands Act that extended a similar regulatory framework to public lands not covered in the original legislation. The framework itself was relatively simple, setting out a general obligation to reclaim the surface of land disturbed by certain kinds of

industrial activity (and allowing for the exemption of other kinds, such as residential and agricultural developments) and providing for the issuing of reclamation orders and reclamation certificates. The Land Surface Conservation and Reclamation Act (1973) consolidated these schemes and, influenced by the planning literature of the day, focused on minimizing the impacts of industrial development by requiring development and reclamation approvals prior to large-scale industrial activity (Sinton 2011).

Subsequent amendments and regulatory changes in the late 1970s and early 1980s fine-tuned this regulatory scheme, but an essential continuity between all these developments was provided by shared goals and implementation logic. The goal was productivist in emphasizing the restoration of the former productive capacity of disturbed land and the implementation logic was discretionary, referring to common sense judgment on the part of the regulatory agencies (Powter *et al*. 2012). While this worked reasonably well with agricultural land – the reclaimed land either did, or did not, support a productive crop – even here there were concerns about the delay of at least a year in determining whether reclamation, however, had been successful. When it came to the extension of the regulatory scheme to forestland, the system was unworkable, given the long timelines involved in re-growing forests.

As policy-makers tinkered with the 1963 framework over this period, new ideas were gaining currency in the reclamation policy community. Paralleling developments in other renewable resource sectors, environmentalism led to a new prominence for ecological ideas and for new disciplines such as conservation biology. Reclamation began to be talked about in terms of restoring ecological structure and function as the essential precondition for restoring productivity capacity that may not be observable for years or even decades.

A series of developments outside the main legislative framework began to produce ecological criteria for reclamation that were increasingly at odds with the productivist orientation of existing legislation and regulations. Statutory changes emerged as the result of new Progressive Conservative premier Ralph Klein's promotion of a more responsive environmental agenda, which resulted in the tense layering of these two sets of policy ideas and goals. As Winfield (1994) elaborated:

> This new approach was evident in Klein's efforts to strengthen the Department's approach to law enforcement, to make its standard-setting and policy development processes more open to public input, and to become more aggressive in its administration of the existing environmental impact assessment process. In this context, extensive pro-visions relating to environmental law enforcement were included in a proposed Alberta Environmental Protection and Enhancement Act released in January1990. (143)

The net effect was to stretch the concept of reclamation beyond the capacity of the older, productivist regulatory framework (Feindt and Flynn 2009) and exacerbate the tension between new and incompatible environmental policy elements layered on top of the older productivist ones. At the same time, developments in the scale and scope of the mineable oil sands area cited earlier raised new challenges to regulations that were designed for much smaller-scale disturbances.

4.2. The 1993 act

The result was a second episode of policy replacement, the Environmental Protection and Enhancement Act (1993), which, as Powter *et al.* (2012) note, consolidated the

regulations concerning the protection of land, air, and water, and explicitly repealed and replaced the old reclamation legislation. The Act was accompanied by the Conservation and Reclamation Regulation and provided needed clarity and definition to terms such as reclamation and remediation.

In particular, the 1993 Regulation introduced the objective of 'equivalent capability' to describe successful reclamation and emphasized that the land uses after reclamation need only be 'similar to' and 'not necessarily be identical' with land use prior to disturbance. 'Capability' was given a scientifically grounded definition in terms of 'the physical, chemical, and biological characteristics of the land.'

Along with the objective of equivalent capability came a new 'science-based' implementation logic that stressed the development of criteria and indicators of capability. The new logic, in turn, allowed for regulatory agencies to remove themselves from on-the-ground implementation. Instead, there was a greater emphasis on their adopting a planning and audit function. In addition to these planning requirements, policy instruments stressed a 'carrot and stick' incentives approach. A reclamation security program required the posting of bonds where reclamation was identified as a requirement for an approval; a reclamation certification program allowed for the issuing of a certificate for successful reclamation that protects the operator from subsequent claims by landowners or land users.

Subsequent policy development, post-1993 has again been of the tinkering or patching kind, as occurred between 1963 and 1993, but in a more sophisticated fashion than in the earlier era. New concerns about reclamation policy were evident in three large scale stakeholder and government initiatives: the Oil Sands Consultations Multi-stakeholder Committee; the Cumulative Environmental Management Association (CEMA) study of cumulative effects of regional development in northern Alberta; and the Oil Sands Ministerial Strategy Committee. One of the 30 recommendations stemming from the Oil Sands Ministerial Strategy Committee report, "Investing in our Future: Responding to the Rapid Growth of Oil Sands Development" was to address reclamation through integrated regional planning. Reclamation criteria were developed, and later revised, for well sites in light of the new objective of 'equivalent capability,' and the criteria and indicator process were extended to the oil sands culminating in 2009 CEMA report, "A Framework for Reclamation Certification Criteria and Indicators for Mineable Oil Sands" (Poscente 2009). The report highlighted the slow pace of reclamation in the mineable area and the controversy around the first reclamation certificates issued for Suncor in 2008. The report proposed policy patches which changed neither the goals and science-based implementation logic of the post-1993 policy framework nor the key objective of 'equivalent capability.' On the instrument side, oil sands operators are still threatened with the regulatory stick of posting security for future reclamation and urged on with the carrot of reclamation certificates. However, a new information instrument was added to improve the transparency of reclamation activity, with a new classification of disturbed and reclaimed land and additional reporting requirements. Otherwise, the changes are all to settings and calibrations.[5]

In addition to the CEMA recommendations, there was a push for reclamation policy change in the province's new regional land-use planning processes. As oil sands production increased, one of seven regional land-use plans initiated under Alberta's 2008 Land-Use Framework (LUF), the Draft Lower Athabasca Integrated Regional Plan 2011–2021 was released in 2011. The government-appointed Lower Athabasca Regional Council raised a host of issues relating to oil sands-related land use. Of reclamation activity, the plan recommended that the Province develop a "progressive reclamation

strategy" that met the stated strategy "outcomes" that "landscapes are managed to maintain ecosystem function and biodiversity" (Government of Alberta 2012, 102). Under the same planning outcome, a tailings management framework was recommended. These proposed measures echoed the same policy goal, namely that "land be returned to an equivalent capability following the completion of industrial activities" (Alberta 2011, 9). Following the Plan's release, the Department of Sustainable Resource Development began formulating the 2011 Oil Sands Progressive Reclamation Strategy. However, this Strategy has remained largely an internal departmental planning exercise due to the formation, in 2012, of an arm's length organization, the Alberta Energy Regulator. The Regulator's roles, defined in the *Responsible Energy Development Act*, included "to regulate the remediation and reclamation of pipelines, wells, processing plants, mines and other facilities and operations in respect of energy resource activities in accordance with the Environmental Protection and Enhancement Act" (Alberta 2012, 1).

Thus, in the post-1993 regime, there is no evidence of the kind of tense layering and stretching of key concepts that led to the replacement of the post-1963 framework. Both the proponents and critics of the current framework embrace the ecological approach to reclamation and engage only in policy patching aimed at retaining the status quo. Argument is over the details, for example, whether the new technology of drying tailings can reproduce the characteristic pattern of boreal wetlands that covered much of the mineable oil sands before disturbance, rather than about re-designing or overhauling the existing regime.

5. Analysis: characterizing Alberta's oil sands reclamation policy trajectory

Using a HI methodology, this article outlines a pattern of continual small-scale alterations to the status quo in Alberta's oil sands reclamation policy, punctuated by very infrequent periods of large-scale change. Laid out chronologically and descriptively, two features of the long-term policy trajectory of Alberta's oil sands reclamation policy stand out. First, there is continuous policy development, with major legislative changes in every decade, usually followed by institutional changes and the development of some new regulatory standards. Second, the pace of policy development intensified in the 1990s, following the enactment of the Environmental Protection and Enhancement Act, shadowing the rapid development of oil sands activity and production itself, culminating in the series of changes that comprise the most recent 2011 *Strategy*.

Against this backdrop, the proposed 2011 changes can be seen to fit well within the existing 1993 policy design. In the period 1963–1993, new elements were added to the policy mix without the removal of older ones and existing elements stretched to try to fit new goals and changing circumstances. This created a mix that contained various incompatibilities, tending to frustrate the achievement of policy goals (Sinton 2011) and led to significant reforms and policy re-design in 1993. As Perry and Saloff (2011) state "[t]he legislation that previously dictated the process and standards for reclamation was not initially designed for oil sands mining. Rather than introducing new legislation tailored to oil sands mining projects, amendments to existing legislation, along with policy changes, were implemented from time to time with the result that the legislators were constantly playing catch-up" (5). This process, however, was not repeated in the post-1993 period. The destructive stretching of policy ambitions has not, so far, been a feature of policy development since the replacement events of 1993. Instead, we find a process of constructive tinkering, or patching, with moderate layering of new policy

instruments and incremental changes to instrument calibrations and settings in response to policy feedback.

This helps reconcile the two different interpretations of the scale and impact of the 2011 reforms cited earlier. That is, designed as an effort to overcome the anomalies or problems contained in the 1993 policy, the 2011 reforms reflect a process of 'policy patching' in which the means and instruments utilized to affect policy outcomes are altered, but do not in themselves reflect a significant new direction in reclamation activity (Howlett and Rayner 2013). This differs from the 1993 reforms which arose after a multi-year experience of 'tense layering' (Kay 2007) in which policy elements were 'stretched' from an earlier policy era in order to try to accommodate changing circumstances and goals (Feindt and Flynn 2009) This ultimately led to a situation in which conflicts between regime elements required a wholesale re-design or 're-packaging' of the policy itself.

6. Conclusion: lessons from Alberta's reclamation policy for policy studies and vice versa

HI policy theory helps us understand the past and present trajectories of Alberta's oil sands reclamation policy and generates insights about the past, present and future trends in the sector which are otherwise difficult to discern from a straightforward recitation of the empirical record of legislative development.

In light of these recent organizational changes, this article addressed long-term policy change by subjecting policy development in the sector to detailed HI analysis. Those in the environmental and planning field rarely utilize such analysis. By examining the historical record of development of Alberta's oil sands reclamation, the policy mix in this area is examined in the effort to understand the dynamics and forces which have driven this policy area forward.

The observation of layering should come as no surprise, since this mode of policy change is commonly observed in many other areas of policy-making, including natural resource policy, where powerful interests are able to keep in place favorable goals, instruments, and settings, such as unsustainable fishing or timber-cutting quotas that support an industry, and limit the impact of new policy initiatives (Howlett and Rayner 1995; Rayner *et al.* 2001). But in this case, these patching processes at work contrast dramatically with the stretching characteristic of earlier eras.[6]

In general, the finding of such a 'punctuated equilibrium' pattern in this sector is not unusual in policy-making (Baumgartner and Jones 1991, 1993; Robinson 2007). However, the case does reveal at least two processes at work in policy formulation – policy 'patching' vs. policy 'packaging' – which also shed light on the underlying mechanisms – 'tense layering' and 'policy st'retching' – which led to these two different outcomes. That is, in the case of oil sands reclamation in the post-1993 era, the main process at work continues to be layering 'as it was in the pre-1993 era' but done through a process of 'smart' policy 'patching' rather than 'stretching.' New elements have been added to the mix without removing older ones; in the most recent instance having added information instruments to the regulatory and incentive instruments already in place.

The development of current oil sands reclamation policy thus illustrates the presence of key features of layering of interest to policy scientists. As Kay has noted, layering can result in tensions between layers which can drive forward policy change. However, the case also reveals that, contra Kay (2007), layering does not, at least in the short to medium term, necessarily bring about incoherence, inconsistency, or incongruence in a policy mix. Rather

this depends to a great extent not on the presence or absence of layering, but rather upon whether or not layering involves policy 'stretching' or 'patching.'

That is, the addition of new instruments and the changes to instrument settings and calibrations that have taken place in Alberta's reclamation policy over the last 20 years have strengthened the coherence and consistency of the regulatory framework and improved the congruence between policy means and ends as well. This is an important finding not only in reconciling diverse opinions about the nature and impact of recent changes to the provincial reclamation regime but, in contrast to most studies of policy layering which feature only negative appraisals of policy change brought about through this process, observes the potential for policy patching to serve as an effective design technique for resolving the tensions developed through layering (Howlett and Rayner 2007; Howlett, Mukherjee, and Woo 2015).

Notes

1. The twin characteristics of a high level of cross-sectoral horizontality and long-term temporality, however, are shared by some other policy areas, such as health, agrifood, and pensions policy and some lessons can be derived from these analogous sectors about how to analyze policy-making in this case (Feindt and Flynn 2009; Jacobs 2008; Kay 2007). Conversely, oil sands development, and reclamation in particular, also makes a good case study against which to test propositions developed about long-term policy-making in these other areas.
2. This is a concept developed in the neo-institutional sociological literature by some of its leading figures, namely Beland (2007), Thelen (2004), and Hacker (2004). Beland and Hacker 2004) and Stead and Meijers (2004), in particular, both attempt to explain the pattern through which social and political institutions have evolved over long periods of time through the use of this concept.
3. The raw bitumen is processed at one of the province's five upgraders (Alberta Energy Regulator 2014).
4. The successful separation of bitumen from the clay and sand was first achieved in 1926 when Research Council of Alberta scientist Karl Clark developed a hot water separation process, the precursor of today's oil sands operations (Oil Sands Discovery Centre 2012). This led to a small amount of production in the mid-1930s.
5. Most controversially, the 'asset liability' approach to assessing security for future reclamation will, in effect, hold the mine's assets as security, requiring less cash up front when the mine still contains large deposits of accessible bitumen and progressively more as those deposits are exhausted. Less controversially, there are continuing efforts to provide training and feedback for the on the ground scientific application of the criteria and indicators, a development paralleled in other regulatory areas such as food inspection, where "poke and sniff" or professional judgment is giving way to laboratory testing.
6. This is not to say that there are not calls for the complete redesign of oil sands reclamation policy. However, there is no guarantee that an optimal policy mix will result from any (re) design effort, or even that such an effort could be mounted and brought to fruition. In this sense, some aspects of slow patterns of policy change through layering are fundamentally responses to political and policy calculations about the difficulty of the wholesale replacement of policy regimes. At the political level, there is often the difficulty of assembling a broad enough coalition of interests capable of abolishing old goals and instruments and replacing them with new ones in the face of those who have reasons to protect the status quo. The more complex the political system, the larger the number of veto points, and the more actors and interests in the relevant policy subsectors, the more difficult will be wholesale change. And on the policy level, a complete redesign of a policy regime requires significant analytical capacity that can draw the appropriate lessons from the shortcomings of the old arrangements and design a more optimal replacement. That is, replacement requires the most capacity and the expenditure of significant political capital and is therefore a more difficult (and hence less likely) outcome than repeated bouts of (partial) layering.

7. In 2001 the RWG developed the following three manuals for the *Environmental Protection and Enhancement Act*: Land Capability Classification for Forest Ecosystems in the Oil Sand Region, Guidelines for Reclamation to Forest Vegetation in the Athabasca Oil Sands Region, and Guidelines for Wetland, and the Establishment on Reclaimed Oil Sands Leases.

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