



Compared to fossil fuels, vehicles running on bio-fuels have 99 per cent fewer GHG emissions. Veer photo

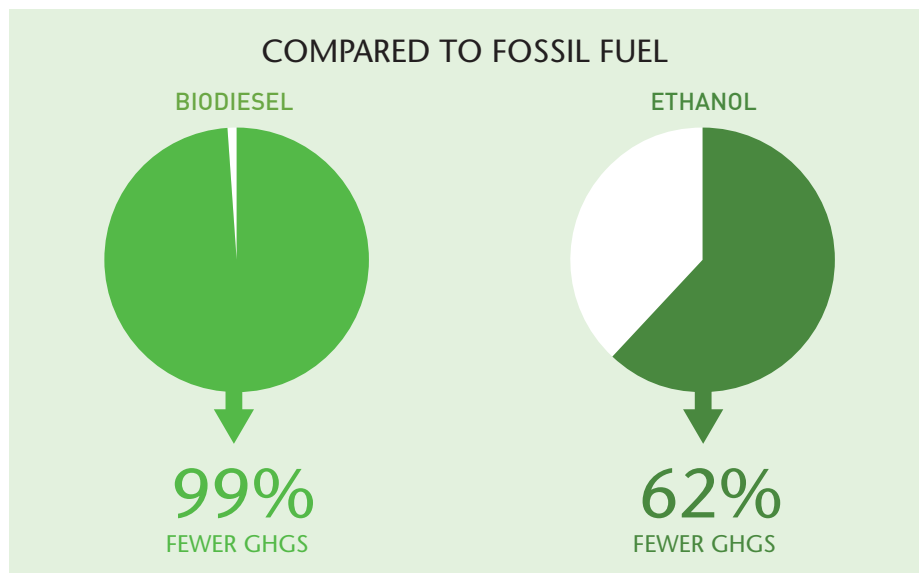
A Road to Clean Renewable Fuels

W. Scott Thurlow

With the world population soaring beyond 8 billion people—and Canada's population more than 35 million—there is a pressing need to conserve our natural resources and diversify our energy mix to include alternative, sustainable sources. The scientific consensus on climate change is that it is happening and that human activity is the cause. Protecting our environment is now one of Canada's most pressing challenges. Rising to this challenge is also one of our greatest opportunities.

It's no secret that renewable fuels burn cleaner than fossil fuels. On a life-cycle basis, biofuels can reduce greenhouse gas (GHG) emissions by as much as 99 per cent when compared to petroleum-based fuels and remove 4.2 megatonnes of carbon from our atmosphere every year—which is equivalent to removing one million cars from our roads. The Canadian government has committed to reducing our nation's GHG emissions by 17 per cent from 2005 levels by the year 2020. While biofuels are a keystone to reaching this commitment, governments should be looking beyond meeting obligations and focus on *solving* environmental problems.

FIGURE 1: Biofuels are the cleanest, most sustainable source of fuel available. To date Canada's biofuels policy remains the single most effective policy tool for reducing GHGs



Source: *Evolution and Growth, From Biofuels to Bioeconomy*, Canadian Renewable Fuels Association 2014

Today's ethanol and biodiesel plants are poised to become true biorefineries capable of using a wide-range of feedstocks to create renewable fuels and sustainable products.

Since 2006, Canada's biofuels industry has expanded significantly and now returns billions of dollars in gross economic impact every year. Today's ethanol and biodiesel plants are poised to become true biorefineries capable of using a wide-range of feedstocks to create renewable fuels and sustainable products. Advanced biofuels technologies can convert agricultural waste, forestry residue and even solid municipal waste into cellulosic biofuels. This is already happening in Alberta, with the opening of the world's first industrial scale waste-to-biofuels facility operated by Enerkem and the city of Edmonton. However, Canada cannot fully realize its potential for such technologies and products without addressing the intense competition from other jurisdictions.

Around the world, strategic policy mechanisms and investment programs are already in place. Europe and the United States have recognized

the need for an integrated bioeconomy and have stepped up to make significant investments. The European Commission adopted its strategy in February 2012, including Horizon 2020, the biggest EU Research and Innovation program ever, with some €79 billion of funding available over 7 years (2014 to 2020). In April of 2012, President Obama unveiled the US National Bioeconomy Blueprint, which lays out strategic objectives to help realize the full potential of the American bioeconomy. The US also has a specific blender's tax credit for cellulosic fuels and a mandated requirement for its inclusion.

The priority we place on sustainability and innovation will ultimately determine our long-term economic prosperity. The growth of today's Canadian bioeconomy is due in large part to renewable fuels technology.

The unfortunate result is that Canada is being left behind. Despite our natural resources advantage and having one of the strongest economies in the G7, Canadian renewable fuel and bioeconomy policies are not keeping pace internationally. (See figure 2)

The priority we place on sustainability and innovation will ultimately determine our long-term economic prosperity. The growth of today's Canadian bioeconomy is due in large part to renewable fuels technology. While the potential of these technologies is nowhere close to exhausted, new government policies and programs that advance these opportunities are needed, if not overdue.

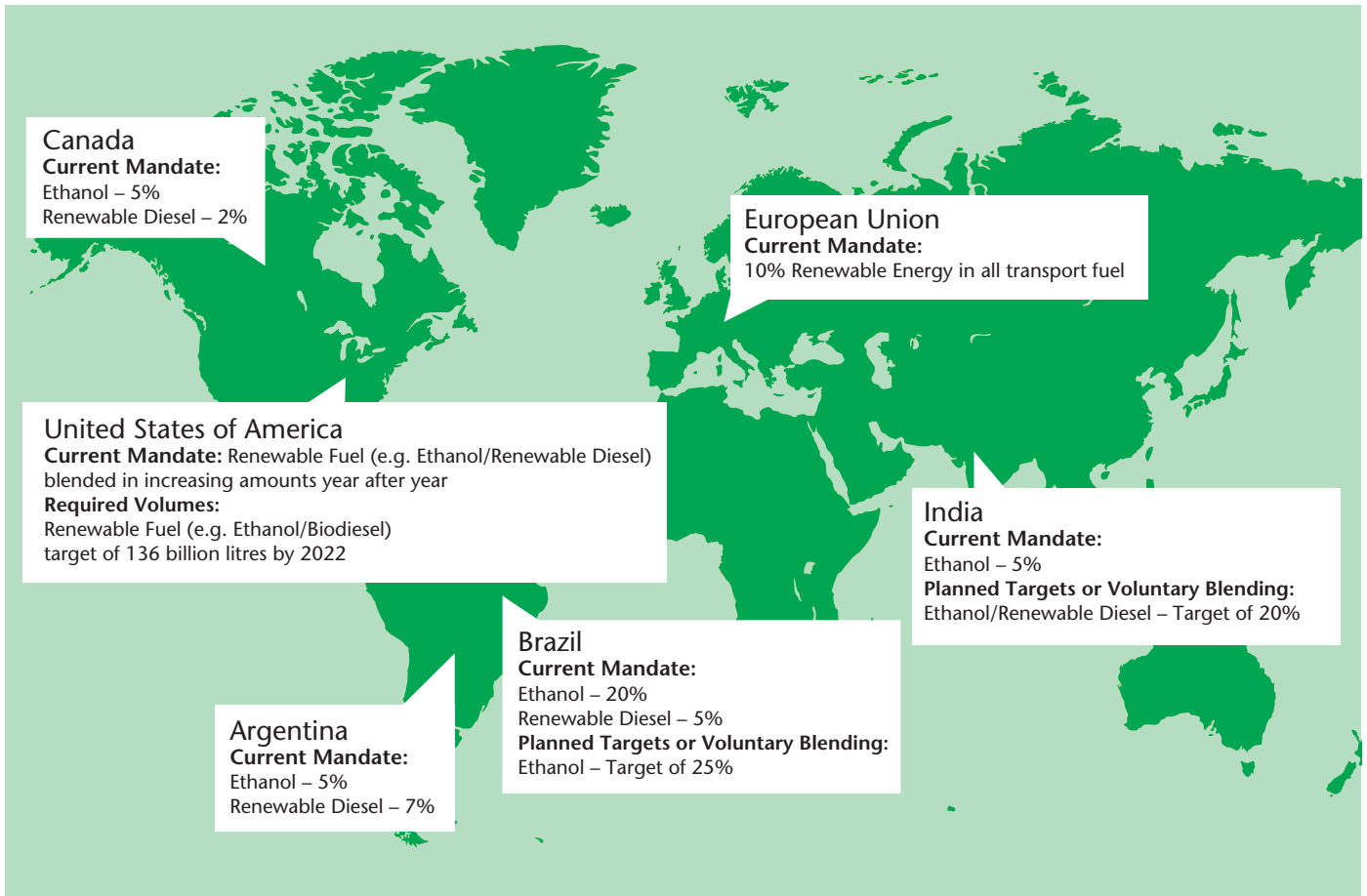
Programs like the Sustainable Development Technology Canada (SDTC) TechFund™ and the SDTC NextGen Biofuels Fund™ (NGBF) have proven very successful but—unlike in Europe and the US—a transition fund for these new technologies does not exist. Tomorrow's bioeconomy relies on expanding emerging technologies and successfully bringing them to market. Creating a biorefinery fund to support innovative and potentially groundbreaking technology will not only accelerate progress in research, but help shape Canada's overall energy future.

Exempting cellulosic biofuels from the current excise tax on fuel would also help advance the bioeconomy by driving production and consumption of cellulosic biofuels in Canada. As demonstrated with similar treatment for other commodities, this relatively small tax measure will encourage domestic production, retain cellulosic biofuels (as well as the associated economic and environmental benefits) in Canada.

Canadian biofuels also give consumers more choices and lower prices at the fuel pump. Renewable fuels diversify our fuel mix and extend our petroleum supply while delivering the environmental benefits many customers—and governments—are looking for.

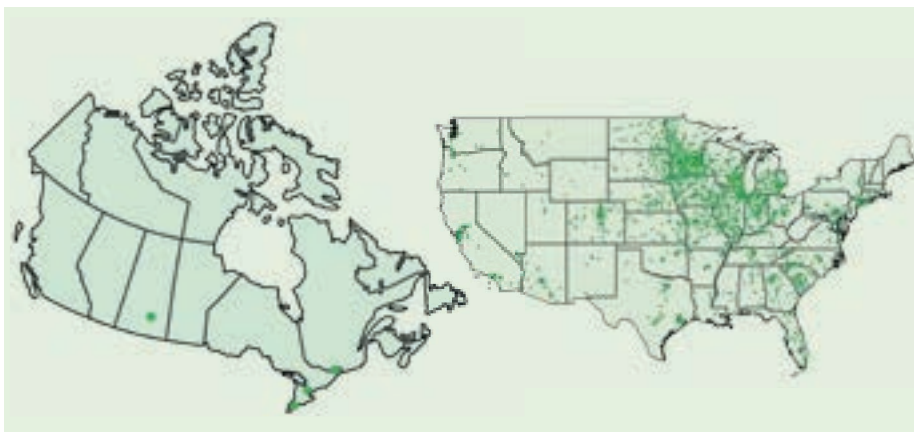
Starting in 2017, North American automakers will be required to improve their fuel economy under the Corporate Average Fuel Economy (CAFE) standards. By 2025, vehicles in Canada will have to more than double their efficiency and run, over a fleet average, at 54 miles per gallon. The overwhelming consensus from domestic vehicle manufacturers is that higher octane fuels are necessary to drive the smaller, lighter engines that these new fuel economy standards

FIGURE 2: There are no technical barriers to expanding inclusion requirements for federal renewable diesel from two to five percent by 2020, and doing so will encourage greater investment in Canada.



Source: *Evolution and Growth, From Biofuels to Bioeconomy*, Canadian Renewable Fuels Association 2014

FIGURE 3: Ethanol station availability in the United States vs. Canada. Canadian consumers simply do not have access to any alternatives to petroleum products.



Source: *Evolution and Growth, From Biofuels to Bioeconomy*, Canadian Renewable Fuels Association 2014

will require. In fact, European auto manufacturers have already called for higher ethanol blends and Brazil has been using them for years.

There are over 3.5 million vehicles

on Canada's roads that can take up to 85 percent ethanol (E85). In the United States, there are over 3,000 E85 pumps, and thousands of others that offer mid-level ethanol blends and 10-

20 per cent biodiesel directly to consumers. In Canada, there are 5 pumps that offer E85 to consumers and none that offer higher biodiesel blends at commercial sites. (See figure 3)

Ethanol and ethanol-blended gasoline (like E20 or E30) is also the lowest cost source of octane available. Ethanol continues to be cheaper than gasoline. In 2013, the wholesale price of ethanol was, on average, 20 cents per litre lower than the wholesale price of gasoline. As the cost of production of crude oil increases, so too will its price, making all goods more expensive.

Consumers should have the choice to use lower-cost, cleaner fuels for their vehicles. This fueling infrastructure turnover will require significant time to build out properly. To facilitate this, governments should be encouraging existing pump turnover and new market entrants by providing tax incentives—through either a direct tax credit or capital cost al-

lowance depreciation—to those individuals who want to offer consumers these alternative fuels. It bears repeating that similar programs in the US successfully provide a much needed incentive to encourage the turn-over of thousands of pumps that offer higher renewable content to consumers. The reality is that if Canada does not make these investments, the fuel economy regulations put in place to improve fuel efficiency will be completely ineffective.

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Mandated levels of renewable fuel content have succeeded in securing a market for a product that burns cleaner when compared to petroleum based alternatives. As a direct result of these mandates, Canada's renewable fuels industry is domestically producing almost 1.8 billion litres of ethanol

and the capacity to produce 700 million litres of biodiesel. The net result is that consumers receive the benefits of cleaner fuels, and Canada reduces its emissions while at the same time stimulating the economic growth that comes with domestic biofuel production.

Despite the economic and environmental benefits, misinformation based on outdated science and flawed logic persists. This is especially disappointing given the proliferation of such "features" in some national papers and by selected academics and public policy forums.

Our domestic renewable fuels industry generates gross economic benefits in excess of \$3.5 billion to the Canadian economy every year and has delivered more than 14,000 direct and indirect jobs.

In Canada, we are fortunate that the federal government—and many provincial governments—have rightly put renewable content regulations into place that are spurring economic growth and supporting agribusiness.

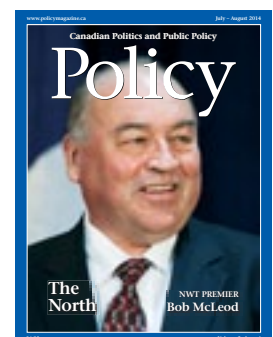
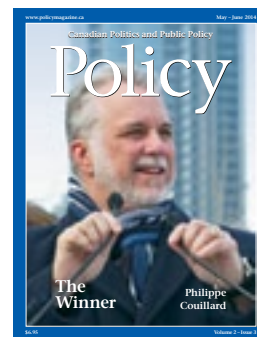
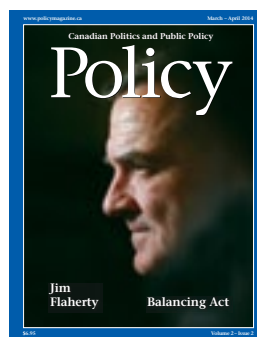
Our domestic renewable fuels industry generates gross economic benefits in excess of \$3.5 billion to the Canadian economy every year and has delivered more than 14,000 direct and indirect jobs. All told, the federal government will realize a net return on investment of more than \$3.7 billion. Characterizing this as a "failure" is untrue and does little besides insult the businesses, policy makers, and farmers who have built a thriving industry. If anything, now is the time to increase renewable fuel requirements and expand biofuels use to other sectors.

Today is a time of real environmental challenges and great economic opportunity. Our industry remains focused on capitalizing on these opportunities. As the recent past has shown, a thriving and fully realized domestic renewable fuels industry is more than possible—it is viable and working in Canada. Now is the time to build on this successful platform and do more. The results will benefit our immediate energy future but more importantly, lay the foundation for the prosperity of generations to come. **P**

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