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POLICY BRIEF

BEST PRACTICES FOR BIOFUEL POLICY

**WHAT CANADA'S BIOFUEL INDUSTRY CAN LEARN
FROM EXPERIENCES IN THE US, THE EU, AND BRAZIL**

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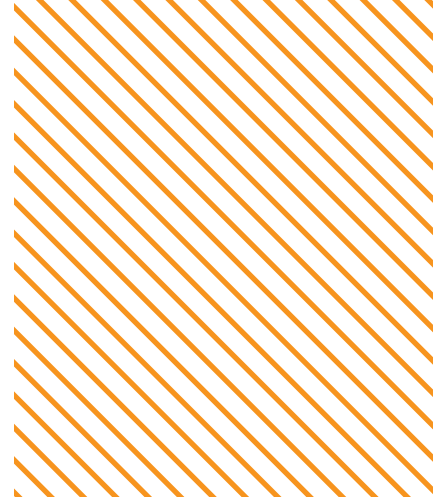
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SUMMARY

The Canadian biofuels industry is facing an impasse in policy-driven growth: blending mandates in current federal and provincial renewable fuel standards are not expected to be raised in the near future and production and consumption incentives have either already expired or are set to expire within the next two to three years. Compounding this policy impasse are growing concerns among the scientific community and policymakers regarding the sustainability of biofuels. With the recent COP21 agreement in Paris, the imperative of greenhouse gas (GHG) reduction as a key biofuel attribute has increased in importance. The Canadian biofuels industry must be able to demonstrate its sustainability, and do so in a way that is recognized internationally. While three provinces (BC, Alberta, and Ontario) have addressed GHG concerns in their biofuels legislation, there is no binding federal-level sustainability criteria for biofuels. There is a unique opportunity for the Canadian biofuels industry to take a proactive approach in addressing sustainability concerns.

This policy brief will provide an overview of biofuel policy approaches in the EU, the US, and Brazil and their relative success in nurturing the production of biofuels while committing to the principles of sustainability. Lessons from the world's largest biofuel producers include fostering regulatory dialogue, addressing sustainability concerns by focusing on efficient land use and GHG performance, and creating trustworthy databases to assist government agencies with informed regulatory decision making. BioFuelNet, as a hub of knowledge and talent in Canada, can play a crucial role in fostering fruitful knowledge exchanges between stakeholders.



INTRODUCTION

The new federal government has indicated that it has an ambitious agenda to cut greenhouse gases (GHGs). In addition, under the Paris Climate Conference (COP21) agreement, the federal government has committed to reducing GHG emissions by 30% compared to 2005 levels by 2030. With the Paris agreement due to enter into force by 2020, combined with the expiration of several provincial-level policy support programs for biofuels in the same timeframe, the biofuels industry in Canada is facing a crossroads. While biofuel producers outside Canada have been challenged over concerns of sustainability, the new federal government's plans for building green infrastructure and developing a clean fuel standard presents opportunities to engage with policymakers on policy options that will both advance industry interests as well as assist the government in meeting its climate change goals. However, the biofuels industry must be cognizant of the policy experiences outside the Canadian context and the potential political challenges of designing acceptable policy for the next phase of biofuels deployment; that of advanced biofuels.

CANADIAN BIOFUEL POLICY AT THE CROSSROADS

Both the federal and provincial governments share jurisdiction over energy policy in Canada. Therefore, energy programs and incentives to support biofuel development can be found at both levels and often overlap in their intended purposes. The federal and provincial governments have developed various programs to assist the biofuels industry with new technology research and development, and to promote the commercialization of biofuels as a viable option for renewable energy and GHG reduction. Support policies have generally come in two forms:

- 1) producer-based incentives, such as grants, subsidies, loans, tax credits, and tax exemptions; and
- 2) consumption-based mandates, known as Renewable Fuels Standards, for blending renewable fuels with gasoline (largely ethanol) and diesel (largely biodiesel) fuel sold in Canada.

As of date, producer-based incentive programs at both the federal and provincial levels have either expired or are set to expire within the next two years. Neither the federal government, nor any provincial governments, have indicated plans or intentions for renewing these types of programs once they have expired. Both the

Alberta Renewable Fuels Standard and the Ethanol Fuel Regulations in Saskatchewan are scheduled to expire in 2020, with no indications that either will be renewed. The federal Renewable Fuels Standard, along with blending mandates for ethanol and biodiesel in British Columbia, Ontario, and Manitoba have no expiration dates. However, the federal government and these three provinces have not publicly expressed interest in raising their minimum thresholds in the near future. The expiration of production-based incentives, along with a lack of commitment to increasing thresholds for blend mandates, demonstrate that the biofuels industry in Canada is at an impasse in policy-driven growth.

In addition to these policy challenges, there are growing concerns among policymakers regarding the sustainability of biofuels. Specifically, there is a lack of consensus within the scientific community regarding biofuel GHG emissions reductions relative to a fossil fuel (gasoline, diesel) baseline when the entire life cycle of a biofuel is calculated – particularly when attempting to calculate indirect land use change associated with biofuel crops. There is growing focus at the provincial level on emissions and lower carbon intensity fuels. Given that the federal government has introduced only voluntary guidelines for sustainable biofuel production, the provinces have taken the lead in addressing sustainability concerns in a more consequential way. Three provinces (BC, Alberta, and Ontario) have addressed GHG concerns associated with biofuels in their legislation. British Columbia has introduced a Low Carbon Fuel Standard (LCFS) that is tied to its Renewable Fuels Standard. Under the LCFS, fuel suppliers are required to demonstrate a 10% reduction in the carbon intensity relative to 2010 levels by 2020. The LCFS applies to both ethanol and biodiesel. Under Alberta's Renewable Fuels Standard, GHG emissions from the production and manufacturing stages of biofuels must be at least 25% lower than those from the same quantity of fossil fuels. While Ontario does not directly address GHG emissions concerns in its biofuels mandate, the government introduced climate change legislation which enshrines in law a GHG reduction target of 15% below 1990 levels by 2020, rising to an 80% reduction target by 2050.

In light of the changing tone in Ottawa, the Canadian biofuels industry must be able to demonstrate the sustainability benefits of its products, and do so in a way that is recognized internationally. This imperative to demonstrate sustainability, including but not limited to GHG reduction benefits, is a unique opportunity for the Canadian industry to take a proactive approach in overcoming the current impasse in policy-driven growth.



TAKING STOCK OF EXPERIENCES ABROAD

THE UNITED STATES

The US is the world's leading producer of biofuels. A suite of state and federal policy incentives propelled the rapid take-off of the industry in the 2000s. Governments have instituted production subsidies, R&D funding, public outreach programs, favourable defense and public procurement policies, tax credits, import tariffs, and, most importantly, a federal mandate. While current incentives are under attack from a 'strange bedfellow' coalition (petroleum industry, watchdog NGOs, free market groups, livestock producers, and food processors), political support for biofuel policies remains strong, particularly in the Senate.

The US is one of the only jurisdictions that requires the distribution of next generation biofuels. Its Renewable Fuel Standard determines volumes for corn, non-corn ('advanced'), and cellulosic biofuels each year. Each type of biofuel has to demonstrate different GHG emission reductions (corn: -20%, 'advanced': -50%, cellulosic: -60%). While yearly volumes are scheduled in legislation, the Environmental Protection Agency (EPA) has the authority to substantially change the schedule in certain circumstances. In 2013, the EPA was forced by the courts to reduce the mandated volumes for cellulosic ethanol because of lack of supply (American Petroleum Institute v. EPA). The court failure has prompted the EPA to shift to a cautious approach. It has since recognized the 'Blend

Wall' problem – a contested term denoting vehicle fleet technical limits to further distribution of biofuels and more specifically, ethanol.

Ethanol consumption currently hovers around 10% of the total gasoline pool, corresponding to the blending limit (E10) that car manufacturers are willing to accept. While the EPA has approved the use of E15 for models built since 2001, most car manufacturers will not honour their warranties if motorists use E15. This situation necessitates a focus on hydrocarbon biofuels for higher blend percentages.

BRAZIL

More so than any other country, Brazil has had a long tradition of biofuel policy support programs – with the first government programs intended to stimulate growth in the sugarcane ethanol industry dating back to the 1930s. From the 1930s to the mid-1970s, Brazil's Sugar and Ethanol Institute regulated production activities and stimulated consumer demand through production quotas, price controls, and a blend mandate, as means of supporting the agricultural industry. The oil crisis in the 1970s gave the impetus to further increase ethanol production to improve the country's energy security. In 1975, the Brazilian government introduced the Proalcool program, which at the time, was the largest fossil fuel substitution program in the world. It expanded the ethanol blend mandate from 4.5% to 22% and introduced policies that expanded the sugarcane industry's capacity to produce ethanol. Support programs declined in tandem with oil prices in the 1980s and the mantra of deregulation during the 1990s led to the end of production and export quotas, as well as direct government controls over production and prices. However, the industry experienced a resurgence in the 2000s and many policy support programs have been re-introduced over the past decade, including regional producer subsidies, expansion of the blend mandate to vary between 20 and 25%, and tax incentives and loans to stimulate production. The Brazilian government expanded its consumer-based incentives to include a blend mandate for biodiesel in 2004, which started at 2% and increased to 5% in 2010. Given widespread use of flex-fuel vehicles, ethanol's market share topped at 55% in 2008, but has since receded to 30% in 2015 with low petroleum prices.

While Brazil lacks biofuel sustainability legislation comparable to the EU and US, it does, however, have a number of policies that promote sustainability. To address concerns over land use change, regulations have been introduced to preserve a certain percentage of forest land from sugarcane expansion and to clarify where sugarcane expansion is permitted and prohibited. To address concerns over GHG and air pollution emissions, national and regional-level programs place limitations on pre-harvest burning. While Brazil has not implemented sustainability criteria domestically, producers wishing to export to the EU and US must comply with the sustainability criteria of those jurisdictions. UNICA, The Brazilian Sugarcane Industry Association, has introduced a voluntary certification scheme – BONSUCRO – which complies with the EU's sustainability criteria and has engaged the US EPA to ensure local compliance.



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THE EUROPEAN UNION

At the start of the 2000s, the EU initiated a policy approach which aimed to promote biofuels as its primary renewable transport fuel component, motivated by a combination of environmental and energy security concerns. Given initial reluctance from some Member States, the EU adopted voluntary targets rather than introducing a blend mandate. A 2003 Directive set indicative voluntary targets for a minimum percentage of biofuels to be placed on the market, set at 2% in 2005 and 5.75% in 2010. After a report in 2007 revealed the failure of Member States to meet these voluntary targets, the EU adopted the Renewable Energy Directive (or RED) in 2009, which aimed to expand the market for renewable energy and replaced voluntary targets with a mandatory target of 10% renewables in the transport sector. Given slow deployment of electric and hybrid cars, biofuels were set to fill most of this 10% mandate. To address growing sustainability concerns associated with biofuels, RED stipulated several sustainability criteria, including GHG emissions savings of at least 35% in comparison to fossil fuels, which rises to 50% in 2017 and 60% in 2018; restrictions on where biofuels can be grown; and restrictions to protect biodiversity.

Despite the introduction of sustainability criteria in RED, policymakers continued to debate over whether additional criteria should be introduced to address the potential effects of indirect land use change (ILUC). The ILUC debate in the EU led to an amendment to RED, which introduced a cap of 7% for conventional biofuels within the 10% mandatory target. In 2014, the share of biofuels in the transport market was 4.9%. While some policymakers had advocated for a minimum target for advanced biofuels within the Directive, the legislation only exhorts EU Member States to set national targets for advanced biofuels, setting a reference value of 0.5% as a voluntary goal. With the RED set to expire in 2020, there is a large degree of uncertainty among EU policymakers as to the future of support programs for conventional biofuels. While Commission strategy documents have advocated support for advanced biofuels produced from lignocellulosic feedstocks and wastes, as well as algae and microorganisms, the Commission has recommended that no further government support of any kind be granted to first generation biofuels produced from food crops after 2020.

THREE LESSONS

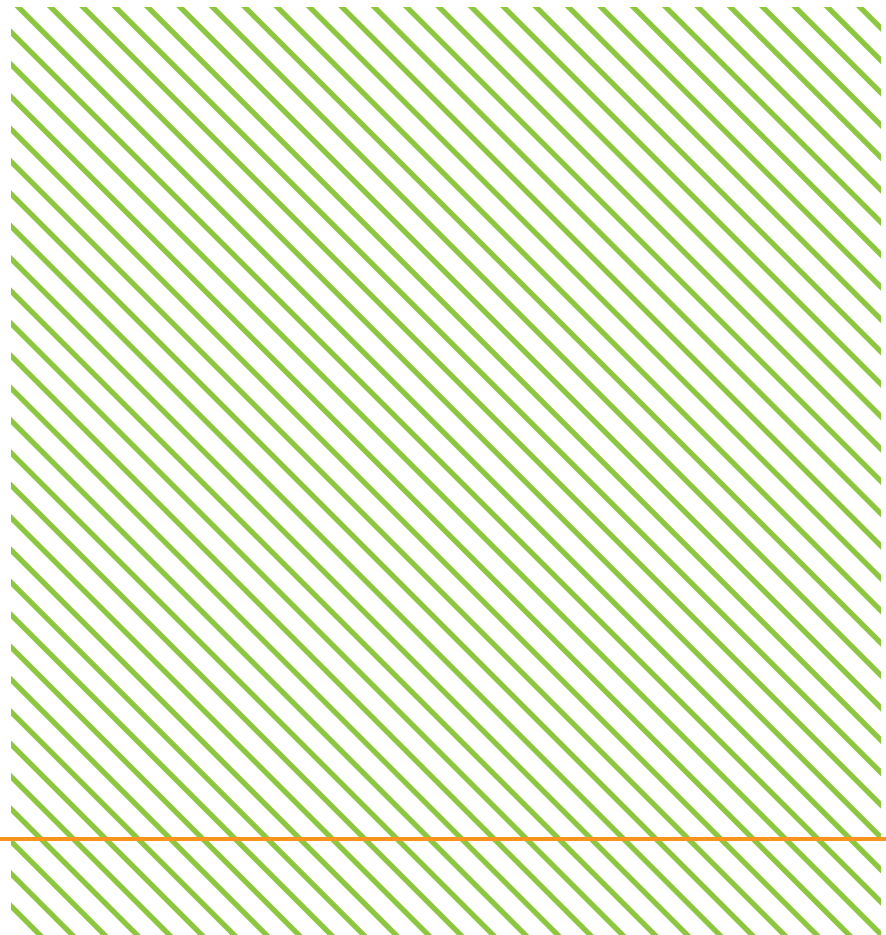
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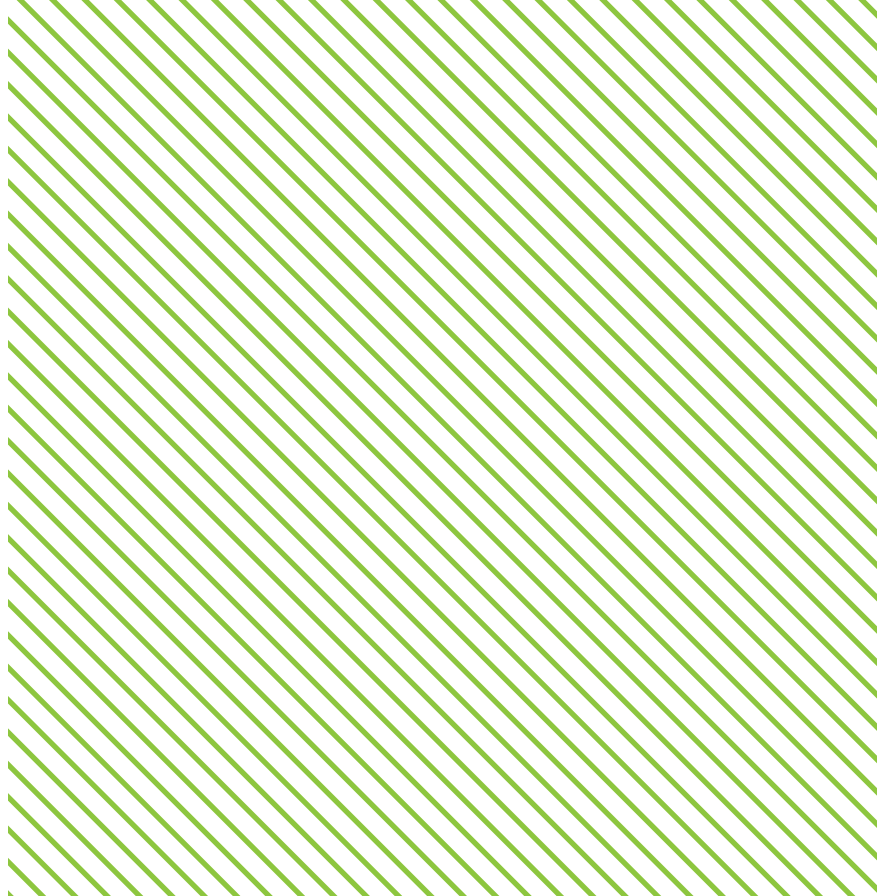
FOSTER GOODWILL REGULATORY DIALOGUE

The long-term commitment necessary for the deployment of the next generation of biofuels requires trust among stakeholders and regulators. Regulatory dialogue between Canadian farmers, foresters, environmentalists, biofuel producers, and scientists is essential. What is a 'sustainable biofuel' and what this means for concrete production practices is still being discussed, particularly for next generation biofuels. Canadian policymakers and stakeholders should consider the collective long-term benefits of collaborating to 'get biofuels right'.

Contrasting experiences in Brazil and the US, on the one hand and the EU, on the other, demonstrate this point. The Brazilian sugarcane industry has identified sustainability as a business asset. It has collaborated with university researchers and entered in sustained dialogue with regulators to gain public recognition of the benefits of its products. US soy producers have also shared technical opinions and information that have substantially influenced the EPA's assessment of biodiesel's sustainability. In contrast, the EU biodiesel industry has adopted an adversarial attitude that prevents it from making its case in regulatory dialogue. Absent this option, it has reverted to a traditional lobbying strategy that further hurts its public image.

These contrasting experiences abroad show that fruitful dialogue not only requires a problem-solving attitude, but also substantial knowledge generation capacity and, crucially, knowledge sharing.





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DEFINE SUSTAINABILITY BY FOCUSING ON EFFICIENT LAND USE AND GHG PERFORMANCE

The public image of biofuels has been plagued by scepticism regarding its sustainability. Jurisdictions abroad have set sustainability criteria to curb the outcry. However, not all criteria are created equal. The US experience shows that having different GHG performance criteria depending on biomass source (i.e. corn, non-corn, cellulosic) creates a backlash against low performance fuels, such as corn ethanol. Furthermore, the EU's cap on food-based biofuels is not placating environmental NGOs, which point to land use as the real problem, and is limiting the use of environmentally efficient solutions such as sugarcane ethanol.

These examples show that efficient use of agricultural land is the fundamental sustainability issue, not source biomass. Biofuels made from non-edible crops may still require prime land that could produce food. Therefore, appropriate sustainability criteria should ensure efficient land use that maximizes output energy while minimizing fertilizer, pesticide, and water inputs.

GHG reduction performance criteria should also be applied regardless of source biomass. Policies such as Low Carbon Fuel Standards, as found in BC or California, or GHG performance requirements that rise with time, as in the EU, will ensure real sustainability gains while opening up more possibilities for innovation in production processes and source biomass.

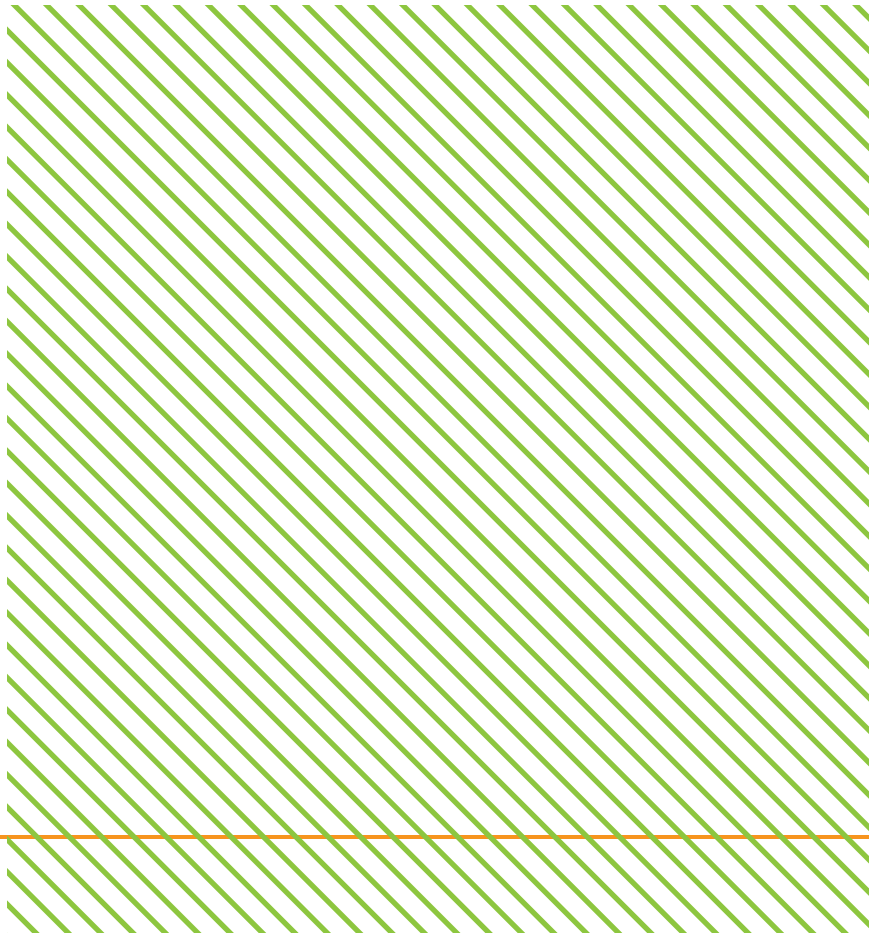
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CREATE TRUSTWORTHY DATABASES

The accuracy of regulatory determinations is key to ‘getting biofuels right’. Yet government agencies are limited in their regulatory science capacity. Subject to cross-pressures from diverse stakeholders, agencies use a variety of sources, including industry data, to measure production practices. Lack of trust in the validity of these sources – whether warranted or not – can undermine support for biofuels. Experiences in the EU and the US show that numbers, such as projected cellulosic production, or GHG reduction performance of different biofuels, can be subject to political wrangling that delays deployment.

Setting in place a single clearinghouse for these data would enhance both trust among stakeholders and policy effectiveness. Data transparency, stakeholder participation, and appropriate verification procedures are key. Opportunities to vet data should be provided. However, the challenge is to find a data governance structure that also accommodates businesses’ need to protect commercially sensitive information. This will require policy-makers to think hard about who provides data, who can access it, and who safeguards it. Perverse incentives in data governance structures can drive stakeholders to withhold data or report inaccurate data, as was the case with the London Interbank Offered Rate (LIBOR) scandal.

Fortunately, Canada has a head start with GHGenius, a platform for collaboration on GHG accounting, which is supported by Natural Resources Canada and enjoys a good reputation with industry. Building on this reputation, GHGenius would benefit from greater involvement of knowledgeable environmental and social NGO stakeholders and university researchers. BioFuelNet, as a hub of knowledge and talent in Canada, can play a crucial role in fostering these fruitful knowledge exchanges between stakeholders.



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