VERTAISARVIOITU
KOLLEGIALT GRANSKAD
PEER-REVIEWED
www.tsv.fi/tunnus

Matthew Sawatzky[a]

Canadian Bioenergy Development and EU Influences

Abstract

This article employs a relational approach to examine EU influences on Canadian bioenergy development. Bioenergy development is a multifaceted process that needs to be understood as part of much larger governance processes, including international climate change objectives and trade, as well as national and provincial energy politics. This work uses the concept of translation loops to analyze the Comprehensive Economic and Trade Agreement (CETA) between Canada and the EU, Canadian domestic energy politics and Canadian bioenergy development. The results indicate that CETA has both path dependent and path creation aspects, and that bioenergy development is currently hindered by path dependent elements in domestic politics, a lack of vision in the energy sector, access to markets and low energy prices. To address these issues, Canada could look to the EU for strategy development, but needs to invest more in research and develop stronger policies. The article also argues for the development of a carbon accounting system which acknowledges both bioenergy producers and consumers.

Keywords: Bioenergy development, Governance, Path dependency, CETA

Introduction

Sustainability is a catch phrase in energy production and consumption. While the global energy market continues to be dominated by fossil fuels, renewable sources are commonly thought to be an increasingly important component of our future energy supply as, "the world is now adding more capacity for renewable power each year than coal, natural gas, and oil combined" (Randall 2015). Contributing to the rise of renewable energy has been the European Union's (EU) 2009 Renewable Energy Directive (RED), a mobile policy designed to be implemented by member states (Kortelainen & Rytteri 2017).

Stupak et al. (2007: 667) claim that,

> *"[t]he substitution of biomass for fossil fuels in energy consumption is a measure to decrease the emission of green house gases and thereby mitigate global warming."*

In the decade since those words were written bioenergy use has become more complex and challenges to its development have arisen.

a. University of Eastern Finland, matthew.sawatzky@uef.fi

"The assumption that bioenergy is 'carbon neutral' (i.e. that it has no net GHG emissions) must be avoided, and bioenergy emissions must be estimated quantitatively" (Smyth et al. 2017: 817).

Thus, choices concerning the type and source of bioenergy, the type of energy that it replaces, and the calculation method applied (Ter-Mikaelian et al. 2015; Thornley et al. 2015) must be addressed. Potential negative effects of bioenergy, including hydrological impacts (Watkins et al. 2015), reduction of land for agriculture and conservation (Popp et al. 2014), and sustainability issues (McDowall et al. 2012) have also arisen.

Bioenergy potentials vary between places and as demands increase land accessibility becomes an increasingly important factor for bioenergy marketisation and trade (Deng et al. 2015; Magar et al. 2011). It is logical for actors to attempt to lower costs and decrease energy dependence by developing local resources and avoid the importation of bioenergy, but political strategies do not always take into account their true potential (Welfle et al. 2014). The transformation of energy systems requires technological and financial capacities, but Burch (2010: 288) argues that, "budgetary resources appear to be less important than the clear articulation of climate change as a municipal priority," while Barnett et al. (2015) claim that energy development and transitions have much to do with social adaptation, boundaries, limits and path dependency. Together, these aspects lead to a system of trade-offs (Acosta et al. 2014) where value disagreements and conflicts occur (Gamborg et al. 2014).

The EU is a leader in the fight against climate change and renewable energy development. Its policy highlights security of supply, sustainability in the energy sector and the development of an internal energy market (RED 2009; EC 2009). However, some members rely on non-EU members to reach their objectives. Consequently, this article sets out to answer the question, what influence does Canada's relationship with the EU have on bioenergy development? The Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada is investigated here as a tool to support bioenergy trading and development. The following section briefly examines climate change and governance in Canada and the EU, and then the methods are described. After, the translation loops of CETA, Canada's internal energy politics and Canadian bioenergy development are outlined before introducing the effects of political leadership and rupture. The final section presents the discussion and conclusions.

Governance and Climate Change

Governance is conceived of here as a process which, "generates, transports and implements various norms, incentives and other means seeking to influence people's ways of acting and thinking" (Kortelainen & Albrecht 2014: 144). In this process actors and things come together to form assemblages (e.g. Bulkeley 2005; Albrecht 2015) where power is a central element. Actors wield power in disparate manners and to varying degrees, in attempts to achieve specific socio-political and economic objectives. Their success is directly related to an actor's reach, or the extent to which they can influence other actors, assemblages and processes at various scales and distances (Allen 2011).

To help identify governance relations, Kortelainen & Albrecht (2014) have developed the concept of translation loops. Translation loops "involve distinct rounds of negotiations and calculations and possess varying rationalities" (Ibid.: 144). These rounds occur simultaneously as policies move from design to implementation and vice versa, leaving actors the chance to influence policy with their rationalities and actions, which are never neutral (Ibid.: 146-148). Interactions within an assemblage may be path dependent, path creative or a combination of the two; making governance a contextual, multi-stakeholder affair where understanding cross-scalar relations is critical (Cash et al. 2006). As an analytical tool for relational studies, translation loops allow researchers to move beyond the territorial readings of multi-level governance, where spaces are empty containers to be filled in, to more complex and open understandings of spaces in continual remaking (Albrecht et al. 2017).

In a democracy, governance also includes Manderscheid's (2007: 110) idea that, "government has one raison d'être – to provide good government for the benefit of the people within their respective jurisdiction." However, what constitutes good governance and what benefits the people are highly contested, contingent on the position of actors and subject to change as a governance assemblage evolves. This helps explain the complexity of different rationalities employed since actors occupy unique mobile positions within an assemblage. Complicating this is the fact that actors have the possibility to

change their minds for a multitude of reasons. Thus, understanding the relationships that exist between actors on different scales and in different locations, and how those relationships affect governance is of critical importance to understanding bioenergy development.

RED (2009) and the 2020 climate & energy package have positioned the EU as a global leader. They fix objectives at the supranational and national levels, leaving local, regional and national level actors the task of translating and implementing the policy. In turn, these actors may simultaneously reach out to the EU to influence policy designers (see Kortelainen & Rytteri 2017). The EU has established hard policy measures via these objectives and obliges member states to develop National Renewable Energy Action Plans. It also creates softer policy measures to allow different nations and regions within the EU to fill in policy and choose their own development paths. This has resulted in the application of a wide array of approaches to foster bioenergy development within and beyond its borders (Albrecht et al. 2017; Sawatzky & Albrecht 2017) and resulted in a relatively stable governance assemblage.

Compared to the EU, Canada has been somewhat of a laggard when it comes to climate change and energy. In 2009 under the Copenhagen Accord, Canada committed to reducing its GHG emissions by 17% (based on 2005 levels) by 2020. The federal government, then led by Prime Minister Harper, withdrew Canada from the Kyoto Protocol in 2012 and de-prioritised environmental issues. In 2015, newly elected Prime Minister Trudeau signed the Paris Agreement at COP 21 and in 2016 the Pan-Canadian Framework on Clean Growth and Climate Change was created with the goal of reducing GHG emissions by 30% (based on 2005 levels) by 2030, though there are no penalties for not achieving these objectives. Canada's climate change governance assemblage has thus far been much more unstable than the EU's.

Climate change, international trade and governance are significant issues pertaining to Canadian bioenergy development and governance. The Canadian constitution gives the federal government of Canada "plenary power in matters relating to international treaties" and "exclusive legislative authority over international trade and commerce" even though "international trade agreements now include the jurisdiction of federated states and even municipal governments" (Paquin 2013: 545-546; also VanDuzer 2013). In terms of bioenergy development, this is complicated by the fact that the provinces have control over natural resources, while climate change mitigation requires global commitments with implementation at all levels of life. This division of power thus forces actors to simultaneously negotiate various levels and scales of governance (see Cash et al. 2006) as they look to create successful relationships.

This work combines analyses on CETA, Canadian energy politics and Canadian bioenergy development. While each one represents a distinct process, there is overlap as the rationalities employed and decisions made in one loop may affect those in other loops. Thus, together they help reveal the effects of Canada's relationship with the EU on Canadian bioenergy development. Kukucha (2013: 530) warns that studies on Canadian foreign trade policy must not become, "overly focused on institutional actors, especially central and sub-central governments." Instead, he claims that business groups and lobbies have a strong influence over the negotiation process of treaties like CETA. Furthermore, Patchell & Hayter (2013: 18) claim that companies are the key to fighting climate change and that,

> *"the international community should shift its focus from setting targets that countries cannot meet to setting directives that multinational corporations have to follow."*

By exploring the perspectives of industry associations, this article seeks to gain insight into how Canadian bioenergy develops and how it is affected by Canada's relationship with the EU.

Methods

The goal here is to determine if and how the EU affects Canadian bioenergy development. To do this, the study deploys the translation loop concept for three distinct areas: CETA negotiations, Canadian energy politics and bioenergy development. The materials used include scholarly and newspaper articles on CETA, governance and bioenergy and industry reports published on the websites of Canadian bioenergy actors. Five thematic interviews were also conducted with industry members by telephone and Skype in June 2015. Interviewees included two members of the Forest Products Association of

Canada (FPAC I, FPAC II), one member from the Quebec Forest Industry Council (QFIC), the BC Bioenergy Network (BCBN) and the Wood Pellet Association of Canada (WPAC), who also worked for the Quebec Wood Export Bureau. Interviews were conducted in English or French, recorded and notes were taken. Interviews ranged from 45 minutes to an hour and a half and covered the three themes. While not exhaustive, these interviewees are "interpretively competent voices" (Holstein & Gubrium 1995: 20) from umbrella organisations that provide representation for industry members in geographically different parts of the country. Their insights are consequently useful in understanding the relationships within the Canadian bioenergy assemblage.

Canada-EU Relations

The relationship between Canada and the EU is friendly and cooperative. McKenzie (2014) argues that Canada has always been a trading nation because of its small population and vast natural resources. The roots of Canadian international trade began with First Nations trading with British and French colonists, continued through periods of protectionism and into the contemporary free trade era. While the EU is an important trading partner, the United States (US) is Canada's primary partner and the relationship between Canada and the US casts a shadow on virtually every aspect of Canada's international activities. There are currently no major issues threatening the peaceful relations between Canada and the EU, but their approaches to (bio)energy governance and development were highlighted during the CETA negotiations.

Comprehensive Economic and Trade Agreement

CETA, which Canadian Prime Minister Harper touted as "the biggest deal our country has ever made" and "a historic win for Canada" (Payton 2013), is an expression of the friendly relations that exist between EU-members and Canada and their desire to work together (McKenzie 2014: 241). It provisionally came into force on September 21, 2017 and reduces tariffs on 98% of all goods and services between Canada and the EU while opening up their respective markets. There is, however, still some uncertainty as the agreement is currently being ratified by EU members. The EU had also been negotiating a free trade agreement with the US, the Transatlantic Trade and Investment Partnership, but this deal was scrapped when Donald Trump became president (O'Grady 2017). While the real effects of CETA will be determined in the future, an analysis of its negotiation process highlights some important aspects of the Canadian-EU relationship.

Negotiations for the agreement began in 2009 after the previous agreement between the two parties, the Trade and Investment Enhancement Agreement, came to an end in 2006. From an EU perspective, the Canadian provinces were responsible for the failure of that agreement (Kukucha 2013) and as negotiations began the EU insisted on provincial representation. Provincial participation was necessary because the EU was targeting provincial and municipal procurement processes, over which the federal government has no authority (Paquin 2013). Additionally, the provinces are not legally obliged to adhere to international trade agreements made by the federal government in areas where they have constitutional jurisdiction. In cases where Canada fails to uphold its obligations due to provincial non-compliance, it is the federal government which is legally and financially responsible to the other parties (VanDuzer 2013).

CETA is remarkable because it marks the first time in which Canadian provinces have actively participated in an international trade agreement. Although precedent setting, the significance of this aspect is debatable since Canada has negotiated agreements with more than 60 nations and the provinces have only been included in those with the EU (Paquin 2013: 551). Kukucha (2013: 529) also states that,

> *"sub-federal governments in Canada - with the possible exceptions of Quebec, Alberta, Ontario and British Columbia – lack the bureaucratic resources to fully engage all of the relevant areas of the discussion."*

Consequently, it is uncertain just how much impact CETA will have on future international trade negotiations, or if it has truly shifted the balance of power in the relationship that exists between Canada and the provinces.

All of the organisations interviewed here were directly involved in discussions about CETA except the BCBN. FPAC and WPAC had meetings with the federal government, while QFIC met with the Province of Quebec. Consequently, these three groups were able to influence the final document. All of the interviewees agreed with CETA in principle, but presented different ideas about its potential effects on Canadian bioenergy. The BCBN interviewee felt that while the main challenge of different operational standards for technical equipment coming from Europe to Canada had already been addressed, the agreement guarantees market access and eliminates potential tariffs and non-tariff trade barriers for wood pellets going from Canada to the EU, which was very similar to the WPAC member's thoughts. The QFIC interviewee was skeptical about the opportunities it would provide for bioenergy claiming it was unlikely that Canadian bioefuels would end up on the EU market due to much lower fibre and production costs in other parts of the world.

FPAC had the most involvement in the CETA negotiation process. The two FPAC members interviewed were especially happy with the process because they got to review the wording of the document prior to enactment, provide information on their sector and trade barriers that they were concerned about and because the agreement resulted in a sector specific forest annex that calls for a working group to be established. FPAC I claimed that he didn't, "think the federal government would have been as open to negotiating that without the help from FPAC." This example of reach (see Allen 2011) was not FPAC's only activity during the negotiation process as the organisation also had discussions with one of its EU counterparts, the Confederation of European Paper Industries.

Running parallel to the CETA negotiations was a Canadian campaign against the EU's Fuel Quality Directive (FQD). While the FQD could be treated as a translation loop, it is analysed here as part of the CETA negotiations since it was likely used as political leverage and can be read as evidence of the Canadian government's desire to continue developing and using fossil fuels. Initially the FQD was to take effect in 2010 and reduce transportation emissions by 6% from 2010-2020 (Directive 2009/30/EC). The primary component of the FQD concerning Canada-EU relations was an oil classification system that would have labelled tar sands oil from Alberta as 'dirty' oil and potentially influenced the sales of Canadian oil. At that time the EU was not importing oil from Canada, but the industry and politicians feared it would set a political precedent and influence other nations. Canada was also interested in securing a future market for its oil and used this campaign to influence CETA negotiations.

The campaign consisted of over 100 meetings between politicians and oil industry members (Rowell 2011: 3), where Canada furnished scientific proof supporting its claim that tar sands oil was no worse than conventional oil, but still claimed that they would clean up the industry (Ibid.: 16). Canada also played on the EU's concern for energy security and emphasised that its oil was not funding terrorism (Ibid.: 18). The Canadian pressure forced the EU to conduct an impact assessment which delayed the FQD's implementation (Rowell 2013: 3) and, ultimately, the European Parliament adopted a weakened version of the FQD which does not distinguish between tar sands oil and conventional oil (Crisp 2014). Spain was the first EU nation to import a significant shipment of Canadian oil in 2014, but even before that the EU had been indirectly supporting tar sands development as it was processed in the US and mixed with American oil before being imported by the EU (Crisp 2015; EC 2017).

Thus, over the last decade Canada has been sending mixed signals to the world. The nation wants to be seen as contributing to climate change mitigation and sustainable development, yet it does not want to lose out on existing and potential revenues. This approach has a significant impact on Canadian domestic energy politics.

Canadian Energy Politics

Natural resources fall under provincial jurisdiction (Constitution Act 1982), which means provinces must play a fundamental role in (bio)energy governance and development. Given the size of the nation, its abundant and diverse natural resources, and varying socio-economic and political contexts, it is not surprising that the provinces have developed different energy sources and political strategies. While all provinces use multiple energy sources, in terms of electricity British Columbia, Manitoba, Newfoundland, Quebec and the Yukon Territory have strong, low carbon hydroelectric sectors; Alberta, Nova Scotia, Nunavut and Saskatchewan are characterised by fossil fuels, and Ontario has all but one

of the nation's nuclear reactors, another low carbon source of energy (NRC 2016: 95). This diversity resulted in difficulties developing a national energy strategy, but, as FPAC I said,

> *"it's not an excuse cause Europe did it, but I think [politicians] would see this as a federal-provincial strategy […] We don't have an energy strategy and overtime the word national strategy comes up it seems to be more difficult to get done."*

When provincial premiers finally agreed on the Canadian Energy Strategy in 2015 after three years of talks (The Council… 2015), the Prime Minister's Office was notably absent.

The Canadian Energy Strategy necessarily involves all forms of energy, but fossil fuel development, especially from oil sands, has been and continues to be a contentious issue. It is an increasingly important topic in light of demands for and resistance to oil pipelines from Alberta (e.g. CBC 2017). The final version of the strategy is weaker than working versions because it fails to impose GHG reductions on the provinces and lacks concrete objectives (Taber & Morrow 2015). This is partially due to the fact that Alberta refused to set absolute objectives, disappointing environmental groups which were against any form of oil sands development being included in the strategy (The Canadian Press 2015). The Canadian Energy Strategy can therefore be understood as a step in the right direction by expressing the desire to develop energy in a sustainable manner although, like the COP 21, it lacks any hard policy measures.

Canada also lacks a national bioenergy strategy, something which could offer cohesion and consistency to the industry (White et al. 2013). FPAC I stated that,

> *"we need a national bioeconomy strategy. I think having something like Europe or Finland would be extremely helpful - a bit more clarity from the federal and provincial governments on how they see the bioeconomy in policies and regulations. That would be key."*

In the absence of a strategy, most provinces have established bioenergy policies or strategies of their own with varying degrees of success. For example, BC developed a bioenergy strategy in 2008 and established the Bioenergy Network, a non-profit organisation focusing on organic waste from forestry, agricultural and municipal sources, with a C$25 million grant to support bioenergy development through investments in, "capital and technology development/demonstration, targeted capacity building, as well as education and advocacy" (BC Bioenergy… 2017). The BCBN interviewee stated that the BC government took action because of FPAC's calls for diversification during the industry downturn from 2008-2012.

While the organisation has helped develop important demonstration products, BC's bioenergy strategy has been unable to create significant changes in the province's energy production. The BCBN interviewee mentioned how technical challenges, such as importing technology from Europe and harmonising standards, were relatively easy to solve, while socio-political and economic issues remain challenging. According to him, the Kwadacha First Nation's attempt to develop bioenergy highlights a significant issue: path dependency. The community is surrounded by a large area of forest killed off by mountain beetles and consequently has good potential for bioenergy production. Community leaders had been negotiating with BC Hydro for years because the company wants the First Nation to become a utility provider to produce electricity from biomass and then sell it to the company. In turn, BC Hydro would sell it back to the First Nation at a preferential rate. The main problem is that BC Hydro refuses to pay the First Nation what it would cost them to produce the energy. Two other issues are that large Canadian utility providers see reliable electricity as only coming from hydroelectric dams or diesel generators, and secondly,

> *"in this particular situation you have a very, very large utility with well-established and I would say somewhat entrenched policies and it's a matter of getting the policies changed" (BCBN interview).*

The price of Canadian energy greatly influences bioenergy development. All of the interviewees claimed that the main driver of EU bioenergy development was high energy costs.

> *"In the European Union they have long had very expensive energy compared to North America, and especially if you compare it to say British Columbia, their energy prices are through the roof compared to what we pay" (BCBN interview).*

Comparatively, most areas of Canada benefit from low energy costs – regardless of the sources (NRC 2016: 97). Additionally, nearly 80% of Canada's electricity already qualifies as low carbon energy (Ibid.: 95). The BCBN interviewee continued that BC Hydro's low cost of energy was mandated by the provincial government, but he was not sure if it was artificially low or if the company just works in a cost effective manner. A similar situation occurs in Quebec where Hydro-Québec,

> *"continues to build dams […] to mess up rivers and we're going to find ourselves with a lot of electricity for which we're not sure to find buyers" (QFIC interview, author's translation).*

He added that most of these developments are for export to the US and that American electricity prices have come down due to the use of natural gas, something which has been compounded by the current American government's attempts to support fossil fuel use.

Low energy prices also affect the feasibility of innovative and decentralised energy systems. For example, the BCBN interviewee mentioned their project with Lignol, a private company, to use forest residue and pine beetle wood to produce bioethanol. While the pilot project scale was successful, the costs of upscaling for commercialisation soared, making it economically unfeasible in Canada. The WPAC and QFIC interviewees reiterated similar ideas but linked them to high fibre costs, especially in eastern Canada, and consumers who prefer individual heating systems over collective ones. Albrecht's (2015) work provides an exception to this idea as he found Norwegian consumers preferred to pay more for hydroelectricity to avoid the work and mess associated with cheaper biomass heating solutions. This points to the complexity of developing bioenergy in contexts where strong fossil fuel and hydroelectric sectors dominate the market, as in Canada or Russia where climate mitigation objectives and policies are not particularly strong (IEA 2015; 2014).

The factors described above illustrate the general climate for (bio)energy development in Canada. High energy costs on the EU market provide an impetus for sustainable energy, along with goals of security of energy supply and climate change mitigation, while low energy costs in Canada hinder innovations and the adoption of existing technology. But the lack of concrete objectives in the Canadian Energy Strategy, failure to develop a national bioenergy strategy and hard policy measures, and a historical lack of political will are perhaps more important shortcomings for Canada's failure to keep pace with the EU. While Canada can learn from the EU's strategic approach to objective setting, bioenergy development and governance, it does provide EU members with bioenergy to achieve their national objectives as we shall see below.

Canadian Bioenergy Development

> *"I find it's piecemeal. So, we're moving […] but I feel we could move faster if we would have an overall strategy, if we would have policies behind it that would support the bioeconomy," (FPAC I interview).*

In the absence of a national bioenergy or bioeconomy strategy, Canadian actors are left to fend for themselves. The interviews reveal the vast possibilities that actors face in bioenergy development. The BCBN focuses exclusively on waste material from forestry, industrial and municipal sources in BC as they attempt to help companies find innovative solutions, while WPAC focuses on international market access and wood pellet development. QFIC focuses on Quebec's forest industry and exports to the US, while FPAC, representing the most diverse portfolio of activities across the nation, was the most insistent about the need for and benefits of a national strategy. Consequently, they, "promote the Finland Bioeconomy Strategy to the federal government. We think it's the best in the world" (FPAC I interview).

Not everyone placed so much emphasis on strategies, however. Referring to the idea that political promises often go unfilled, one respondent expressed skepticism saying,

"[p]olitical objectives, pardon me, are easy to shovel out for 2050 when you see that the buttons don't match the clothing," (QFIC interview, author's translation).

This idea holds true for BC where a provincial bioenergy strategy was developed in 2008 but,

"has not yet translated to any direct sort of policy. There have not been any pieces of legislation put in saying we're going to do this" (BCBN interview).

It should be noted that these different views may have something to do with the fact that the skeptics work with provincial entities while FPAC and WPAC work on the national level.

The interviews reveal that, aside from the lack of political direction and low energy prices, Canadian bioenergy lags behind the EU for a few reasons. First, "we don't put a lot of effort into research," and as soon as economic hardship arrives, research is the first area companies cut, leaving northern Europe and the US to drive knowledge production because they receive more support and investment (QFIC interview, author's translation). Second, all of the interviews brought up market access and the BCBN interviewee mentioned the lack of competition in North America. The EU was perceived as being much more competitive due to its larger population and greater number of actors competing in the market. Together, these challenges result in a third problem: lethargy. In many instances Canadian actors were said to be content applying European or American technology instead of innovating. This supports Edenhoffer & Hayter's (2013) findings which point out that Canfor, Canada's largest lumber producer in 2013 and 2014 (Wood Markets 2015), is the only company to have survived the Fordist days of forestry in BC. The company has done so by resisting innovation and continuing its strategy of vertical and horizontal integration, cost minimisation, mass production and expansion. Canfor's success is seemingly an example of how a path dependent business strategy can undermine calls for innovation and value added wood processing.

However, the interviewees all felt that Canadian bioenergy is developing, in part due to a healthy relationship with the EU. For example, EU renewable energy policy, "had a huge impact on the wood pellet market" (FPAC I interview). Canadian wood pellet exports go towards residential markets driven by economics and industrial markets driven by EU policy because,

"[i]f the policies aren't in place, the industrial producers basically won't use the more expensive form of energy that pellets represent, even though it's renewable" (WPAC interview).

This illustrates that Canadian bioenergy actors are translating EU renewable energy policy as a demand for specific types of products and supporting European regional and national policy translations. This also leads to further development in the industry as the "pent up demand" for products to replace coal is leading to new partnerships and innovation, exemplified by BCBN's support of Diacarbon's torrefaction bioreactor in BC (BCBN interview).

The interviewees from WPAC and FPAC also mentioned provincial incentives for domestic wood pellet use in BC, New Brunswick and Québec, and Natural Resources Canada's IFIT program, which helps fund "first-in-kind technologies" (NRC 2017b). These incentives appear to be insufficient as even the interviewees from FPAC, who were the most optimistic about the future of Canadian bioenergy in this study, felt that both companies and governments were still too hesitant to take risks and act on climate change and bioeconomy developments.

The FPAC and WPAC interviewees were cautious with their estimations about the effects of CETA on bioenergy trade. Given Canada's perceived need to export natural resources to maintain a healthy economy, something which all of the interviewees agreed on, CETA is important because it guarantees access to EU markets, Canada's fourth most valuable export destination for wood product exports (NRC 2017a). While this is path dependent behaviour, it may help Canadian companies innovate because the EU is a wealthy market with an increasingly important environmental ethic, making it a potentially lucrative market for Canadian bioproducts (WPAC interview).

The FPAC interviewees were also, "very pleased with the forestry annex" in CETA (FPAC I interview), which marks the first time that sector specific legislation has been included in an international free trade agreement for the forest industry (CETA Section 25 Trade and Environment Article X.10) and, "sets a

good precedent for other bilateral negotiations or other multilateral negotiations" (FPAC II interview). FPAC would like to see this type of agreement in all future international trade agreements, and existing trade agreements amended because it offers another forum in which to create new relationships and enhance existing ones. CETA also calls for an industry working group to be established within one year of coming into effect (CETA Section 26 Regulatory Cooperation Article X.6(4)) and while the details of such a working group remain to be worked out, it is fairly safe to assume that FPAC will be involved to some degree given its position in Canada's forest industry.

What is more uncertain is who else would be included in the working group. The previous federal government, led by Prime Minister Harper, was criticised during the CETA negotiations for excluding certain groups. The,

> *"exclusion of critical views shows an inherent democratic deficit in the CETA negotiations that privileges corporate insiders at the expense of civil society, the public, and even elected officials" (Trew 2013: 568).*

Consequently, it is likely that smaller associations, individual companies and environmental groups would only be included on a limited basis, if at all. That is, unless the EU or the current Canadian federal government forces the issue.

FPAC I hoped that this working group would lead to the cross-pollination of ideas and collaboration in the creation of a Canadian bioeconomy. But the working group might also be useful to address the failure of international governance bodies and national governments to address climate change. Patchell and Hayter (2013: 22) argue that,

> *"[t]he concentration of immense power in a small number of corporations – long a fear of concerned citizens everywhere – might turn out to be just what is needed to save the planet."*

This, they argue, could be done through the creation of climate clubs of multinational corporations in similar fields from developed and developing nations to, "set targets for emissions reduction and standards for product design and share knowledge about renewable energy technologies" (Ibid.: 21). These standards would be applied globally through the United Nations to avoid carbon leakage and be monitored by third parties with the power to impose penalties for failing to meet deadlines and objectives. The Canadian forest industry has adopted biomass for energy (NRC 2016: 84) and made genuine improvements in social responsibility and openness towards other stakeholders, albeit with mixed results (e.g. Sawatzky 2013), making them a reasonable candidate for inclusion in the CETA forestry working group. This would also align with the current federal government's desire for progress through dialogue and its proposed carbon tax under the Pan-Canadian Framework on Clean Growth and Climate Change.

Canadian Wood Pellets and the EU

Wood pellets are a tradable source of bioenergy. According to the WPAC and BCBN interviewees, 90% of the pellets produced in Canada are exported. The majority are produced in western Canada, especially in BC where the nation's forest industry is most developed and recent pine beetle kill-offs provide the industry with abundant raw material. Wood pellets have become an important energy source in the EU as member nations attempt to fulfill their national objectives under RED (2009). In the EU, pellets are primarily used in conjunction with or as a replacement for industrial coal operations, but they also represent an increasingly important source of domestic heat (AEBIOM 2016). While much of the wood pellets consumed in the EU are produced by member nations, a significant amount of Canadian wood pellets are also imported, especially by the United Kingdom, Belgium and Italy (WPAC 2017). However, the US recently took over from Canada as the largest source of non-EU produced wood pellets in the EU.

Wood pellets were not subject to tariffs in the EU prior to CETA, but that does not mean that they could not have been subject to them in the future as the EU looks to strengthen its internal energy market as part of the 2020 framework. The WPAC interviewee mentioned how Italy had reduced its value added tax rate on pellets to encourage their use but once they became more common the

government returned it to the normal rate. Such changes do not target any specific exporting nation, but they do affect consumption. All of the respondents here felt that CETA will provide market access security for Canadian wood pellets and some felt that if American pellets were subject to tariffs in the future, a possibility given President Trump's decision to end TTIP negotiations with the EU, it could become an advantage for Canadian pellets.

Other non-tariff trade barriers were also mentioned by the interviewees. The WPAC interviewee thought that Canadian wood pellets may have a sustainability advantage over American pellets because American producers have increasingly chosen the path of whole tree harvesting on dedicated plantations. This leads to a more efficient production system and increases traceability, but it also contributes to the creation of monocultures and restricts biodiversity, a longstanding complaint by environmental activists, and raises questions of how to get the most value out of a single tree. More in line with current European sustainability priorities, Canadian producers primarily use a cascading principal where trees are harvested for an initial purpose, like lumber, and residues from logging and sawmill operations are used to produce pellets. This complicates the traceability process but promotes sustainability through best use practices. However, Dwivedi et al. (2014: 237) claim that, "[h]arvest age is more important in determining carbon saving than forest management intensity" for climate mitigation.

The FPAC I, II and WPAC interviewees mentioned the issue of certification. In the 1990s the EU Flower certification program raised the concern that Canadian forest products were unfairly discriminated against (FPAC II interview). These industry associations would like to see a level field of competition produced through the harmonisation of global standards and wood pellet certification. Also, Canada already has the most certified forests in the world and FPAC represents two-thirds of that area (FPAC 2015), potentially providing another advantage for the industry.

The relationship between the Canadian pellet industry and the EU is not strictly confined to CETA. The WPAC acts as a lobby group in the EU and, for example, it supported the Back Biomass campaign organised by the Renewable Energy Association in the UK to support biomass development and bypass governments to directly influence consumers. The WPAC is also an associate member of the European Biomass Association and works with the Sustainable Biomass Partnership to improve standards and certification issues. These types of campaigns illustrate the reach of industrial actors as they seek to persuade the national governments to establish policies intended to help the industry develop.

Political Rupture

On October 19, 2015, Canadians elected the Liberal Party of Canada and gave them a majority government. The end of nearly a decade of Conservative Party governance is viewed here as an important rupture in ideology that has the potential to become a significant driver to change Canada's environmental and bioenergy policy. Leadership is an important aspect of governance, but there is no consensus on what actually constitutes authority (Bulkeley 2012), nor is the power that political leaders wield constant. Analysing leadership is challenging since it is context specific and varies from one location or time period to another, but writing, style and content are essential aspects.

Under Harper's Conservative governments Canadian environmental and social justice critics railed against Canada's tarnished reputation. Harper's opponents often complained about his close ties to big business, especially the Canadian oil industry in western Canada for which both he and his father worked (Ibbitson 2015).

> *"We have a lot of people who think that, just by their past performance, past behaviour, that the current federal government really has no intentions of doing anything beneficial for the environment if they don't absolutely have to. They've long been viewed as being behind the multinational businesses and behind the resources sector" (BCBN interview).*

It was also under his direction that Canada pulled out of the Kyoto Protocol in 2012 to avoid incurring penalties for failing to meet its objectives leaving Canada without a "coherent national policy" (Burch et al. 2014: 468). In terms of leadership style, Harper has been called "abrasive" and "thuggish" as he alienated both opponents and supporters (Milewski 2015). This was apparent during the CETA negotiations as critics complained not only about the contents of the free trade agreement but also

about the manner in which certain groups and even the general public were excluded from the process (Trew 2013; Healy 2014). However, both FPAC interviewees said that they had great working relationships with Harper's governments and that they appreciated their openness to work with them and the way that they dealt with trade issues.

In many regards Prime Minister Trudeau is the antithesis of Harper. Young and charismatic, his leadership style has more to do with networking and team building than domination (Cowen 2015). He appointed a youthful, ethnically diverse cabinet with an equal number of men and women (Murphy 2015), and campaigned on promises including the establishment of carbon pricing and creating a Low Carbon Economy Trust of C$2 billion, and investing C$100 million per year in clean technology and C$200 million for green technology in the forestry, energy, mining, fishing and agricultural sectors. Perhaps more importantly he pledged to create a Canadian Energy Strategy and signed on to a continental climate change agreement with the USA and Mexico (Lee-Anderson 2016). These promises represent important steps in decarbonising Canada and the development of bioenergy. Trudeau began to act on his promises by establishing the Cabinet Committee On Environment, Climate Change and Energy (Kennedy 2015), marking the first time that Canada has had a committee on climate change, and developed the Pan-Canadian Framework on Clean Growth and Climate Change. But questions remain regarding how he will handle Alberta tar sands and pipelines. It should also be noted that since the interviews were conducted prior to the election there are no comments regarding the new government from interviewees.

The brief analysis of Canadian leadership presented above is unbalanced and, in some regards, unfair because we are able to judge not only Harper's words but also his actions, while Trudeau's leadership thus far is based much more on words. Consequently, I tread lightly on the matter of bioenergy development with regard to the federal government because political discourse is wrought with broken and forgotten promises. Yet it seems that this political rupture might positively affect Canadian bioenergy development and climate change mitigation activities.

Discussion and Conclusion

This article set out to explore Canadian bioenergy development in relation to the EU. It relies on a relational understanding of space and employs the translation loop concept to analyse CETA, Canadian energy politics and Canadian bioenergy development. By linking these loops, the article explores the relationship between the EU and Canada and reveals some of the effects of EU policy on Canadian bioenergy development.

CETA is the result of years of hard political work in the EU and Canada. All of the interviewees supported the agreement and all but one had the opportunity to influence the process through discussions with either provincial or federal governments. From a Canadian perspective the agreement is both path dependent and path creative. The main objective for Canada was guaranteed market access for exports, a mainstay of Canadian trade policy. But it also created precedents for the inclusion of provinces in international trade agreements and sector specific legislation, including working groups. The FQD campaign that ran parallel to the CETA negotiations also illustrates how non-EU members influence EU policy development and that Canada's number one energy priority continues to be oil and gas development.

The Canadian energy politics loop highlights many of the challenges facing bioenergy developers in Canada. There are two main issues here. First, low energy prices prevent innovative projects and alternative energy sources from being economically viable on the open market. In another path dependent aspect, low energy prices are compounded by large utility providers with entrenched policies and rationalities that fail to accept decentralised bioenergy as a viable source of energy. This was especially visible with low carbon hydroelectricity. Yet, large hydroelectric projects may have negative environmental and social effects due to the land use changes they cause.

Second, there is a lack of political will in Canadian energy politics. Canada has withdrawn from past climate change agreements, and it took years for the Canadian Energy Strategy to come into being. The federal government was not involved with the strategy, which lacks fixed objectives, making it like so many other policies: an expression of good intentions that are easy to avoid in the future if needed. Additionally, there is no Canadian bioenergy strategy. While the respondents did mention provincial

incentives and national programs that help develop bioenergy, they are not enough to overcome the timidness currently shown by governments and industry. The necessity and appropriate scale for such strategies is arguable, but Canada should look to the EU as an example of how to successfully develop and implement meaningful strategies with fixed objectives and penalties for failing to meet them.

The lack of vision in Canadian bioenergy development is one of the main issues that actors face and has led to FPAC promoting Finland's bioeconomy strategy (Ministry… 2014) as a way to move forward. Yet, despite the actors' familiarity with bioenergy issues and obvious competences in the field, no one brought up the issue of carbon sequestration or other issues related to European bioenergy briefly mentioned at the beginning of this article. It could be that the interviewees simply did not think of it or that because there is so much forest available that it's not an issue, though that is doubtful. In fairness, they were not asked about such issues, but it seems that there is a vast distance between the EU and Canada on these issues, which could be an avenue for future studies.

The current wood pellet trade between Canada and the EU appears to be based primarily on a simple supply and demand relationship. This relationship fails to address the importance of bioenergy production in climate change mitigation. In the EU only the consuming nation can count the carbon reduction for changing energy types. By focusing exclusively on the consuming nation's reduction, EU objectives fail to acknowledge the contribution of producers, both within and beyond the EU. In the interest of energy justice (Sovacool & Dworkin 2015), we need to develop ways of acknowledging the efforts of all actors.

One possible solution is to establish a new global accounting system for carbon reduction where both consumers and producers are recognised. Developing such an accounting scheme would be challenging as a variety of elements need to be considered. For wood pellets this would include their source, plantation or residue or a combination of the two (see Anderson et al. 2015 for more), certification of the forests, processes and labour involved (Lewandowski & Faaij 2006, Stupak et al. 2011), and the transportation of products from source to destination as it may be counter-productive to continue shipping them on cargo ships fueled by fossil fuel. Allowing producers to account for part of the carbon reduction benefits in a global accounting scheme may also encourage nations which have thus far failed to adhere to fixed objectives and implement hard policy measures to create meaningful bioenergy objectives and strategies.

The other challenges facing bioenergy developers in Canada include a lack of research and development, small markets and a lack of competition; all of which were perceived as being stronger in the EU. Together, these challenges have led to a type of lethargy where respondents feel that governments, industry and the general public are not yet ready to embrace bioenergy and a bioeconomy. Canadian bioenergy in the EU is currently headlined by wood pellets, where demands created by policies have had a large impact in Canada. The interviewees, however, felt that the real potential of bioenergy is yet to be released in the form of much higher value added biofuels, bioproducts and processes. CETA now guarantees Canadian producers access to the EU's mature and wealthy markets.

The question is, is Canada ready to act upon the opportunities that its wealth of natural resources provides? Or will it continue to push for a fossil fuel fix? The political rupture caused by the election of a new federal government might help get Canada on track towards a bioeconomy. To do so will require investments in research and the development of strong policies that drive change. But these will be challenged by the nation's current dependency on fossil fuels, and path dependency in industrial and political rationalities, as shown, for example, by the failure of Saskatchewan and Manitoba to sign on to the Pan-Canadian Framework on Clean Growth and Climate Change (Rabson 2017).

Acknowledgements

The author would like thank all of the participants in this study, the anonymous reviewers for their helpful comments and Teijo Rytteri for comments on an earlier version of this paper. The research presented here was funded by the Academy of Finland as part of the Contested Bioenergy Governance project at the University of Eastern Finland.

References

Acosta, Lilibeth A., Eugenio, Elena A., Enano Nelson H. Jr., Magcale-Macandog, Damas B., Vega, Belita A., Macandog, Paula Beatrice M., Eugenio, Jemimah Mae A., Lopez, Marilou A., Salvacion, Arnold R. & Lucht, Wolfgang (2014). Sustainability trade-offs in bioenergy development in the Philippines: An application of conjoint analysis. Biomass and Bioenergy 64, 20–41.

AEBIOM (2016). AEBIOM Statistical Report - European Bioenergy Outlook. 20.6.2017, http://www.aebiom.org/wp-content/uploads/2016/12/AEBIOM-KEY-FINDINGS-REPORT-2016.pdf

Albrecht, Moritz (2015). Enlightenment in Norway's Oil Shadow? Governance assemblages of a wood-based district heating network in Norway's' Inland Region. *Journal of Environmental Policy and Planning* 17:3, 381–401.

Albrecht, Moritz, Kortelainen, Jarmo, Sawatzky, Matthew, Lukkarinen, Jani & Rytteri, Teijo (2017). Translating bioenergy policy in Europe: mutation, aims and boosterism in EU energy governance. *Geoforum* 87, 73–84.

Allen, John (2011). Topological twists: power's shaping geographies. *Dialogues in Human Geography* 1:3, 283–298.

Anderson, Jay, Luckert, Marty & Campbell, Hawley (2015). Potential policy reforms for a "more exotic" Canadian forest sector: Comparing Canada's plantation policies with those in Australia, New Zealand and the United States. *The Forestry Chronicle* 91:5, 560–572.

Barnett, Jon, Evans, Louisa, Gross, Catherine, Kiem, Anthony, Kingsford, Richard, Palutikof, Jean, Pickering, Catherine & Smithers, Scott (2015). From barriers to limits to climate change adaptation: path dependency and the speed of change. Ecology and Society 20:3, art 5.

BC Bioenergy Network (2017). Homepage. 20.6.2017, http://bcbioenergy.ca/

Bulkeley, Harriet (2005). Reconfiguring environmental governance: towards a politics of scales and networks. *Political Geography* 24, 875–902.

Bulkeley, Harriet (2012). Governance and the geography of authority : modalities of authorisation and the transnational governing of climate change. *Environment and Planning A* 44:10, 2428–2444.

Burch, Sarah (2010). Transforming Barriers into Enablers of Action on Climate Change: Insights from Three Municipal Case Studies in British Columbia, Canada. *Global Environmental Change* 20, 287–297.

Burch, Sarah, Shaw, Alison, Dale, Ann & Robinson, John (2014). Triggering transformative change: a development path approach to climate change response in communities. *Climate Policy* 14:4, 467–487.

Cash, David, Adger, W. Neil, Berkes, Fikret, Garden, Po, Lebel, Louis, Olsson, Per, Pritchard, Lowell & Young, Oran (2006). Scale and Cross-Scale Dynamics: Governance and Information in a Multilevel World. *Ecology and Society* 11:2 art 8.

CBC (2017). NEB confirms review panel for Energy East pipeline proposal. 27.6.2017, http://www.cbc.ca/news/canada/calgary/neb-national-energy-board-energy-east-panel-members-trans-canada-pipeline-1.3928721

Constitution Act. (1982). Constitution Act Section IV 92a 1867-1982. Department of Justice Canada. 29.6.2017, http://laws-lois.justice.gc.ca/PDF/CONST_E.pdf

Cowen, James (2015). The biggest leadership lesson from Justin Trudeau's historic win. Canadian Business October 20, 2015. 29.6.2017, http://www.canadianbusiness.com/blogs-and-comment/the-biggest-leadership-lesson-from-justin-trudeaus-historic-win/

Crisp, James (2014). Canada tar sands will not be labelled as 'dirty' after all. EURACTIV. December 17, 2014, updated 14 January 2015. 29.6.2017 http://www.euractiv.com/sections/energy/canada-tar-sands-will-not-be-labelled-dirty-after-all-310910

Crisp, James (2015). Two thirds of European oil refineries ready for tar sands imports. EURACTIV November 25, 2015. 27.6.2017, http://www.euractiv.com/section/transport/news/two-thirds-of-european-oil-refineries-ready-for-tar-sands-imports/

Deng, Yvonne Y., Koper, Michèle, Haigh, Martin & Dornburg, Veronika (2015). Country-level assessment of long-term global bioenergy potential. *Biomass and Bioenergy* 74, 253–267.

Directive 2009/30/EC. 2009. European Parliament and Council. 29.6.2017, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0030

EC (2009). Directive 2009/28/EC of the European parliament and the council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. *Official Journal of the European Union*, 140, 16–62.

EC (2017). EU Crude Oil Imports and supply costs. European Commission. 27.6.2017, https://ec.europa.eu/energy/en/statistics/eu-crude-oil-imports

Edenhoffer, Klaus & Hayter, Roger (2013). Organizational restructuring in British Columbia's forest industries 1980 - 2010: The survival of a dinosaur. *Applied Geography* 40: 222–231.

FPAC (2015). Forest Products Association of Canada Homepage. 9.12.2015, www.fpac.ca

Gamborg, Christian, Anker, Helle Tegner & Sandoe, Peter (2014). Ethical and legal challenges in bioenergy governance: Coping with value disagreement and regulatory complexity. *Energy Policy* 69, 326–333.

Healy, Teresa (2014). Canadian and European Unions and the Canada-EU CETA Negotiations. *Globalizations* 11:1, 59–70.

Holstein, James & Gubrium, Jaber (1995). *The Active Interview*. Sage, London.

Ibbitson, John (2015). Stephen Harper: The making of a prime minister. *The Globe and Mail*. July 31, 2015. 20.6.2017, https://www.theglobeandmail.com/news/politics/stephen-harper-the-making-of-a-prime-minister/article25809825/

IEA (2015). Energy Policies of IEA Countries: Canada 2015 Review. International Energy Association. 2.10.2017, https://

www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesCanada2015Review.pdf
IEA (2014). Energy Policies Beyond IEA Countries: Russia 2014. International Energy Association. 2.10.2017, http://www.iea.org/publications/freepublications/publication/Russia_2014.pdf
Kennedy, Mark (2015). Cabinet committees are where the real power lies. Ottawa Citizen November 4, 2015. 29.6.2017, http://ottawacitizen.com/news/politics/cabinet-committees-are-where-the-real-power-lies.
Kortelainen, Jarmo & Rytteri, Teijo (2017). EU policy on the move - mobility and domestic translation of the European Union's renewable energy policy. *Journal of Environmental Policy and Planning* 19:4, 360–373.
Kortelainen, Jarmo & Albrecht, Moritz (2014). Translation loops and shifting rationalities of transnational bioenergy governance. In Stripple, Johannes & Bulkeley, Harriet (eds.). *Governing the Climate: New Approaches to Rationality, Power and Politics.* Cambridge University Press, Cambridge, 144–159.
Kukucha, Christopher (2013). Canadian sub-federal governments and CETA: Overarching themes and future trends. *International Journal* 68:4, 528–535.
Lee-Anderson, Selina (2016). Canada, Mexico and the US sign MOU on Climate Change and Energy Collaboration and Launch Portal for North American Energy Information. Canadian Energy Perspectives - Developments in Energy and Power Law. 20.6.2017 http://www.canadianenergylawblog.com/2016/02/12/canada-mexico-and-the-us-sign-mou-on-climate-change-and-energy-collaboration-and-launch-portal-for-north-american-energy-information/
Lewandowski, I & Faaij, A (2006). Steps towards the development of a certification system for sustainable bio-energy trade. *Biomass and Bioenergy* 30, 83–104.
Magar, Surya, Pelkonen, Paavo, Tahavainen, Liisa, Toivonen, Ritva & Toppinen, Anne (2011). Growing trade of bioenergy in the EU: Public acceptability, policy harmonization, European standards and certification needs. *Biomass and Bioenergy* 35(8): 3318–3327.
Manderscheid, Don (2007). First Nations and Self-Government: A Matter of Trust. *Canadian Journal of Law and Society* 22:1, 109–121.
McDowell, Will, Anandarajah, Gabriel, Dodds, Paul E. & Tomei, Julia (2012). Implications of sustainability constraints on UK bioenergy development: Assessing optimistic and precautionary approaches with UK MARKAL. *Energy Policy* 47, 424–436.
McKenzie, Francine (2014). Faith, fear, and free trade. *International Journal* 69:2, 233–245.
Milewski, Terry (2015). Stephen Harper's legacy: Good, bad and a dose of ugly. CBC News. October 20, 2015. 29.6.2017, http://www.cbc.ca/news/politics/canada-election-2015-harper-political-obit-1.3273677
Ministry of Employment and the Economy (2014). The Finnish Bioeconomy Strategy: Sustainable growth from bioeconomy. Government of Finland.3.10.2017, http://biotalous.fi/wp-content/uploads/2014/08/The_Finnish_Bioeconomy_Strategy_110620141.pdf
Murphy, Jessica (2015). Trudeau gives Canada first cabinet with equal number of men and women. The Guardian November 4, 2015. 29.6.2017, http://www.theguardian.com/world/2015/nov/04/canada-cabinet-gender-diversity-justin-trudeau
NRC (2016). Energy Fact Book 2016-2017. Natural Resources Canada. 20.6.2017, https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/EnergyFactBook_2016_17_En.pdf
NRC (2017a). Statistical Data. 20.6.2017, https://cfs.nrcan.gc.ca/statsprofile/trade/ca
NRC (2017b). Investments in Forest Industry 2.10.2017, http://www.nrcan.gc.ca/forests/federal-programs/13139
O'Grady, Sean (2017). By snapping TTP and TTIP, Trump has boosted American jobs in the short term - and destroyed them in the long term. Independent January 24, 2017. 29.6.2017, http://www.independent.co.uk/voices/donald-trump-trade-deals-tpp-ttip-american-business-workers-boost-short-term-destroy-long-term-a7543706.html
Patchell, Jerry & Hayter, Roger (2013). How Big Business Can Save the Climate. Multinational Corporations Can Succeed Where Governments Have Failed. Foreign Affairs. 29.6.2017, https://www.foreignaffairs.com/articles/global-commons/2013-08-12/how-big-business-can-save-climate
Paquin, Stéphane (2013). Federalism and the governance of international trade negotiations in Canada: Comparing CUSFTA with CETA. *International Journal* 68:4, 545–552.
Payton, Laura (2013). CETA: Canada-EU free trade deal lauded by Harper, Barroso. CBC News. 27.6.2017, http://www.cbc.ca/news/politics/ceta-canada-eu-free-trade-deal-lauded-by-harper-barroso-1.2125122
Popp, Jozsef, Lakner, Zoltan, Harangi-Rakos, Monika & Fari, Miklos (2014). The effect of bioenergy expansion: Food, energy, and environment. *Renewable and Sustainable Energy Reviews* 32, 559–578.
Rabson, Mia (2017). Carbon clock ticking on Manitoba. The Canadian Press June 15, 2017. 29.6.2017, http://www.winnipegsun.com/2017/06/15/carbon-clock-ticking-on-manitoba
Randall, Tom (2015). Fossil Fuels Just Lost the Race Against Renewables. Bloomberg. 27.6.2017, http://www.renewableenergyworld.com/articles/2015/04/fossil-fuels-just-lost-the-race-against-renewables.html
RED (2009). Directive 2009/28/EC of the European Parliament and the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.
Rowell, Andy (2011). Canada's dirty lobby diary: Undermining the EU Fuel Quality Directive. Friends of the Earth Europe. 29.6.2017, https://www.foeeurope.org/sites/default/files/publications/FoEE_Canada_dirty_Lobby_0711.pdf
Rowell, Andy (2013). Keeping their heads in the sands: Canada's EU Fuel Quality Directive lobby diary. Friends of the Earth Europe. 29.6.2017, https://www.foeeurope.org/sites/default/files/publications/keeping_their_head_in_the_sand_january_2013.pdf
Sawatzky, Matthew (2013). *Voices in the Woods: A Study of Forest Use in Eastern Manitoba.* Publications of the University of Eastern Finland. Dissertations in Social Sciences and Business Studies No 55. Juvenes Print, Tampere.

Sawatzky, Matthew & Albrecht, Moritz (2017). Translating EU renewable energy policy for insular energy systems: Reunion Island's quest for energy autonomy. *Fennia* 195:2.

Smyth, Carolyn, Kurz, Werner A., Rampley, Greg, Lemprière, Tony C. & Schwab, Olaf (2017). Climate change mitigation potential of local use of harvest residues for bioenergy in Canada. *GCB Bioenergy* 9, 817–832.

Sovacool, Benjamin & Dworkin, Michael (2015). Energy justice: Conceptual insights and practical applications. *Applied Energy* 142, 435–444.

Stupak, Inge, Lattimore, Brenna, Titus, Brian & Smith, C. Tattersall (2011). Criteria and indicators for sustainable forest fuel production and harvesting: A review of current standards for sustainable forest management. *Biomass and Bioenergy* 35, 3287–3308.

Stupak, Inge, Asikainen, Antti, Jonsell, Mats, Karltun, Erik, Lunnan, Anders, Mizaraite, Diana, Pasanen, Karri, Pärn, Henn, Raulund-Rasmussen, Karsten, Röser, Dominik, Schroeder, Martin, Varnagiryte, Iveta, Vilkriste, Lelde, Callesen, Ingeborg, Clarke, Nicholas, Gaitnieks, Talis, Ingerslev, Morten, Mandre, Malle, Ozolincius, Remigijus, Saarsalmi, Anna, Armolaitis, Kestutis, Helmisaari, Helja-Sisko, Indriksons, Aigars, Kairiukstis, Leonardas, Katzensteiner, Klaus, Kukkola, Mikko, Ots, Katri, Ravn, Hans Peter, & Tamminen, Pekka (2007). Sustainable utilistation of forest biomass for energy – Possibilities and problems: Policy, legislation, certification, and recommendations and guidelines in the Nordic, Baltic, and other European countries. *Biomass and Bioenergy* 31, 666–684.

Taber, Jane & Morrow, Adrian (2015). Premiers agree on energy strategy with weakened climate change pledges. The Globe and Mail July 17, 2015. 29.6.2017, http://www.theglobeandmail.com/news/national/premiers-making-progress-on-national-energy-strategy-deal-could-be-signed-today/article25545448/

Ter-Mikaelian, Michael T., Colombo, Stephen J., Lovkin, Dave, McKechnie, Jon, Reynolds, Rick, Titus, Brian, Laurin, Emil, Chapman, Anne-Marie, Chen, Jiaxin & Maclean, Heather (2015). Carbon debt repayment or carbon sequestration parity? Lessons from a forest bioenergy case study in Ontario, Canada. *GCB Bioenergy* 7, 704–716.

The Canadian Press (2015). Environmental groups to premiers: no oilsands in Canadian Energy Strategy. The Globe and Mail July 16, 2015. 29.6.2017, http://www.theglobeandmail.com/news/national/environmental-groups-to-premiers-no-oilsands-in-canadian-energy-strategy/article25527650/

The Council of the Federation (2015). The Canadian Energy Strategy. 29.6.2017, http://www.canadaspremiers.ca/phocadownload/publications/canadian_energy_strategy_eng_fnl.pdf

Thornley, Patricia, Gilbert, Paul, Shackley, Simon & Hammond, Jim (2015). Maximizing the greenhouse gas reductions from biomass: The role of life cycle assessment. *Biomass and Bioenergy* 81, 35–43.

Trew, Stuart (2013). Correcting the democratic deficit in the CETA negotiations: Civil society engagement in the provinces, municipalities, and Europe. *International Journal* 68:4, 568–575.

VanDuzer, Anthony (2013). Could an intergovernmental agreement increase the credibility of Canadian treaty commitments in areas within provincial jurisdiction? *International Journal* 68:4, 536–544.

Watkins, David W. Jr., Alcoforado de Moraes, Marcia M.G., Asbjornsen, Heidi, Mayer, Alex S., Licata, Julien, Gutierrez Lopez, Jose, Pyphker, Thomas G., Gamez Molina, Vivianna, Marques, Guilherme Fernandes, Guimaraes Carneiro, Ana Cristina, Nunez, Hector M., Önal, Hayri & da Nobrega Germano, Bruna (2015). Bioenergy Development Policy and Practice Must Recognize Potential Hydrological Impacts: Lessons from the Americas. *Environmental Management* 56, 1295–1314.

Welfle, Andrew, Gilbert, Paul & Thornley, Patricia (2014). Securing a bioenergy future without imports. *Energy Policy* 68, 1–14.

White, William, Lunnan, Anders, Nybakk, Erlend, & Kulisic, Biljana (2013). The role of governments in renewable energy: The importance of consistency. *Biomass and Bioenergy* 57, 97–105.

Wood Markets (2015). Canada & U.S. "Top 20" Lumber Producers' Annual Ranking 2014. Wood Markets. 20.6.2017, https://www.woodmarkets.com/canada-u-s-top-20-lumber-producers-annual-ranking/

WPAC (2017). Canadian Bioenergy Situation and Opportunities in Canada's Wood Pellet Sector. Wood Pellet Association of Canada. Presentation at the Central European Bioenergy Conference in Graz, Austria on January 18, 2017. 2.10.2017, https://www.canadianbiomassmagazine.ca/images/canadian%20bioenergy%20situation%20and%20opportunities%20in%20canadas%20wood%20pellet%20sector.pdf.