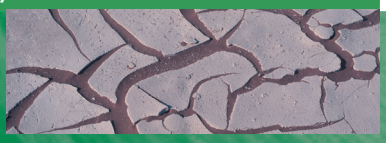
Promoting Sustainable Bioenergy Production and Trade





US Trade Policies on Biofuels and Sustainable Development

By Jane Earley
Earley & White Consulting Group LLC

ICTSD Global Platform on Climate Change, Trade Policies and Sustainable Energy

ICTSD
International Centre for Trade and Sustainable Development

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ABBREVIATIONS AND ACRONYMS

AGOA	African Growth and Opportunities Act
AoA	WTO Agreement on Agriculture
ATPA	Andean Trade Preferences Act
CAFTA	Central American Free Trade Agreement
CBI	Caribbean Basin Initiative
EISA	Energy Independence and Security Act
EC	European Community
EPA	(US) Environmental Protection Agency
EU	European Union
FAEE	fatty acid ethyl esters
FAME	fatty acid methyl esters
FTA	free trade agreement
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GM	genetically modified
GNP	gross national product
GSI	Global Subsidies Initiative
GSP	Generalized System of Preferences
HTS	Harmonized Tariff System
LCFS	Low Carbon Fuel Standard
MBTE	Methyl tert-Butyl Ether
MFN	most favoured nation
NAFTA	North American Free Trade Agreement
PPM	processing and production methods
RFA	Renewable Fuels Association
RFS	Renewable Fuel Standard
SCM	Agreement on Subsidies and Countervailing Measures
TBT	(Agreement on) Technical Barriers to Trade
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
USDA	United States Department of Agriculture
VBETC	volumetric biodiesel excise tax credit
VEETC	volumetric ethanol excise tax credit
WCO	World Customs Organization
WTO	World Trade Organization

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FOREWORD

To produce, trade on or use agricultural products as fuel -a practice as old as human history— has become a policy riddle spawning emotional debate and multiple, sometimes competing and conflicting, measures and actions. Today, many see fuel derivatives from agricultural produce and forests as a new frontier in energy supply. In a context of action against climate change, the carbon emissions efficiency of some energy crops has emerged as a promising powerful option to the use of fossil fuels; against a backdrop of energy scarcity, particularly in cash-dry economies, excitement on the prospect of producing cheap fuels from un-edible crops at large scale seems unarguable. Especially if crops are grown in marginal lands, if new policies both at home and abroad are generating fresh capital and investment flows, and if, on top, energy resulting may match otherwise unattended demand and neglected populations.

A promissory outlook, except that at this very time, successfully steering action on agro-fuels as a tactic in combating climate change, or as energy or developmental strategy, is complicated by critical factors; primarily, a lack of consensus on how to deal with the emerging flows of trade and investment and the ensuing trade-offs in the allocation of implicated resources, from land, to work force, to capital. Compounding the issue are ill-equipped existing regulatory frameworks at both domestic and international levels. And, equally crippling is perceived deficiency in science and metrics to demonstrate effects. Not insignificant is also the realization that with current technologies limitations of scale render the whole idea less attractive or, at best, relegate its relevance to a reduced niche use.

Yet, OECD countries and most major demandeurs of energy for transport or otherwise, have in the past few years adopted policies and measures that have spurred enormous demand and stimulated investment in production and growth. Evidence also shows that these policies have created or significantly and rapidly expanded trade flows and production at home and abroad; in particular measures introducing mandates of agro fuel use in the mix of liquid fuel for transportation or the energy grid. Activity on technological development has also surged in recent years in response to prospects and stimuli; indeed, high expectation on an eventual technological fix to the shortcomings of existing possibilities for ethanol and bio-diesel, specifically in the use of biotechnology in the conversion of cellulose fibres into energy, has served in contradictory ways as both incentive or deterrent for further development of existing feedstock. The fact is that given that energy crops are based on the basic conversion of sunlight into energy by means of plants, natural comparative advantages rest for the moment in tropical crops; a key factor determining the current geography of production and trade. However, technological applications at advanced stages of development may very soon alter all this and with it, the accompanying political economy orbiting policy-making.

Net gains and losses from use of biomass as energy are hard to estimate, particularly in a long-term assessment. Odds for a future of improved energy efficiency, lower carbon emissions, reasonable and sustainable use of lands for the production of food, fiber, forests or fuel, and larger developmental and social gains, maybe enhanced or doomed by options on policy chosen now; specially those aiming at long term targets and behavioural changes, as well as those concerning regulatory frameworks in the form of international rules that limit and lock-in our possibilities.

It is in this context that ICTSD has decided in the past two years to engage in policy dialogue, research and analysis and problem-solving activity that contribute to societies' very pressing and real need to come to grips to the reality of energy crops. We do so, conscious of the dynamism of the policy environment, together with the intended and unintended consequences of policy development; the actual impact of decisions on use of resources in the daily lives of communities

and individuals, even if on trial or temporarily terms, and the need to find solutions from the policy perspective that are durable and supportive of the sustainable aspirations of societies and global welfare.

The paper you're holding has been authored by Jane Earley, a foremost expert on matters related to standards, agriculture and trade; for years a USTR negotiator and in the most recent past, CEO of the Marine Stewardship Council, and a policy advisor to WWF US, and commissioned under the Global Platform on Climate Change, Trade Policies and Sustainable Energy. This work is intended to provide an analytical snapshot of the complex policy landscape in the US as major driver of production and trade, and a not insignificant player in global rule-making on sustainability.

The ICTSD teams involved in these fascinating issues and myself, very much hope that this paper is of interest and, indeed, a contribution to the current debate and the definition of policy options.

Thank you,

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

Biofuel in the United States of America (USA) is primarily ethanol produced from corn. Although new legislation in the form of a recent Farm Bill and an ambitious biofuels mandate looks toward increased production of other forms of bioenergy, such as cellulosic biofuels, there is little commercial production at this time.

Without significant policy shifts, production of cellulosic biofuels on a commercial scale is unlikely to occur as rapidly as envisioned by the Renewable Fuels mandate in the face of current incentives to produce ethanol from corn. Without such shifts, increasing corn ethanol production will continue to contribute to increased stress on land and water resources, loss of wildlife habitat and conservation-dedicated land, and increased levels of hypoxia in water bodies from nitrate run-off. It will also continue to contribute to increased food and animal feed prices, low carry-over stocks and food price volatility.

Although imports of ethanol from Brazil and Caribbean Basin Initiative (CBI) countries have increased dramatically, they are still very small relative to demand. The tariffs on ethanol and blender credits for both ethanol and biodiesel combined disadvantage ethanol imports from Brazil and other countries, limit and cellulosic development in favor of present technology, and subsidize the blending of biodiesel for foreign as well as domestic producers.

Clearly, a new look at US biofuel policy should include reduction of current restraints on trade to encourage increased imports of sustainably produced biofuels, and revision of the biofuel mandate to further encourage cellulosic production and cap production of corn ethanol. There may be a renewed opportunity to accomplish this in an administrative framework, despite the US Environmental Protection Agency's recent denial of a request to waive portions of the Renewable Fuel Standard (RFS) to minimize price increases to animal feed and food. Policy revision should also look at increasing production of other sustainably produced biofuels and renewable energy sources, including biofuel imports from developing country recipients of non-reciprocal trade preferences.

World Trade Organization (WTO) rules could address many aspects of this situation. It is likely that the ethanol tariff and the biodiesel blender credit will become important trade issues. The range and level of domestic support provided throughout the value chain, from feedstock production to consumer use, should also be considered in light of the disciplines provided in the WTO Agreement on Agriculture (AoA) and the Agreement on Subsidies and Countervailing Measures (SCM). The Doha Development Round could provide an important incentive to further clarify biofuel tariff nomenclature, reduce tariffs and non-tariff barriers in agricultural and industrial trade, and include biofuel provisions in environmental goods and services negotiations.

US biofuel policymakers should also link to international efforts to develop sustainability standards for biofuels. These will be critical in both a climate change and a resource conservation context. Although these would not avoid problems in current WTO jurisprudence, international standards would help to provide a basis for the lifecycle analysis of biofuels required by US laws and could also provide a neutral platform for assessment of biofuels from both domestic and imported sources, including preferential trade arrangement beneficiaries.

INTRODUCTION

In recent months, many developments have led to questions about US energy policies, in particular those concerning biofuels. Globally, some commodity price reductions appear to be likely, but global food prices remain high, economic slowdowns threaten the recent growth of alternative energy markets, and there is as yet no global consensus on how to address climate change. In the meantime, the Doha Round remains unfinished business, and WTO rules do not appear to constrain high levels of domestic subsidies for biofuel feedstock production, with absent litigation resulting in a binding agreement to reduce them.

Domestically, US biofuel policies have also been revisited, with a new Farm Bill that perpetuates previous agricultural policies and energy legislation that adds incentives to produce both first- and second-generation feedstocks. However, in the context of the challenges facing the US in terms of its overall energy policy, the documented impacts of US biofuel policies to date are discouraging.

Although investment in corn ethanol production using current technology has been extremely profitable for some investors, there is evidence that consolidation in the ethanol-producing sector has removed benefits from some of the rural communities that expected to profit from them. Livestock and poultry industries have been hard-pressed to compete with ethanol refineries for supplies of corn, a large part of animal diets. Ethanol production has also contributed significantly to food price increases in the USA (Rosegrant, 2008), and it also carries additional costs. The infrastructure investment necessary to create dedicated transport, storage and distribution facilities for ethanol, including dedicated pipelines, will be considerable at a time when transport infrastructure improvements are also necessary in other areas.

The environmental effects of intensified corn production for ethanol have also become apparent, as many communities are finding that corn ethanol refineries are large users of scarce water supplies. Others are finding that the environmental effects of corn production include high water use, soil erosion, increased rates of nitrogen fertilizer, and corresponding run-off into the Gulf of Mexico and the Chesapeake Bay, enlarging the "dead zone" in the Gulf and thwarting plans to save the Chesapeake Bay (O'Brien, 2008). Conservation acreage is under great pressure, as US corn farmers plant more corn for ethanol production. Reversion of this acreage to production will inevitably cause biodiversity loss.

The US has not erected new trade barriers to alternative energy sources, and biofuel in particular, as much as it has continued old ones. The ethanol and biodiesel blender credits, the ethanol tariff, and the level of subsidy for corn ethanol at state and federal levels have perpetuated a relatively protected market and have in effect protected a relatively inefficient technology. Some of this has come at the expense of global demand for food and feed. In the wake of increased use of US corn production for ethanol, stocks of corn and other grains have become dangerously low at times, making the global food supply vulnerable to shortfalls and price volatility, reducing the ability of the US to respond to disasters and famine, and contributing to increased global food costs.

There is no doubt that the new US administration is be called upon to make many changes, but whether the impetus for such changes will be internal, external or both remains to be seen. The relevant US domestic and trade policies, and the WTO agreements and jurisprudence relevant to them, are analysed in the sections that follow.

1. BIOFUEL PRODUCTION AND TRADE IN THE USA AND FUTURE PROSPECTS

Currently, biofuel in the USA is primarily ethanol produced from corn. Other fuels such as biodiesel are increasingly available, and cellulosic biofuels may at some point be developed on a commercial scale, but they are dwarfed by the magnitude of development of ethanol in the past few years. Strong initial growth was in part a response to the substitution of ethanol for Methyl tert-Butyl Ether (MBTE), a gasoline additive whose production was found to be a toxic source of groundwater contamination.

However, corn ethanol production now continues to be encouraged by the ambitious blending mandate of recent energy and farm support legislation. Although there is support for cellulosic energy and several projects nearing commercial production, corn ethanol is very likely to be the dominant form of biofuel production into the future unless substantial policy changes are implemented in the near term. These would most likely necessitate reduction or stabilization of present federal and state mandates that encourage production of first-generation technology, removal of subsidies and elimination of the ethanol tariff and blender credits.

There is no doubt that corn ethanol production at the levels described below has serious environmental impacts. Corn is a water-intensive and fertilizer-intensive crop and, although yields have improved, there is much pressure to end federal conservation easements to support increased production. Irrigation for corn production and use of water for the refining processes is a particular danger to non-renewable aquifers. Soil depletion increases as corn/soy rotations are replaced by corn/corn. Run-off from intensive production has intensified dead zones in the Gulf of Mexico and the Chesapeake Bay.

Although much attention has focused on the effects of biofuel production on fragile native forests in Amazonia and Indonesia, and the indirect effects of biofuel production more generally, there is also an increasing perception that US domestic biofuel production has environmental consequences. This has not so far resulted in a diminution of the blending mandates, or support for the industry, but recent legislation calls for lifecycle assessment of biofuels, which will capture some of these environmental costs.

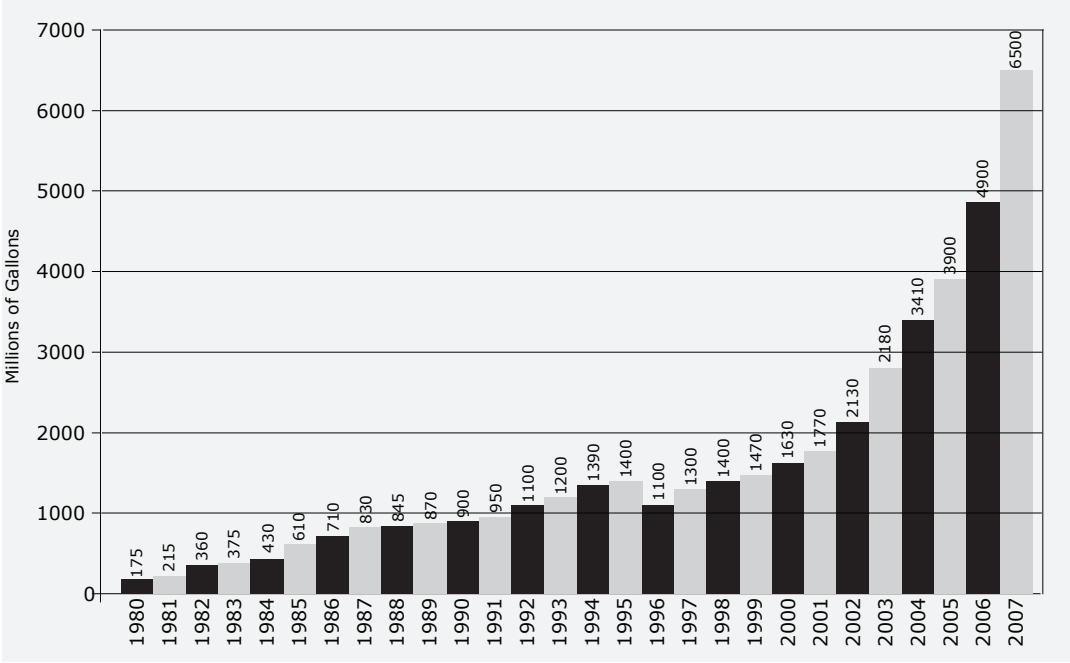
1.1 Ethanol production

Statistics from the US Renewable Fuels Association (RFA), an industry association for the ethanol industry, indicate that in 2007 US ethanol production amounted to approximately 6500 million gallons. The RFA projects 2008 production to exceed 9 billion gallons, and industry analysts believe that 11 billion gallons could be produced in 2009. This is in contrast to a mere 830 million gallons in 1987 and 1300 million gallons in 1997.[1] Figure 1 shows the exponential increases in ethanol production to 2007.

Ethanol produced from corn is thought to be an interim approach to reducing carbon emissions and helping to supplant reliance on imported energy. Therefore, cellulosic ethanol production and production of other "advanced biofuels" is encouraged by recent legislation. By definition such "advanced biofuels" exclude corn starch.

Currently there is almost no commercial production of ethanol from cellulosic sources; and, even though ethanol producers are not now profiting due to the high price of corn, corn ethanol production is cheaper than cellulosic. Cellulosic sources under consideration in the US include a variety of feedstocks and processes. These include wheatstraw, corn stover and fibre, fast-growing trees, perennial grasses such as miscanthus and switchgrass, wood and yard trimmings, and municipal solid waste. Some cellulosic production is beginning in 2009. This will include six cellulosic projects, funded in

Figure 1: Historic US Fuel Ethanol Production



Source: Renewable Fuels Association (2008), http://www.ethanolrfa.org.

part by the US Department of Energy, that will eventually produce approximately 227 million gallons of ethanol.

Future demand for advanced biofuels will be conditioned by blending mandates and subsidies. The US federal mandate is a blending mandate. It calls not for production of ethanol to replace gasoline but rather for the two to be blended. State mandates also provide incentives for ethanol production and use. US energy policy has provided incentives for the use of ethanol for a long time, but this has become important only as demand has also been increased by blending mandates. There is a blending credit of 51 cents/gallon for US refiners for ethanol, and $1 (USD) credit per gallon for biodiesel. This is coupled with a tariff of 54 cents/gallon on imported ethanol, which will drop to 45 cents/gallon over time.

The Energy Policy Act of 2005 set a consumption mandate of 7.5 billion gallons of renewable fuel by 2012. This was amended by new legislation (the Energy Independence and Security Act, EISA) signed into law on 19 December 2007. The changes to the RFS in this energy legislation call for production of 36 billion gallons of biofuels by 2022, almost a five-fold increase over the 2012 target. In addition to building refinery capacity, the USA will also retrofit infrastructure to accommodate ethanol transport and storage needs.[2] There will also be increased development of a so-far nascent biodiesel market.

The RFS also includes support for cellulosic development in a biomass programme to produce 250 million gallons by 2013, and authorizes $500 million annually for the production of advanced biofuels that have at least an 80 percent reduction in lifecycle greenhouse gas emissions relative to current fuels. Most importantly, it schedules introduction of advanced and cellulosic biofuels into the US fuel supply and caps corn ethanol production at 15 million gallons in 2015. The schedule is shown in Table 1. This table shows that, by 2022, the USA will be producing 21 billion gallons of advanced biofuel, of which 16 billion will be cellulosic.

In addition to the federal (RFS) mandate, state blending mandates and even municipal mandates are in force. Many of these mandates have the force of law. The RFA maintains an inventory of such requirements, together with grants, tax credits and procurement directives offered at state level, on its website (http://www.ethanolrfa.org).

Table 1: New renewable fuels standard schedule

Year	Renewable Biofuel	Advanced Biofuel	Cellulosic Biofuel	Biomassed-based Diesel	Undifferentiated Advanced Biofuel	Total RFS
2008	9.0					9.0
2009	10.5	.6		.5	0.1	11.1
2010	12	.95	.1	.65	0.2	12.95
2011	12.6	1.35	.25	.8	0.3	13.95
2012	13.2	2	.5	1	0.5	15.2
2013	13.8	2.75	1		1.75	16.55
2014	14.4	3.75	1.75		2	18.15
2015	15	5.5	3		2.5	20.5
2016	15	7.25	4.25		3.0	22.25
2017	15	9	5.5		3.5	24
2018	15	11	7		4.0	26
2019	15	13	8.5		4.5	28
2020	15	15	10.5		4.5	30
2021	15	18	13.5		4.5	33
2022	15	21	16		5	36

Source: Renewable Fuels Association[5]

Some examples of state mandates include California's blending mandates of 20 percent by 2010, 40 percent by 2020 and 75 percent by 2050 and directive to increase the percentage of flex-fuel vehicles in state-owned fleets to 50 percent by 2010. California has also committed to reducing the carbon intensity of transportation fuels by 10 percent by 2020 by establishing the Low Carbon Fuel Standard (LFCS). Another state mandate is Florida's tax exemption for materials used in the distribution of biodiesel (B10–B100) and ethanol (E10–E100), including refuelling infrastructure, transportation and storage, up to a maximum of $1 million in taxes in each fiscal year. Gasoline refuelling station dispenser retrofits for ethanol (E10–E100) distribution also qualify.

Hawaii has a requirement that at least 85 percent of unleaded gasoline must be fuel blends containing at least 10 percent ethanol (E10). Gasoline blended with an ethanol-based product, such as ethyl tertiary butyl ether, is also in conformance with this requirement. Illinois has a sales and use tax exemption for ethanol-blended fuels containing 70–90 percent ethanol sold between 1 July 2003 and 31 December 2013. Oregon maintains a property tax exemption for property used to produce biofuels, if it is in a designated renewable energy development zone.

Together with the federal mandate, state mandates keep demand for ethanol at high levels. Even if the federal mandate disappeared tomorrow, there would be significant artificial demand for ethanol coming from state mandates. Therefore, despite a reduced rate of new plant start-ups, rising ethanol prices are continuing to support producer margins, and capacity utilization for existing plants remains strong. Although transport fuel demand will decrease overall due to the economic slowdown and high prices, 64 new ethanol plants are expected to be in production in 2008 (F.O. Licht, 2008). These and existing plants will find margins squeezed by high corn prices, but ethanol prices are also high.

Ethanol production, already having exceeded earlier production mandates, will most likely continue to increase in the near term and the long term in keeping with or exceeding the RFS targets. Some estimate production in 2009 to reach 11 billion gallons. RFS-inspired growth after 2015, if over the 15 billion gallons

mandated by the legislation, will not come from corn ethanol. This does not mean that more corn ethanol cannot be produced, but it cannot count against the RFS mandate. US cellulosic fuel production costs were estimated recently to be more than $2.50/gallon, compared with $1.65/gallon for corn ethanol (Coyle, 2007). Erosion of political support and low oil prices in the long term are also factors that could lead to diminution of production. Although short term oil prices have dropped, long term low prices are not considered likely.

Therefore, although ethanol's current share of the US domestic fuel supply is still small (less than 6 percent on a volume basis and 3.9 percent by energy), it will no doubt continue to grow. Over 50 percent of US gasoline was blended with ethanol in 2008, compared with less than 45 percent in 2007.

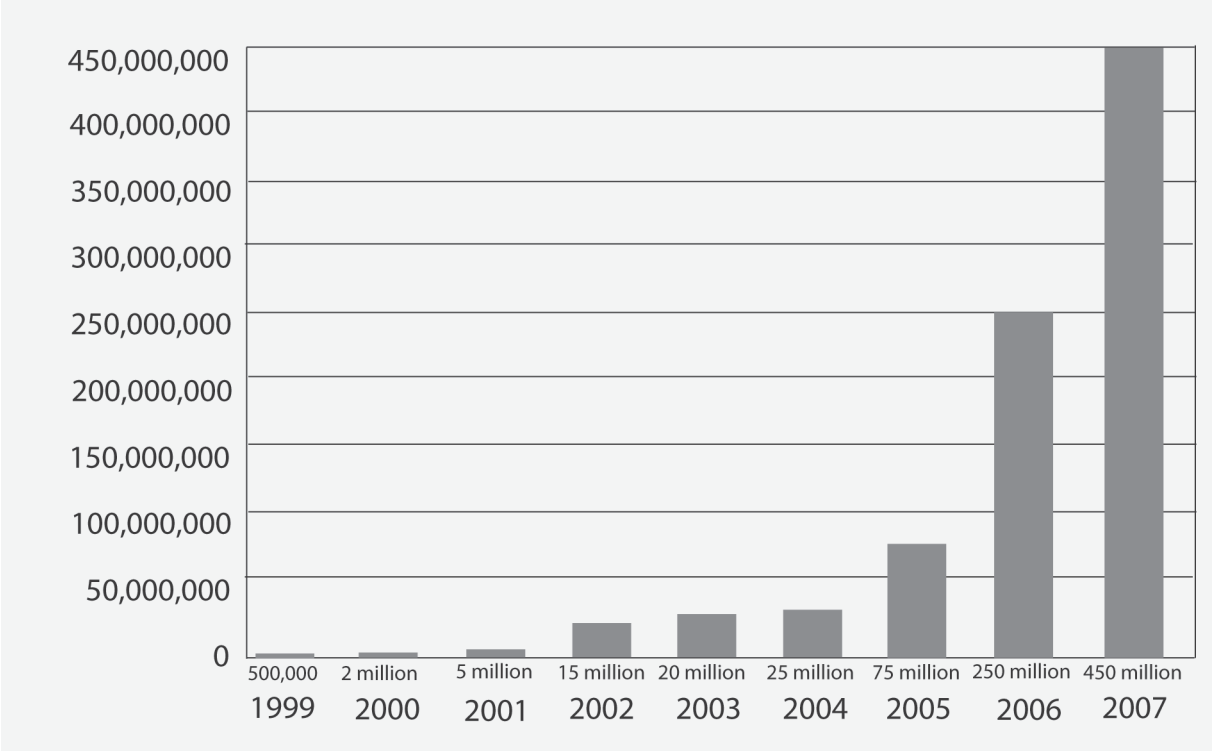
1.2 Biodiesel production

In contrast to ethanol, biodiesel occupies a far smaller share of the US fuel supply, and its growth prospects are considered more limited, even though fuel feedstocks (oilseeds such as soy and canola, waste products such as fryer fats and recycled oils, and new products such as cammelina) are plentiful. The US Department of Energy estimates that available feedstocks such as virgin soy oil and recycled restaurant grease could support production of about 1.7 billion gallons of biodiesel per year. However, this would constitute only 5 percent of transport diesel used in the USA.[3]

Even so, biodiesel production, like ethanol production, has grown exponentially, as shown in Figure 2 from the National Biodiesel Board, the US industry association for biodiesel producers.[4]

US biodiesel prospects have been hurt recently by high agricultural commodity prices. Although soy, a major feedstock, is plentiful, its high domestic prices in relation to low diesel prices made biodiesel from soy uncompetitive in the market in 2007 and 2008. Most production in these two years was exported to the European Union (EU).

Figure 2. Estimated US Biodiesel production by fiscal year



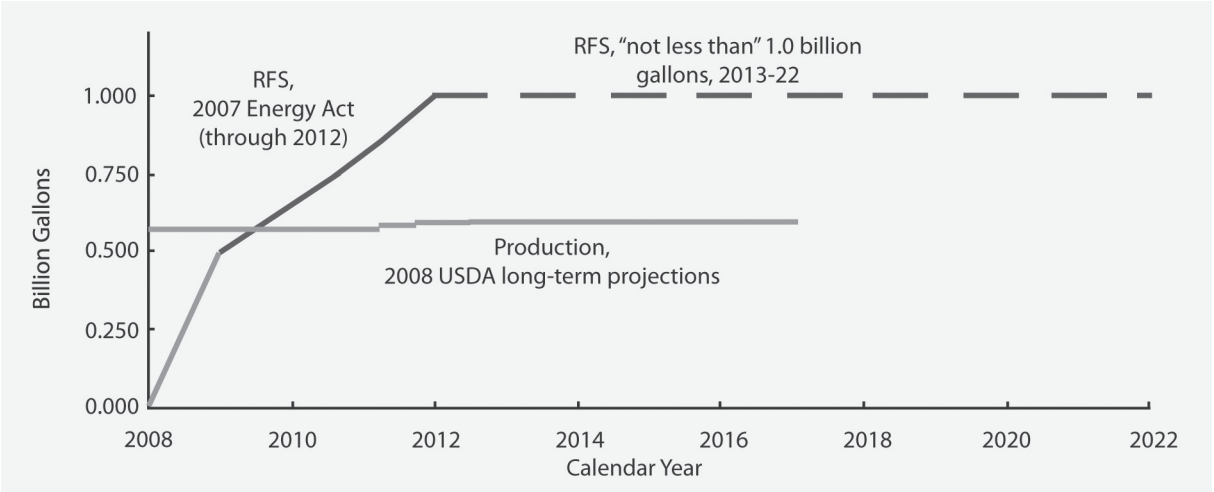
The USDA projected use of soybean oil for biodiesel production at 2.9 billion pounds for 2007–08, essentially unchanged from last year. Concurrently, however, the USDA projects use of other fats and oils for biodiesel production to increase. Use of other fats and oils was reported at 34.2 million pounds in January 2007, 93.2 million pounds in August 2007, and 115.9 million pounds in January 2008 (University of Illinois, 2008).

Biodiesel production, perhaps more so than ethanol production, is increasingly oriented to new technologies and use of new feedstocks. Algae, cammelina and other oilseeds are being actively investigated, although production in the USA is not occurring at commercial levels. Glycerine is also being explored as a feedstock, although it is usually a troublesome by-product of vegetable oil processing with few market uses and large disposal problems.

Although not yet produced in large volumes, biodiesel from waste streams is very popular, and there are many very small producers nationwide. More than half the biodiesel industry can use any fat or oil feedstock, including recycled cooking grease.

The USDA projects biodiesel production to increase as a result of the 2007 RFS amendments, beyond levels that it would have anticipated without these incentives. A comparison of the two scenarios is shown in Figure 3.

Figure 3. Projected biodiesel production



Source: USDA Agricultural Projections to 2017, February 2008. USDA, Economic Research Service

1.3 Trade

Although USDA estimates assume that the ambitious mandates of the production of ethanol and biodiesel in the EISA can be met, it will almost certainly not be the case that they are met exclusively from domestic production. Ethanol imports have been rising as demand increases, even given the present high tariff. Likewise, biodiesel processors, which are not limited to domestic sources of supply to receive the $1 blender credit for biodiesel, have been exporting biodiesel blended in the USA to Europe, where it allegedly comes into that market below the cost of production.

As shown in Table 2 from the US RFA, US ethanol imports are not insubstantial, even given the high tariff, and they have been rising. Given that ethanol derived from sugar cane has fuel efficiency, net energy content and carbon lifecycle benefits greater than those of corn-based ethanol (Worldwatch Institute, 2007), and that it is also cheaper to produce, it is fair to assume that more would be imported if the tariff were to be removed. This would lead to greater use of an arguably more sustainable feedstock.

It is also fair to assume that more would be imported from the western hemisphere, and that most of the imports would be ethanol from sugar cane. Section 5 describes imports from CBI countries and prospects for change in US preferential trade rules.

Table 2: 2007 US Ethanol Imports

Country	Total Gallons *(Through Nov. 2007)*
Brazil	188,825,960
Jamaica	75,193,188
El Salvador	73,280,595
Trinidad & Tobago	42,738,552
Costa Rica	39,359,298
Canada	5,382,504
China	1,468,844
Total	426,248,940
RFA estimate for 2007	450,000,000

Source: International Trade Commission (ITC)

In addition to tariffs on the importation of ethanol, described below, the US sugar programme is also an import barrier. US sugar production has been protected since 1789. The current programme, operated since 1934, is a price support programme using import controls and marketing allotments to ensure that the government does not accumulate stocks. Payment-in-kind provisions are used to reduce production. Recent changes to the Farm Bill (a "Feedstock Flexibility Program for Bioenergy Producers") now mandate that the government buys excess sugar and sells it to ethanol producers.

Despite the sugar lobby, some modifications were made to the sugar programme by recent trade agreements. The CBI, the Central American Free Trade Agreement (CAFTA) and the North American Free Trade Agreement (NAFTA) all made some changes to sugar import quotas. The NAFTA enacted free trade in sugar in 2008 between NAFTA partners, an important development for the Mexican sugar market.

Overall, the new sugar and energy provisions are projected to be supportive to both US and Mexican sugar prices due to the higher loan rates and the sugar-to-ethanol diversion requirement. The latter could become particularly important if the Doha Round eventually concludes and the USA has to open its sugar market to another 300 000–500 000 tons of raw and refined sugar imports (Earley, 2008).

2. US TARIFFS ON BIOFUELS

The USA applies an ad valorem tariff of 2.5 percent on ethanol (specifically, undenatured ethyl alcohol) and 1.9 per cent on denatured ethyl alcohol. This was coupled with a 54 cent per gallon tariff to "offset" the blender credit of 51 cents/gallon. The recently passed Farm Bill extended this tariff, which was set to expire in 2009, but reduced the blender credit to 45 cents/gallon. The extension will now expire in 2010. The Farm Bill also established a temporary cellulosic biofuel producer tax credit of up to $1.01/gallon until the end of 2012.

The US ad valorem tariff on ethanol has also been subject to a duty drawback for USA-based manufacturers that can export a like commodity within two years of paying the initial duty. Jet fuel is such a like commodity, so manufacturers that also produce jet fuel have been using these exports to offset the duty that they would otherwise pay on ethanol. This has allowed a significant increase in ethanol imports that are effectively exempted from this charge (Newman, 2008). However, the recently passed Farm Bill has eliminated this provision. Beginning 1 October 2008, the exemption will no longer be allowed, and companies will have until 1 October 2010 to apply for a duty drawback on prior transactions.

The USA applies an ad valorem tariff of 4.5 percent on biodiesel. A $1/gallon tax rebate has also been given to blenders of biodiesel. Since the credit does not distinguish between either sources or destinations of the biodiesel to which it applies, it has resulted in access to the credit by domestic blenders for biodiesel produced abroad and domestically produced biodiesel that is exported. This has been called the "splash and dash" loophole. In particular, the loophole has allowed biodiesel producers to blend B-99 (1 percent diesel, 99 percent biodiesel), claim the tax credit from the US and then export the fuel to Europe. Several legislative proposals to address the situation have been made. However, at this point none has been fully enacted.

2.1 Environmental implications of US biofuels–related trade provisions

The implications of US trade-related biofuel policies for the US environment have not been debated extensively, although the RFS itself was debated in terms of the net effect on the US environment of production of 36 billion gallons of corn for ethanol. Yet, sugar cane is generally agreed to provide more benefits as a biofuel feedstock than corn in terms of both energy efficiency and lifecycle impact. Sugar cane is a perennial, unlike corn, needing to be replanted only every five years in order to maintain good yields. Although sugar cane is water-intensive, like corn, it does not need corn's high levels of nitrate fertilizer. If sugar cane ethanol were to be imported at high levels, then it might arguably displace some of the corn now grown for ethanol and therefore minimize damage to the environment caused by massive corn production.

Of course, changes to US trade policies supportive of increased imports of ethanol produced from sugar cane would not necessarily affect levels of corn ethanol production because of rising demand built in to the RFS. There would not necessarily be benefits to the US environment resulting from increased imports of ethanol. However, such imports could ameliorate demand for other corn uses, such as animal feed, and provide better ethanol distribution to coastal areas, reducing demand for extensive new transport infrastructure.

The ethanol tariff has come under increased scrutiny, not because of the environmental implications of the mandate and present levels of production of corn ethanol but because biofuels themselves are increasingly seen as agricultural goods whose production drives up food prices. It is likely that pressure to eliminate or reduce the tariff will emerge as a highly controversial issue in 2009, one of many controversial issues in a very fluid energy policy debate.

3. US NON-TARIFF MEASURES ON BIOFUELS

Non-tariff measures applied to biofuels in the USA fall into two general categories: technical standards and sustainability standards. Although these two kinds of standard both relate in different ways to environmental conditions, their development has proceeded along very different tracks. The global oil industry is a heavily regulated industry whose products are subject to many technical regulations in every country. Unlike agricultural commodities, for which market entry barriers can be very high, oil and other energy products traditionally face low entry barriers but high regulatory barriers.

Fuel standards vary regionally and globally because transport fuels vary in content with temperature and climate on a regional and seasonal basis. Each country has a different climate, a different history of infrastructure development for fuels, and different blending requirements and specifications for ethanol and biodiesel based on these factors. Standards also differ from place to place in terms of ethanol content (blending requirements), acidity, phosphorus content, evaporation residue and other chemical issues. The energy industry is accustomed to working out technical specifications in commercially friendly venues, such as the International Standards Organization. Of course, the same crops are also grown differently in different places with different yields and different water and soil requirements, and different crops are grown in single ecosystems, some more suitable than others in terms of environmental requirements and yields. Few commercially available venues exist for resolving standards differences pertaining to the different environmental attributes of agricultural crops.

Biodiesel is an emitter of carbon residue in the form of nitrous oxide (NOx), an air pollutant that most jurisdictions have limited pursuant to environmental requirements for clean air. Emission standards also differ from country to country, affecting the characteristics of existing fuel standards, the performance of the kinds of engine most prominent in differing national settings, and the emission profiles of different kinds of biodiesel. Emissions standards could be considered a non-tariff barrier as well, but, since their effect on biofuels is indirect, they have not been treated here.

Finally, since biofuels incentives depend on their carbon emissions qualities, standards to measure their carbon lifecycles and other carbon-related attributes are also relevant to their production and use. Many countries are now in the process of developing such standards, and multilateral initiatives, such as the Roundtable on Sustainable Biofuels,[5] also exist.

3.1 Technical standards

Technical standards include those relevant to blending requirements and other physical properties of biofuels. Some concern the chemical properties of the fuels themselves as they relate to the efficient operation of engines, such as viscosity and emissions characteristics and the methodologies used to determine them. Others concern the chemical properties of the fuels as they are used in different climatic zones and under different conditions. These are often integral to blending requirements, which are peculiar not only to fuel mix policies of different jurisdictions but also to engine requirements when operated in different climates. Some standards are also necessary for efficient operation of distribution systems, since some fuel mixes are too corrosive for transport through dedicated pipelines. Technical standards can act as import barriers. For instance, recently passed restrictions on the time of year when ethanol can be used in Georgia and Florida have been estimated to potentially depress demand in the USA by about 3 billion gallons (Westervelt, 2008).

Chief among efforts to reconcile technical standards pertaining to biofuels is an initiative between the USA, the EU and Brazil. Standards

experts have produced a White Paper on internationally compatible biofuel standards (Tripartite Task Force of Brazil, European Union and United States of America, 2007). This report was released in December 2007, and a new "roadmap" was presented in 2008 on which action will be taken to reconcile divergent standards. The White Paper concluded that there are significant differences in standards for biofuels among the USA, the EU and Brazil, but that these could furnish the basis for standards processes in the International Standards Organization and in national standards institutions, and in some cases they could also be adopted as agreed commercial practices by respective industries.[6] More important, the taskforce concluded that there was no significant impediment to trade because of technical standards at the present time in bioethanol, but that significant differences in biodiesel standards needed to be resolved. These stem from regional differences in production and use, and divergent methods of measurement.

Of the 24 specifications for biodiesel, the taskforce found significant differences in 10 of them. These include specifications for sulphur content, cold climate operability, cetane number, oxidation stability, mono-, di- and tri-acylglycerides, density, kinematic viscosity, iodine number, linoleic acid content and polyunsaturated methyl ester. Also, although EU standards cover biodiesel from fatty acid methyl esters (FAME), US and Brazilian standards also apply to fatty acid ethyl esters (FAEE) and are used to describe a blending component in conventional (hydrocarbon-based) fuels. In contrast, the EU standard is for a product that can also be used as a standalone fuel. In addition, the taskforce found significant regional differences based on locally produced feedstocks but concluded that these could be reconciled via blending.

For ethanol, the taskforce found major differences, principally in water content requirements. These are lowest in the EU and, if imposed on US and Brazilian manufacturers, could impose significant costs, but the taskforce concluded that "there is no technical specification that constitutes an impediment to trade given the current situation". The taskforce also noted other categories, where there may be "little similarity" but similar standards could be "easily agreed on", in part because limits or conditions were "lacking in some specifications".[7]

In conclusion, on the basis of the report, US technical standards for biofuels do not appear to pose trade barriers. In fact, it is more likely that EU standards, such as iodine content, will pose barriers to US exports. However, sustainability standards may pose a different problem.

3.2 Sustainability standards

Sustainability standards as such are not required by US federal legislation, but the RFS, as amended by the EISA passed in December of 2007, does require lifecycle analysis of some biofuels in order for them to be counted against blending mandates.[8] It also requires that use of renewable biomass[9] must result in significant reductions in greenhouse gas emissions: more than 50 percent over their lifecycle in the case of advanced biofuels.10 Cellulosic biofuels are held to reductions of over 60 percent.

The Act requires the US Environment Protection Agency (EPA) dministrator to report to Congress on the current and future environmental effects of these measures, including imports. In order to furnish this report, the EPA will need to establish criteria to evaluate biofuels production in terms of its environmental effects, essentially creating a working definition of sustainable biofuels production. The EPA will work with other relevant agencies (including the USDA) to develop these basic sustainability criteria for biofuels.

This federal mandate is not the only sustainability standard in the USA. California's LFCS also requires lifecycle analysis of biofuels and will allow credits to be traded.11 The new standard is set to take effect by January 2010.

Although the LCFS requirements are not yet complete, it is clear that proponents of the LCFS advocate full implementation of sustainability standards. This would include development of standards and best management practices for resource development, production and extraction that could be enforced by both industry and the state, and verification by means of certification. Certification of sustainable practices could include land and water use, environmental impacts, environmental justice, and other resource-relevant conditionalities. There is currently no provision for social certification. Other states, such as Massachusetts, are close to enacting their own low carbon fuel approaches to carbon emissions reductions.

Although the US approaches to the sustainability of biofuels are in contrast to those of others, such as the EU, they attempt to achieve some of the same objectives: a full assessment of the energy and environmental values of each biofuel qualifying against a target for use set by federal or state authorities. This includes the environmental conditions at the site of production and their ultimate value as energy sources.

3.3 WTO consistency of US biofuel Non– Tariff Measures

Since non-discrimination (in the form of national treatment) and adherence to international standards are the focal points of the WTO Agreement on Technical Barriers to Trade (TBT Agreement), if there is an agreed international standard it will surely be used as a benchmark against which to measure the alleged WTO consistency of any trade practice based on technical standards. Discrimination on the basis of performance of different kinds of feedstock may at some point pose a problem. However, performance-based distinctions operating in the USA at the moment would most likely discriminate in favour of imports, as ethanol produced from sugar cane and biodiesel produced from palm oil are more efficient fuels. A final discrimination issue, however, could be posed by the way in which technical standards are implemented. This is discussed below in connection with sustainability standards.

There is little jurisprudence under the TBT Agreement but, because the TBT Agreement requires national treatment, it is clear that technical standards would be WTO-inconsistent under the TBT Agreement if they discriminate against imports. So far, US technical standards do not do this in a way, or on a scale, that is likely to cause trade tensions. However, there is much room for trade tension as technical standards continue to diverge and other tensions exacerbate biofuels trade. It has long been the case, for instance, that US soy producers cannot meet EU biodiesel standards because of the iodine content test applied to soy biodiesel. Palm oil producers also find themselves at a disadvantage in exporting to cold climates where their biodiesel products are likely to congeal at low temperatures, making them unsuitable for some fuel uses.

However, based on the work of the taskforce, it appears unlikely that US technical standards at a federal level are likely to be the basis of a WTO complaint. State blending requirements may be another story, as state blending mandates and specifications proliferate and local content provisions begin to take hold. The latter are facially discriminatory and could become the basis for a trade complaint if the market is big enough to warrant it.

Sustainability standards would be subject to a somewhat different test. US legislation does not aim to create sustainability standards as such. But it is clear at both the federal and state levels that the requirements applicable to advanced biofuels or low carbon fuels will be a set of lifecycle criteria whose values will be established either by regulators or by multi-stakeholder processes to which regulators will refer. It is also fair to assume that these will apply equally to imports and to domestic production. The ability of national or state regulators to establish environmental production standards and to impose them as preconditions for importation, especially where conditions of production are likely

to vary widely from country to country, has been challenged in a number of similar WTO contexts. Both the tuna–dolphin[12] and shrimp–turtle[13] cases involved US regulators concerned about importation of products whose domestic production was governed by environmental regulation in the US and who had attempted to devise equivalent standards for production elsewhere. In both cases, the US standard was found to discriminate against imports.

WTO jurisprudence on when and whether environmental measures can be seen as discriminatory and trade-restrictive has been much debated and arguably somewhat moderated over time. If non-discrimination or national treatment as required by General Agreement on Tariffs and Trade (GATT) Article III and the TBT Agreement is provided, then an even-handed administration of sustainability standards to both imports and domestic production would avoid some problems, and so would minimizing the appearance of a trade barrier. Sustainability standards should not prohibit imports of biofuels that do not meet the standards. This would be a trade barrier prohibited by the TBT Agreement unless it falls within one of the GATT exceptions to the Agreement or otherwise can be argued to be consistent with it. If a biofuel were instead allowed to enter the country but then could not qualify for a promotional policy unless it is considered to be produced sustainably, the situation would still be subject to GATT Article III's requirement of national treatment, or non-discrimination but eligibility for incentives may differ from imposition of taxes or charges.

Standards should not discriminate in the way they are formulated or applied. It is arguably discriminatory to compose a standard without input from major stakeholder groups, if it is in fact a global, or shared, problem. Therefore, if Indonesian palm oil is going to be evaluated by California fuel importers for application against blending targets, then Indonesian producers should have been consulted on what environmental lifecycle values will be applied to it. Two WTO Appellate Body rulings bear on this issue. In the shrimp–turtle case,[14] the panel found that efforts had not been made to enlist foreign producers in a US effort to conserve sea turtles harmed by certain shrimp fishing methods. In the reformulated gasoline case,[15] an Appellate Body Panel found that foreign producers were discriminated against when they were assigned generic baselines rather than being allowed to generate their own on the basis of production data like domestic producers.

Sustainability standards for biofuels will also need to meet the requirements of WTO jurisprudence relating to products whose processing and production methods (PPM) are not related to their product characteristics. Although some WTO members maintain that the TBT Agreement does not cover such PPMs, and others state that they are WTO-inconsistent per se, this supposed discipline has been somewhat eroded by recent developments. Even the WTO website appears to downplay the binding nature of this distinction, but it has not been retested in WTO jurisprudence. In fact, many countries now enforce standards based on characteristics that are not readily apparent in the product. For instance, there is global agreement to the adoption of organic standards which by and large have no objectively measurable characteristics by which to distinguish organic products from other products, and many countries require labelling of genetically modified (GM) foods with no discernable GM content, predicated on the desire for consumer information about the production method.

Under the TBT Agreement, if sustainable production of biofuel is an international standard, then a country would arguably be required to implement it unless it could be shown to be inappropriate. Although implementation of an international standard is arguably little different from implementation of a national one, its use would avoid some of the pitfalls attending creation of a domestic regime applied to foreign producers and, if it were also the subject of multilateral agreement, it could be argued that it should prevail over WTO obligations.

Although social standards are not really part of US proposals for sustainable biofuels at this point, they may pose additional problems. Social standards are far more controversial in international trade law and are also controversial domestically in the US at federal level, in part because they are administered on a state level. Any linkage of social standards to biofuels production will, unless preceded by a fully fledged multi-stakeholder process with full agreement of exporting countries, be very vulnerable.

Therefore, although there are grounds on which to defend a challenge to US sustainability standards brought by another country in the WTO, there are most surely still many grounds on which to press such a challenge. In the meantime, US regulators would be well-advised to participate actively in efforts to develop internationally agreed standards for sustainable biofuels production that could be linked to their lifecycle assessments and ultimately carbon trading regimes.

4. US DOMESTIC SUPPORT MEASURES AND THEIR WTO COMPATIBILITY

US domestic support for biofuels extends across the value chain, running from production support for corn, soy and cellulosic feedstocks, through the blender credit, to tax incentives and other support for distribution and infrastructure. Climate change policy may also be brought to bear through voluntary or mandatory programmes offering offsets to production of crops also used as biofuel feedstocks. Although biofuels as such are supported by measures that apply after the feedstocks are harvested, corn and soy production is well-supported and tax incentives benefit infrastructure development and use by consumers.[16]

Although there is widespread perception that biofuel mandates are partially to blame for rising food prices, and in particular for food and feed price increases cause by corn price increases, there is little current consensus in the US Congress that mandates should be downsized. Food price increases tied to biofuels, however, have received a lot of attention. Recent estimates of the magnitude of price increases of corn due to support for corn ethanol project only a 13 percent drop in corn prices if support were removed (Food and Agricultural Policy Research Institute, 2008). Moreover, the recently passed Farm Bill and energy legislation both include enhanced support for biofuels and in particular for cellulosic research and development.

In addition, the US EPA recently rejected a request to downsize the RFS mandate to produce 36 million gallons of biofuel by 2022. The request was based in part on the effect of corn ethanol production on livestock feed and food. Although this request, in the form of a waiver from the governor of Texas, was rejected on somewhat technical grounds (United States Environmental Protection Agency, 2008), there is little evidence that rollback of the mandate or the other incentives described below would receive widespread support.

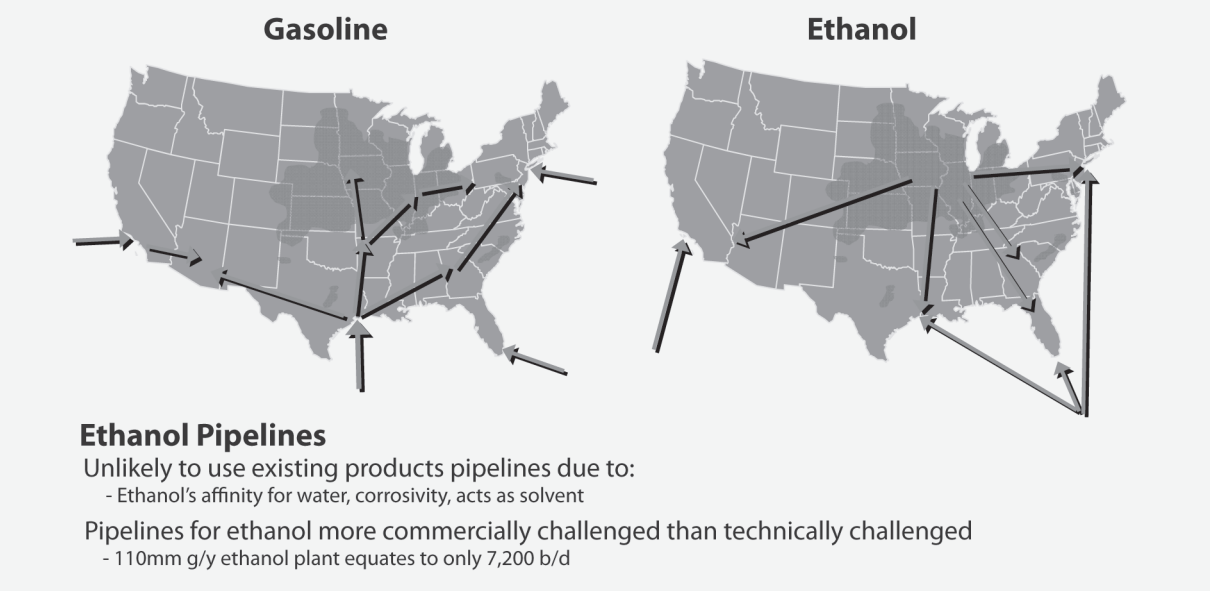
However, energy policy in the USA is very fluid, and economy-wide price increases due to high energy costs have inspired debate and will most certainly be a hot issue in the near term. Whether this will lessen support for biofuel, and corn ethanol in particular, remains to be seen. There is growing pressure to focus on renewable energy in many areas and to extend domestic oil drilling to previously exempted areas such as the Arctic National Wildlife Refuge and offshore sites. There is also clear support for further development of cellulosic biofuels.

The International Institute for Sustainable Development's Global Subsidies Initiative (GSI) has extensively documented domestic support to biofuels in the USA and other countries (Global Subsidies Initiative, 2007). Its 2007 update estimated support to the biofuel sector from 2006 to 2013 to be in the region of $92 billion. It included in this estimate changes to Energy and Farm Bill legislation that were projected at the time. This support does not yet factor in the extent of infrastructure changes that will be needed to transport ethanol, as opposed to gasoline, to population centres. As Figure 4 shows, these could be substantial. It also does not factor in those changes to legislation that were actually made, as opposed to those that were projected; these include changes to the US sugar programme.

The GSI's documentation of US subsidies for ethanol and biodiesel is divided into four basic categories: (i) output-linked support, (ii) subsidies to factors of production, (iii) policies affecting the cost of intermediate inputs and (iv) subsidies related to consumption.

Support for cellulosic and other advanced biofuel production processes is integrated into all of the above and emphasized in most categories, but sometimes it is also added as a separate category of assistance. Subsidies are often intermingled, stacked and otherwise combined. They exist at federal, regional, state and local levels.

Figure 4. Distribution patterns: gasoline versus ethanol



Source: ExxonMobil

4.1 Output–linked support

US output-linked support to biofuels includes market price support provided by tariffs, renewable fuel standards, and their combined effects, and payments based on current output such as the volumetric ethanol excise tax credit (VEETC) and the volumetric tax credit for biodiesel, and procurement preferences. It also includes the USDA's bioenergy programme, reduced motor fuel excise and sales taxes, and other output-related measures at the state level.

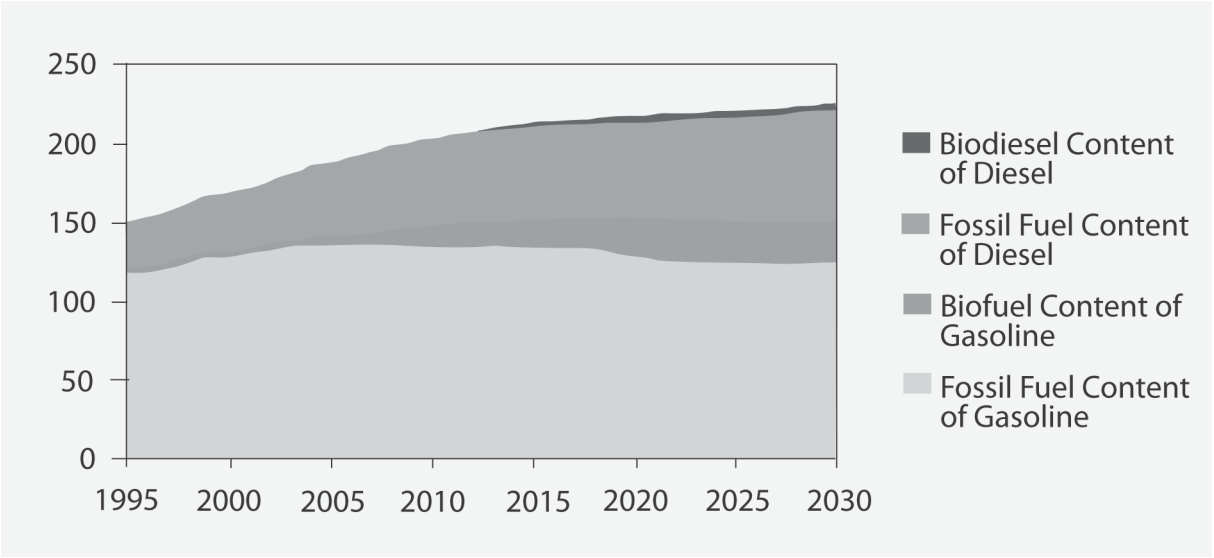
The most important of these, other than the ethanol tariff, is the RFS itself, supported by federal and state blending mandates. The RFS was first promulgated in 2005, but it was most recently amended in 2007 by the 2007 EISA. That Act raised the combined fuel economy average for model year 2020 to 35 miles per gallon for the total fleet of passenger and non-passenger automobiles manufactured for sale in the UDS for that model year. It also established a national standard for generating electricity from renewable energy sources, set new standards for energy-efficient appliances and federal buildings, and required increased use of biofuels, including ethanol made from sources other than corn.

The blending mandate is for 36 billion gallons of biofuel to be generated by 2022 for use as motor fuel. The proportion of fuel to be blended would increasingly include cellulosic and other "advanced" biofuels. The legislation was seen at the time as very positive, including by environmental leaders,[17] but in light of food price increases it has also been much criticized:

> Our environment, our climate, and the pocketbooks of hardworking American families are hurting after decades of failed energy policy. This bill – unprecedented in its support for clean energy and action to combat global warming – will take America's energy policy in a dramatically different direction. It will create hundreds of thousands of jobs, save consumers over $26 billion at the pump and $18 billion on their energy bills, give us greener cars and clean electricity, put us on the road to energy independence, and make real progress in the fight against global warming. – Carl Pope, president, the Sierra Club, 30 November 2007

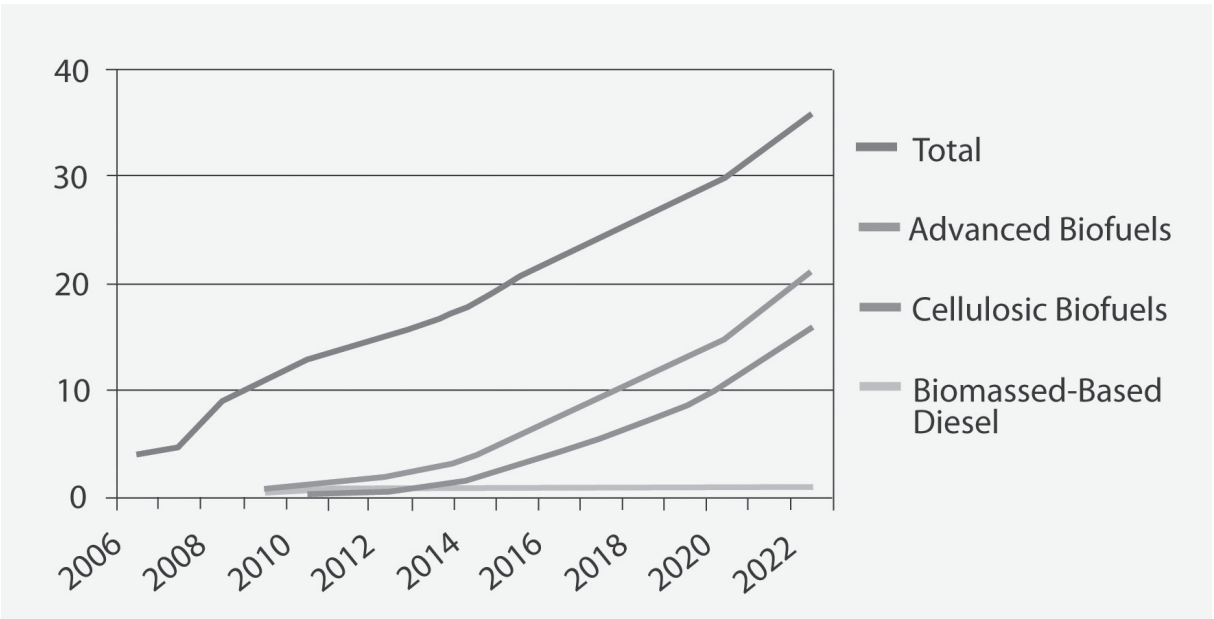
It should be emphasized, as Figure 5 illustrates,[18] that this increase in production is predicated on blending of ethanol and other fuels with gasoline, and not on substitution of fossil fuels with biofuels.

Figure 5. Motor Fuels by source (billion gallons)



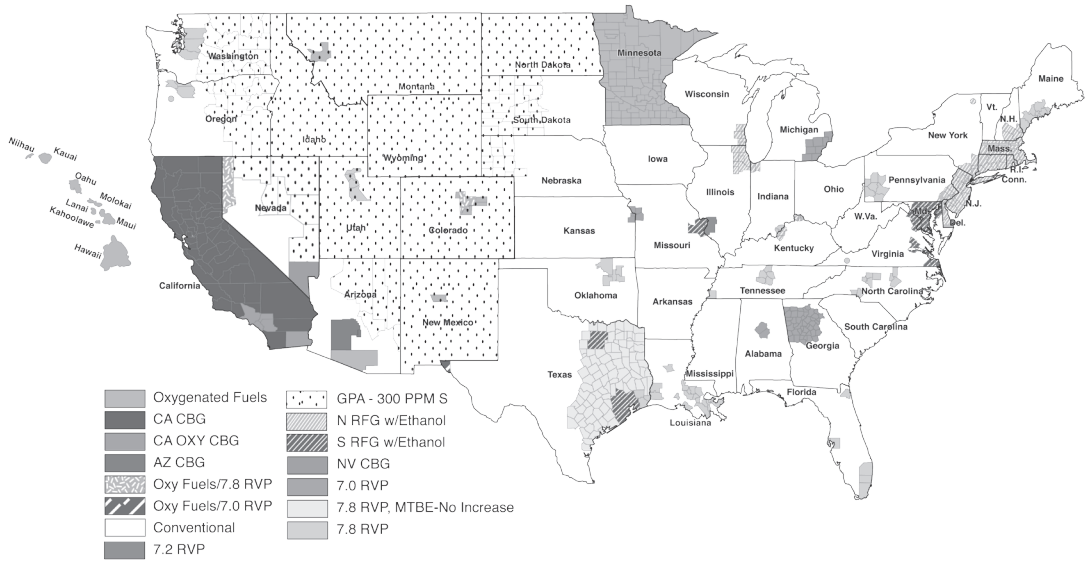
The commitment to advanced biofuels is integral to this mandate because corn ethanol is capped at 15 million gallons in 2015 and does not qualify as an advanced biofuel. Because of this, the EISA does not contemplate that increased used of biofuels will necessitate continued increases in acreage devoted to current feedstocks, primarily corn and potentially soy. The proportion of advanced biofuels and the staged increase in the blending mandate is shown in Figure 6.

Figure 6. EISA 2007 expands the renewable fuel standard (RFS) mandate



Source: Energy Information Administration, Annual Energy Outlook 2008

Figure 7. State blending requirements for fuels



Source: ExxonMobil, As of April, 2007

State blending mandates, such as Florida's for 9–10 percent ethanol blending in gasoline by the end of 2010, and other specified fuel requirements supplement federal ones. Figure 7 is a 2007 chart showing a variety of state content and blending requirements for fuels.[19]

Together, these requirements for the constitution and percentage of liquid biofuels that must be added to gasoline add up to a level of total consumer demand for biofuels that is not price-dependent. Although the federal mandate does not specify source or origin of supply, some state blending requirements mandate in-state production capability.

After the RFS mandate, the most important sources of support for US biofuel production are the VEETC and volumetric biodiesel excise tax credit (VBETC). The VEETC is the 51-cent volumetric ethanol excise tax credit, which will be reduced to 45 cents in the new Farm Bill. This is offset by a tariff of 54 cents/gallon. The VEETC provides the single largest subsidy to ethanol. The effect of the VEETC is difficult to calculate.[20] A recent study by the Food and Agricultural Policy Research Institute projects that reducing the tax credit without reducing the tariff would reduce the price that blenders would be willing to pay ethanol producers, all else being equal. But this would result in less than a 1 percent reduction in ethanol production (Food and Agriculture Policy Research Institute, 2008).

Biodiesel receives a similar blender excise tax credit (VBETC), currently 50 cents/gallon from waste cooking oil and $1/gallon for biodiesel from oilseed feedstocks. In addition to these tax credits, there is also a renewable biodiesel tax credit for producers in the same amounts, but this is claimed as an income tax deduction rather than an excise tax break.

Although issues have arisen concerning whether the VBETC should be awarded to conventional oil refineries for co-processed, as opposed to renewable, biodiesel producers,[21] there is a possibility in pending legislation that only the tax credit for renewable biodiesel will be retained. Also likely is that it will be extended beyond 2008. At the same time, the "splash and dash" loophole, by which blenders are eligible to receive the excise tax credit for blending and re-exporting imported biodiesel, will probably be ended. This is likely to sharply reduce exports of biodiesel to Europe.

Procurement preferences and purchase mandates are also part of US output-linked support to biofuels. Many US states and cities require that their fleets or transport services use particular kinds of fuel. The RFA reports

that 11 states have such mandates for ethanol. Federal government procurement of renewable fuels was explicitly authorized by the 2002 Farm Bill, which established a new programme for purchase of bio-based products by Federal agencies modelled on an existing programme for purchase of recycled materials. The EISA now conditions federal procurement on contracts that must specify that the lifecycle greenhouse gas emissions associated with the production and combustion of the fuel must, on an ongoing basis, be less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.

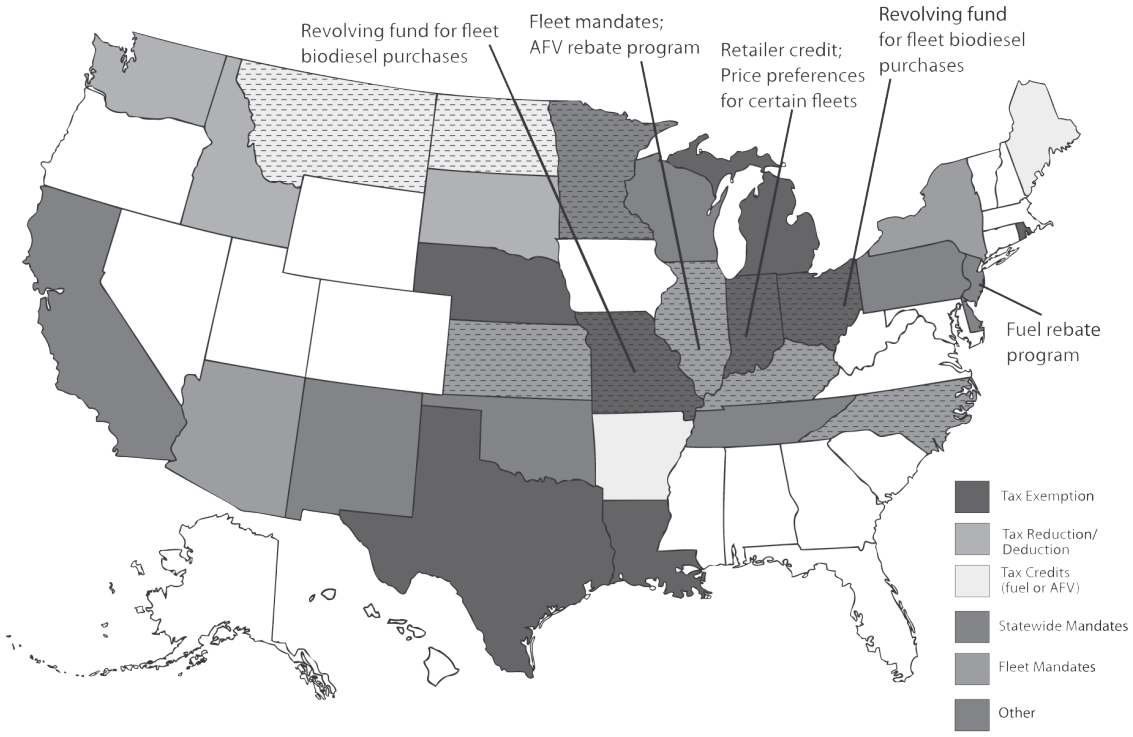
Together, the RFS mandate, the blender tax credits and state support to biofuels have resulted in an ambitious corn ethanol industry with production capacity currently exceeding the mandate. The rapid growth of this industry, and its ability to continue to grow despite the high prices of corn, has arguably impeded the shift to commercial scale development of cellulosic biofuels. Unless policies are changed to reduce support for first-generation biofuels, this situation will most likely continue. Although cellulosic and other forms of "advanced" biofuels are contemplated, they are not currently supported at levels that would make them commercially competitive, with the exception of the six projects funded by the Department of Energy. However, new technologies are proliferating and emphasis may shift to cellulosic biofuels in the near future. This is clearly contemplated by most policymakers focused on use of biofuels, as opposed to other renewables.

4.2 Subsidies to factors of production

The USA provides generous support to biofuels through federal and state subsidies in this category. The GSI estimates that the median level of support provided by these state subsidies to ethanol is about 20 cents/litre (Global Subsidies Initiative, 2007). These are generic subsidies to capital usually implemented through the tax code, such as accelerated depreciation, investment tax credits, and subsidies for production-related capital such as capital grants, funding for demonstration projects and credit subsidies. They include credit–grant hybrids, property tax abatement and exemptions, enterprise zone taxation, deferral of gain on sales of farm refiners to cooperatives, and regulatory exemptions. This category also includes support for labour employed in the biofuels industry and support for land used in the biofuels sector. Cumulative tax exemptions, tax credits and other permutations of tax policy (such as accelerated depreciation or write-off, tax deferrals and capital gains exemptions) all combine with mandated uses to produce a very supportive environment for biofuel producers and refineries.

Biodiesel support at state level is significant. In 2006, approximately 31 states provided incentives to biodiesel producers to build facilities in their states, typically offering tax credits, grants and other financial incentives.[22] Figure 8 illustrates both producer- and consumer-related incentives at the state level in 2006. Consumer-related incentives included tax exemptions, tax reductions/deductions, tax credits for the purchase of alternative fuel vehicles, and use of biodiesel, and commercial and state fleet mandates. Two states provided fuel rebate programmes, and two provided revolving funds for fleet biodiesel purchases.

Figure 8. State incentives meant to spur biodiesel use



Source: Compiled by the IFQC Biofuels Centre, February 2006

4.3 Policies affecting the cost of intermediate inputs

Of all the US support policies affecting biofuels production, subsidies to inputs reflecting their environmental cost or value are perhaps the most important from the viewpoint of sustainable development. Input subsidies include subsidies for feedstocks, including corn for ethanol production and soy for biodiesel use. Water subsidies for feedstock production and production of ethanol should also be included in this category.

Valuing use of land for biofuel production, as well as for other attributes, such as carbon sequestration and water use, is increasingly perceived to be a necessary component of biofuels assessment. Lifecycle analysis required by the EISA will include data relevant to the level of intermediate inputs associated with production of a specific biofuel. But it will not reflect the level of support for agricultural production itself. Likewise, carbon accounting will at some point reflect the value of sequestered carbon in the production practices used to produce agricultural crops. However, at this point a market in voluntary carbon credits is unaccompanied by federal standards.

Sustainability standards for biofuels could perhaps fill the need for assessment of the value of some inputs, but they would not do the whole job. As environmental services become increasingly recognized, perhaps inputs will be valued more appropriately and explicitly. In the meantime, policies that encourage valuation of resources and integration of these costs and environmental services into the final products should be supported.

The recently enacted Farm Bill contains a number of provisions relevant to biofuels, but most importantly it extends producer support payments to corn and soy producers on the same basis as did the 2002 Farm Bill, which was widely criticized for reverting to generous price-related subsidies that the previous (1996) bill had abolished. As a result, and because of high commodity prices, net farm income in 2008 is estimated by the USDA to be 51 percent above the 10-year average.[23] Payments to producers do not distinguish between production for food and fuel.

The GSI calculates the value of the input subsidies to farmers as a simple pro rata share of corn used for biofuel production compared with the entire corn crop. For crop year 2007, the "fuel share" of the corn subsidy (about 22 percent of $2 048 116 614) would have been about 450 million dollars.[24]

Some biofuel feedstock producers have also benefited from carbon sequestration payments. Carbon offsets for agricultural production are a relatively new feature of the US farm production landscape, but these have been increasing under voluntary programmes intended to establish and maintain a carbon market. The USA has no federal cap and trade legislation to establish a regulated market for emissions trading of greenhouse gases and is not party to the Kyoto Protocol, but private-sector voluntary schemes are proliferating. Individual states have also joined together to lay the regulatory basis for emissions trading, but none of these programmes has become binding yet.

This leaves the market for agricultural carbon credit in the hands of the private sector, where companies such as the Chicago Climate Exchange have begun to award carbon credit based on no-till agricultural practices. This benefits soy and corn producers that can use genetically modified herbicide-tolerant seeds to withstand applications of herbicides and that can sow directly into last year's crop residue remaining on the field.

Irrigation has also been heavily subsidized in some places. Farmers drawing water from the Ogallala aquifer, a non-renewable ("fossil") aquifer, have been allowed to take cost depletion on their groundwater usage. More than 59 percent of the aquifer lies under the state of Nebraska, where 70 percent of the corn produced is irrigated. Water for ethanol refining is potentially problematic, but not generally subsidized in most of the country, although there are exceptions. Refining operations typically consume more gallons of water than they produce in gallons of ethanol. Research to reduce the amount of water consumed in refining is under way and is supported at both federal and state level.

4.4 Subsidies related to consumption

These include subsidies to capital related to fuel distribution and disbursement, support for vehicles capable of running on ethanol, support for the operation of flexible fuel vehicles and support for the purchase of ethanol. There are many initiatives, particularly at state level, to assist retailers to build and operate a fuel infrastructure that will accommodate the new kinds of fuel and vehicle that depend on them. This includes retrofitting fuel pumps, support for labelling, and support for other ways to identify and control fuel distribution, including transport and storage facilities.

This category of subsidies is likely to rise in the near future as industrial-scale ethanol and biodiesel infrastructure, including pipelines, tankers and tanker trucks, becomes funded. Corn ethanol produced in the US Midwest must be transported to the coasts to reach the large population centres. If more biofuels were to be imported into east and west coast ports, then it would reduce the need for some of the infrastructure development. Reducing the tariff on ethanol would favour this development.

Additional incentives may also be provided to consumers to use flexible fuel vehicles and to companies that produce them. Although demand is now high for fuel-efficient vehicles, there is little domestic production of them, although more will be available in the 2010–11 timeframe. Tax rebates and incentives to purchase and use energy-friendly vehicles are popular and widespread. These have increased since the election.

4.5 WTO-compatibility of US domestic support to the biofuels sector

Are US subsidies to biofuels WTO-compatible? Trade tensions exist that may soon be resolved in the context of WTO dispute settlement. Currently the measures at issue are the ethanol tariff, which Brazil has threatened to challenge, and the "splash and dash" loophole for biodiesel that awards a blender credit to biodiesel blended in the USA regardless of its origin or destination, an issue of concern to the European Community (EC).[25]

However, longer-term issues are how the AoA and SCM are interpreted to work together. Favourable tax treatment of biofuels and use of other such incentives would be actionable under the AoA and SCM, even though they might not deliver money directly to producers: conferring benefit also includes revenue forgone. Also, interpretation of the manner in which the current Uruguay Round Agreements and perhaps the Doha Development Round will allow WTO members to categorize payments under the AoA could become an issue.

Support to blenders

There is no doubt that domestic support to agricultural producers is covered by the AoA. This is currently under negotiation in the Doha Development Round. Under the AoA, domestic support in an "amber box" category, represented by production-related payments to farmers such as those recently re-authorized by the US Farm Bill, is capped at certain quantitative levels. It is clear that US production-related support in excess of these levels would be inconsistent with the AoA.

Could the VEETC and the biodiesel blender credit also be considered amber box support? Since these tax credits go not to agricultural producers but to blenders of the products they supply, the answer to this question in unclear. The issue is complicated somewhat by the classification status of certain biofuels. Until recently, both biodiesel and ethanol were treated as agricultural goods. However, biodiesel has now been reclassified by the World Customs Organization in Chapter VI of the Harmonized Tariff System (HTS), "products of chemical and allied industries" HS2490. Ethanol, on the other hand, is still traded under HS 2207, in Chapter 22 on "beverages, spirits and vinegar". Therefore, Doha outcomes on agriculture would be assumed to apply to ethanol, and those on industrial goods would be applicable to biodiesel.

Classification also leads to some important assumptions about what subsidies disciplines would apply to biofuel subsidies, and the interaction of the two subsidies agreements. If the AoA applies to ethanol and the SCM to biodiesel, how should WTO members rationalize their support to this industry in terms of WTO rules? This issue was exacerbated by the existence of the "peace clause", under which WTO members agreed not to challenge subsidies under the AoA for a period of time. However, the "peace clause" has now expired and subsidies challenges under the AoA will perhaps be more likely.

The differences between the AoA and the SCM treatment of subsidies are also important. SCM disciplines focus on export subsidies, which generally do not characterize biofuel subsidies, and those that are "actionable". In order to be "actionable", a payment must qualify as a "financial contribution" and also must provide a "benefit" or competitive advantage to the recipient. It must also be "specific" and cause "adverse effects", which can include "serious prejudice" to the interests of another member. Jurisprudence suggests that the financial contribution and the benefit need not be received by the same entity, although the benefit would have to be proved and cannot be assumed.[26]

Under the AoA, subsidies can be challenged if they exceed specified quantitative levels, and also if they are improperly assigned to a category for which a quantitative level is in effect. Programmes that do not distort trade (minimally or non-distorting trade subsidies) have no cap, or annual limit on support. The USDA has characterized the complexity of the issue of biofuel support, noting that, although programmes are structured to support the biofuels industry, some operate "at least in part, so as to confer support to agricultural products that are covered by the AoA".[27] This could arguably cover ethanol under the VEETC.

In addition to falling within agreed levels of support for agricultural producers, some biofuels programmes could also be categorized as green box payments, which have no quantitative limit. Such payments must be publicly funded, not involve transfers from consumers, and not have the effect of providing price support to producers. Research and development and environmental programmes are commonly considered green box programmes. However, the former must not take the form of direct payments to producers or processors, and the latter are limited in amount to extra costs or loss of income to comply with a government programme – although this would include payments to fulfil conditions related to production methods and inputs.

It is most likely that the VEETC would be considered a form of internal taxation and, as such, under Article III would need to be structured and operated in a manner so that it is non-discriminatory with respect to "like" products. A de facto test is implicitly applied to consider whether non-domestically produced products that are directly competitive or substitutable are treated in the same manner. This kind of analysis found Chilean alcohol taxes discriminatory when they applied a higher tax rate to all alcoholic products with a greater alcohol content than Pisco (WTO, 1999), the national beverage, even though the tax did not discriminate in a de jure manner. Domestic support to the biofuels sector beyond the VEETC is also, of course, potentially actionable under the SCM.

Support to producers for feedstock production

Under the rationale elaborated above, payments to corn and soy producers for agricultural support programmes regardless of whether the products are used for food or for fuel would most likely be treated first under the AoA, because they are agricultural products. But they could also be considered within the rubric of the SCM. In the latter case, the subsidy would need to be specific, which would be difficult to argue given the many uses (other than for biofuels) of corn and soy. It could likewise be difficult to argue that only downstream domestic biofuel industries benefit in terms of competitive advantage because multiple products are made from each feedstock. Relevant jurisprudence (Softwood Lumber)[28] would require that the existence of benefits be proved. But benefit to producers is clearly both intentional and evident under the combined framework of tariff, excise tax and producer support. The tariff is designed to offset the excise tax, and the two combined are designed to add price support to feedstock production. The resulting effect gives US producers a clear advantage in the marketplace.

Under the AoA, subsidies to corn and soy producers could perhaps qualify for green box treatment if a case could be made that they have to be sustainably produced in order to qualify for the subsidy. However, this would cover only the amount of the subsidy equal to the costs of complying with the programme. In fact, commodity producers eligible for US government payments must comply with US environmental and other requirements, but this is a condition common to all such commodities.

It is interesting to speculate whether specific sustainability requirements for biofuels might render support to feedstocks eligible for green box treatment, and what difficulties this might pose for biofuel feedstocks such as algae and switchgrass that are not clearly marketable as agricultural products. By-products of such biofuel production processes might also benefit from such subsidies, in which case the benefit derived by the processor might need to be addressed separately and, under the ruling in the Softwood Lumber case, the benefit clearly demonstrated.

It is likely that these and other issues may receive a hearing in the WTO in a dispute settlement context if efforts to resolve them are unsuccessful. In the meantime, the very fluid energy policy debate in the US may provide some clarity on how and whether present levels of support for biofuels will be maintained.

5. TRADE RULES ON BIOFUELS IN US PREFERENTIAL NON-RECIPROCAL TRADE ARRANGEMENTS

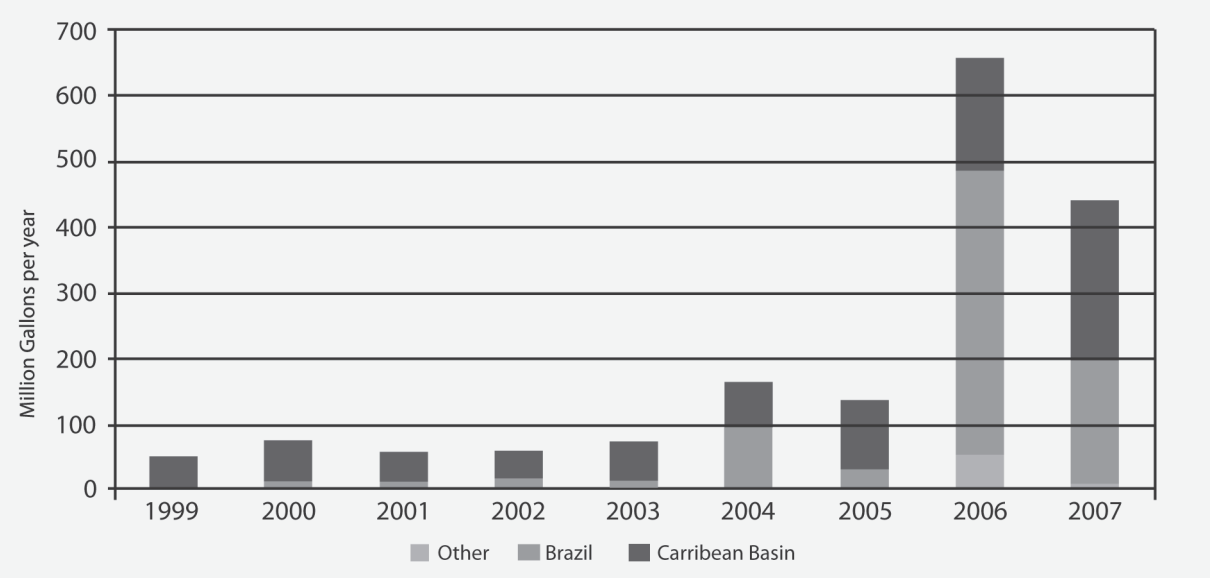
The USA has maintained a number of preferential trading arrangements under which biofuel exporters to the USA have derived some market access. These include the CBI, the African Growth and Opportunities Act (AGOA) and the Generalized System of Preferences (GSP). The Andean Trade Preferences Act is also relevant, as are NAFTA and CAFTA.[29] A joint US-Brazil initiative has initiated projects to develop biofuels refineries in the Dominican Republic, El Salvador, Haiti, and St. Kitts and Nevis, primarily for domestic biofuel consumption. Each of these programs maintains specific requirements for country participation and for product qualification for the preference. The US also maintains several free trade agreements (FTAs), and has been negotiating more with a host of countries. Of these, agreements with Peru, Colombia, Malaysia and Indonesia, would most likely be the most relevant for biofuel imports.[30]

Although all of these programmes are important for their beneficiaries, there is concern that they are not used to the greatest extent possible. Administrative requirements are burdensome and prevent use in some categories (textiles being especially complex). Additionally, complex rules of origin are limiting to countries without extensive expertise in their sometimes convoluted interpretations.

The CBI[31] is currently the most important avenue by which ethanol enters the USA, and yet only a small percentage of US ethanol imports come from CBI countries. Since production of some ethanol feedstocks, such as sugar cane, is most efficient in tropical countries, importing ethanol from CBI countries could be a more sustainable way for the USA to source biofuel than to produce ethanol from corn domestically. Although the CBI and other preferential arrangements currently account for only a small percentage of imports, this could be changed by legislation. At present, CBI provisions allow some latitude for imports of Brazilian ethanol.[32]

Imports from CBI countries were the principal source of US imports in 2007, as illustrated in Figure 9, but historically they have been below the 7 percent cap. Dehydration plants in Costa Rica, Jamaica, Trinidad and Tobago, El Salvador and the US Virgin islands accounted for the majority of these imports. Given the pattern of trade so far, it is likely that imports from CBI countries could increase (Yacobucci, 2008).

Figure 9. Annual ethanol imports to the USA



Source: Congressional Research Service Report to Congress RS21930, March 18, 2008[53]

This is not the case for imports from Brazil, for which the ethanol tariff is a significant disadvantage. A recent report from the Food and Agriculture Policy Research Institute estimates that, if the ethanol tariff were to be eliminated, ethanol imports from Brazil could more than double over the period 2011–17 (Food and Agriculture Policy Research Institute, 2008).

The Andean Trade Preference Act (ATPA) signed in 1991 extends preferential treatment to Bolivia, Colombia, Ecuador and Peru. Investment in ethanol has been identified as one of the effects of the ATPA (United States International Trade Commission, 2005). Andean countries are also potentially major producers of biodiesel from palm oil and other oilseeds.

The ATPA is set to expire in 2009 for some countries unless it is extended. Extension may be contentious if the Colombia Free Trade Agreement has not been approved by Congress. Ecuador and Bolivia, the other two countries in the Andean bloc, could lose duty-free market access to the USA when the preferences expire, since they are not members of the CBI.

AGOA, enacted in 2000, extends preferences to 48 sub-Saharan African countries. This programme was recently extended to 2015. Legally, AGOA is a modification of the US GSP programme. However, although based on the GSP programme, AGOA grants preferences to products considered import-sensitive under GSP. Annual determinations are made on which countries participate. Conditionality under AGOA extends, as it does in other programmes, to both products and countries.

Country participation requires "either the establishment of, or continual progress toward establishing, a market-based economy; removal of barriers to US trade and investment; establishment of rule of law; efforts to combat corruption; protection of intellectual property rights and internationally recognized worker rights and policies to reduce poverty". In addition, "countries cannot engage in activities that undermine US national security or foreign policy interests; cannot engage in gross violations of internationally recognized human rights; cannot provide support for acts of international terrorism, and must have implemented their commitments to eliminate the worst forms of child labor".[33] Products (other than apparel) must be the growth, product or manufacture of a beneficiary country, and an AGOA country must provide at least 35 percent value added in the course of the production process. Up to 15 percent of that 35 percent may be derived from US parts or materials used to produce the product.

Although in theory there should be no barriers to ethanol or biodiesel importation under AGOA, trade volumes so far have been minimal or nonexistent. Southern African countries have great potential to develop both ethanol from sugar cane and other feedstocks, and biodiesel from jatropha and palm oil. Significant investment is taking place in both on the continent. However, the US market, even with AGOA trade preferences, may not be the market of first choice given the relative proximity of Europe and China and investment from those sources.

The US GSP, originating in 1974, requires that beneficiary countries offer reasonable access to US goods and services, reduce trade-distorting investment policies, eliminate trade-distorting export practices and ensure internationally recognized worker rights in order to be eligible for the programme. Beneficiary countries are those with per-capita gross domestic product (GDP) below levels set for high-income countries by the World Bank. Countries are "graduated" from the programme when their per-capita gross national product (GNP) exceeds these levels. Particular products can be excluded from GSP treatment if they exceed their "competitive need limit", essentially competing with US production beyond specified levels. In that case, imports can be subject to duty or quantities can be limited. Waivers can be granted for this situation under certain conditions.

Since import-sensitive products are excluded from coverage, many agricultural products fall into this category. Agricultural product exports under the GSP are also limited by quantity when there is a quota. The GSP programme was expanded in 1997 to give additional benefits for least developed countries. This still excluded many agricultural products, however.

5.1 WTO-consistency of CBI, GSP and other preferential arrangements

There is a legal distinction in the WTO between preferential programmes such as the CBI and GSP, and FTAs. The former originate in an "enabling clause" to the GATT enacted in 1971 at the behest of the United Nations Conference on Trade and Development (UNCTAD), and subsequently were extended by WTO members for the purpose of according developing countries differential, non-reciprocal and non-discriminatory treatment as an exception to most favoured nation (MFN) obligations. FTAs, by contrast, are also an exception to MFN obligations and require elimination of duties on almost all reciprocal trade between countries party to them. This exposes the domestic production of developing countries to competition from imports from developed country partners. FTAs are governed by Article XXIV of the GATT.

Trade preferences, and GSP programmes in particular, have since their inception included both positive and negative conditionality based in part on the different conditions of developing countries, and in part on the values, objectives and preferences of the legislators and programme administrators who institute, fund and manage the programmes. Both US and EC GSP programs have traditionally included such conditionality. In recent years, both programmes have added conditionality in accordance with goals such as sustainable development and good governance. It is such "political" conditionality that is at issue here.

Analysis of US trade preference programmes in light of recent WTO jurisprudence raises a number of legal and policy issues. In particular, the Appellate Body Report in the EC GSP case34 is relevant to the WTO-consistency of the US GSP programme and other preferential trade arrangements. The EU GSP case, India's challenge to EU GSP conditionality based on country's adherence to policies governing illicit drugs, raised a number of complicated issues for administrators of GSP and other preference programmes. Essentially, the Appellate Body Report established that, in the context of a trade preference programme authorized by the enabling clause of GATT Article 1, differentiation among and between developing countries must be available to all "similarly situated" countries and must be applied as a positive response to need, which is defined as "development, financial and trade" need. The Appellate Body also opined that the existence of a "need" must be determined by objective criteria, and there must be a nexus between the need identified and the imposition of differential tariff treatment (Switzer, 2008).

Applying these criteria to US trade preference programmes as they would presumably apply to biofuels, one might question whether the programmes fairly exclude certain countries that could be described as similarly situated with respect to level of development, particularly in terms of financial and trade need in the biofuel sector, and whether objective criteria would be applied to distinguish between eligible countries in terms of either country or product treatment, and what criteria would be appropriate.

Additionally, one could also question in a more biofuel-relevant context whether, in light of recent studies on the indirect effects of biofuel development, biofuel trade preferences would actually benefit developing countries and, more broadly, whether either affirmative or negative conditionality in US preferential arrangements would contribute to sustainable development and trade in biofuels.

The US trade preference programmes could be vulnerable in terms of their differentiation between similarly situated developing countries on multiple grounds. Most broadly, if geographical criteria are the initial basis for inclusion in the US CBI programme, then on what grounds would Cuba be excluded? A similar situation exists in AGOA, where annual determinations are made on inclusion, dependent in part on considerations that may be grounded more in political perception than they are positive responses to development, financial and trade needs. Pursuing finer distinctions, what would be the objective basis for limiting ethanol imports from the

CBI countries to 7 percent of US consumption, while others in the region receive different treatment under GSP, and AGOA recipients are not so limited?[35]

> If they were to regard each element of the Member's GSP Scheme as reviewable against independent (but undefined) legal norms of non-discrimination and non-reciprocity, the dispute settlement organs would be throwing into profound uncertainty the operation of the GSP as it now stands: all of these schemes contain elements of selectivity and conditionality that could, on some conception of discrimination or other, be viewed as discriminatory. This uncertainty would in the short term make the preferences in question even more precarious and uncertain from the perspective of developing countries, and in the longer term perhaps erode the viability of any "mutually acceptable" system of preferences. – Howse (2003)

The jurisprudence also raises a number of questions. Would objective criteria be required for each product distinction? If so, should preferences be designed on a country-specific basis, and would sustainability standards for biofuel production be considered objective criteria?

In short, the EU GSP jurisprudence as it stands is an open invitation to challenge multiple provisions of preference arrangements in terms of the criteria used to differentiate between and among programme recipients, between and among programmes, and between and among products eligible for preferential treatment. By establishing criteria for differentiation between developing countries in programmes authorized by the enabling clause, the Appellate Body may have rendered discrimination in this context legally actionable rather than aspirational. This may contribute, as one WTO legal expert has warned, to eroding the viability of the programmes (Howse, 2003).

Moving to other aspects of this jurisprudence, it is interesting to note that the beneficial aspects of preference programmes perhaps cannot be assumed either. If a GSP scheme must be "taken with a view to improving the development, financial or trade situation of a beneficiary country", then it must perhaps be assumed that objective criteria, or at least a rational connection, must also be available to determine whether a preference is indeed conferring a benefit. In the case of biofuel development, some could question whether preferences that spur biofuel development are necessarily beneficial, given recent research on the indirect effects of biofuel development (Searchinger and Heimlich, 2007), and the possibility that in some countries biofuel feedstocks could replace food crop cultivation and endanger food security. It is also interesting to note that the Appellate Body in the EU GSP case limits GSP to improvements in the "development, financial or trade" situation, and does not include environment, land use, rule of law or other elements that might be seen as important, perhaps even supportive of trade.

Finally, it is important to consider the EU GSP jurisprudence and preferential arrangements in terms of the contribution of their positive and negative conditionality to sustainable development and trade in biofuels. Although positive conditionality is a hallmark of GSP programmes, so is negative conditionality, and the US programme recognizes the seriousness of this in explicit allowance for appeals from determinations of exclusion on both a country and a product basis. The Appellate Body explicitly declined to address negative conditionality, but its ruling would suggest that this must also be non-discriminatory and that objective criteria would be necessary to impose the equivalent of sanctions (McKenzie, 2005). Since US GSP country conditionality is origin-neutral, de facto discrimination would presumably be the major issue rather than de jure discrimination.

In the context of biofuels, a GSP or other preference programme provision excluding a country from the programme if it produced biofuels unsustainably would conceivably be actionable if this condition discriminates against the country in a de facto manner. A similar provision enacting the same condition in a positive manner (e.g. sustainably produced

biofuel gets a higher level of preference) would be potentially actionable under the rationale in EU GSP as discriminatory if it is not available to similarly situated countries, and a positive response to development, financial and trade need, as determined by objective criteria, and with a nexus between the preferential treatment and the need.

How conditionality based on sustainable biofuels production and trade might fare in this situation is unclear. Certainly it is arguable that sustainable production conditionality for biofuels is a positive response to development need, even though environment is not mentioned explicitly as part of that need. To the extent that the country itself has endorsed sustainable production through multilateral or even national instruments, this would be relevant. Whether sustainable biofuel production criteria are objective would be critical to the analysis, and it would be critical to establish a nexus between biofuel production and development priorities. The extent to which a beneficiary country has participated in articulating goals for sustainable biofuel development would also be relevant.

Finally, considering whether such criteria would or should be added to GSP conditions is not an academic exercise. Many aspirational development goals of US policy are articulated in the GSP and other preferential arrangements. Since sustainable development, and in particular sustainable biofuel development, is becoming a shared goal, establishing positive GSP conditionality could conceivably act as leverage to encourage adoption of objective sustainability criteria for biofuel development and trade.

6. TRADE RULES FOR BIOFUELS IN NAFTA AND CAFTA, AND THEIR IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT

The CAFTA extends CBI treatment of ethanol to CAFTA signatories, perpetuating the 7 percent cap on imports and allocating specific volumetric percentages to Costa Rica and El Salvador. The ethanol provisions in CBI allow up to 7 percent of the total annual US ethanol production to come from a "foreign feedstock" duty-free if it is produced in any of the 24 countries covered by CBI. In addition to the 7 percent import allowance, an additional 35 million gallons also may enter the USA duty-free if at least 30 percent of the ethanol is derived from a "local or Caribbean" region. Furthermore, anything above the 35 million gallons is also duty-free if at least 50 percent of the ethanol comes from Caribbean Basin feedstocks.

Under the NAFTA there is free trade in ethanol and biodiesel among the USA, Canada and Mexico. As of 2008, there is also free trade in biofuel feedstocks including sugar. Trade tensions arising from biofuel trade in the NAFTA context have been minimal. US support for ethanol was seen in 2006 as the major contributor to a sharp increase in the price of white corn in Mexico. However, this was later also attributed in part to market manipulation. US corn produced for ethanol has created a market opportunity for Mexican and Canadian producers to fill needs for animal feed. Mexican producers could also contribute to ethanol production and, given recent fuel price increases, may now have increased incentives to do so, although Mexico is a relatively high-cost producer of sugar.

Sustainable development of biofuels in the NAFTA region is linked to the trade agreement. The Commission for Environmental Cooperation, established by the NAFTA, has done significant work on biofuels, although its recommendations are advisory in nature. It has recently moved to create a website for biomass mapping.[36]

GATT Article XXIV conditions WTO member access to preferential arrangements under FTAs subject to the requirement that such agreements cover "substantially" all trade between participating countries and do not increase existing levels of trade restrictions affecting non-member countries. Since CAFTA rules of origin treat Brazilian ethanol as CAFTA-origin ethanol provided that it has been denatured in a CAFTA country, it could be argued that these provisions increase restrictions on trade with non-members (Nicely and Ellis, 2007). Indeed, FTAs have come under increased scrutiny on many fronts, rules of origin being of particular concern.

7. POLICY RECOMMENDATIONS

The US policies and their features described above are not all WTO-inconsistent; nor are they all disadvantageous from the point of view of policymakers seeking to expand the domestic supply and diversity of energy sources available to the US market. But particularly in light of food and energy price increases, and the increased need to source and use bioenergy that delivers real greenhouse gas emissions reductions and does not contribute to diversion of food and feed supplies, they seem short-sighted and some policies have clearly outlived their original purpose and utility.

Furthermore, current policy measures at both state and federal levels are ill-coordinated with policies relating to support of the agricultural sector and climate change policies. The former are important because policy revisions are long overdue, and the latter because coherent policies at federal level are only just beginning to emerge. The same points could be made about the multilateral trading system, which has so far failed either to accomplish reform of agricultural trade or to accommodate trade rules to the needs of sustainable development in light of climate change.

7.1 US domestic measures

Oil prices at $135 a barrel do not argue for continued support for an ethanol industry that was projected to be profitable at $60 a barrel. Therefore, the recently enacted reduction in the blender credit should be continued until it reaches a minimal level or zero,[37] and the ethanol tariff should be suspended in its entirety. The EISA mandates should also be reviewed. These could be accomplished by virtue of negotiations in return for tariff concessions in the context of the Doha negotiations, or simply by Congress and the Executive branch. They could be phased out and reduced gradually, or they could be eliminated outright.

A 2008 report by the Food and Agriculture Policy Research Council estimated the effects of multiple variations of EISA support policy measures. Scenarios focused on all the EISA mandates (mandated ethanol and biodiesel use, the blender credits, and the ethanol and biodiesel tariffs) and examined variations on retention and elimination of some and all of them. The report also estimated impacts of petroleum price increases policies using an average oil price of $100/barrel. The Food and Agriculture Policy Research Council estimated that, with high oil prices, high ethanol prices would generate production sufficient to supply more than the EISA mandated use. The mandate would therefore not be binding and would have no market impact. Removing tax credits and tariffs would reduce corn prices by 6 percent.

The blender credit for biodiesel is already the subject of a trade complaint and pending legislation, and it is unlikely to continue in its present form. Whether it should be eliminated, or whether biodiesel production should be given further incentives, needs to be considered. Likewise, US policymakers need to reconsider the extent to which US policy should focus on a range of renewables and technologies, some of which are already profitable at current prices, and some of which are clearly more sustainable than others in terms of their production effects and emissions reduction potential, rather than perpetuating the ethanol biofuel monopoly.

In light of new information on the indirect effects of some kinds of biofuel production, biodiesel produced from waste streams and ethanol from sugar cane should receive new attention. The latter would inevitably become a larger part of the US biofuel market with the elimination of tariff barriers, but the former may need technological assistance for by-product (glycerine) disposal without adverse environmental consequences. There is no doubt that cellulosic technologies hold promise and should be commercialized, but there is also considerable infrastructure investment involved in bringing these initiatives to scale and no guarantee that cellulosic production will be environmentally preferable at that level. Support to cellulosic technology should be re-evaluated in light of present energy prices and infrastructure needs.

Although this paper has focused on transport biofuels, which in the USA are ethanol from corn and biodiesel from soy, other oilseeds and waste streams, there is also potential in using biomass (of which biofuels are a subset) for electricity generation. Indeed, this may be the best use of biomass such as woody plant residue and fast-growing trees, and the transport sector may be better served in the long term by plug-in vehicles than by flexible fuels. Therefore, federal and state support for ethanol transport and storage infrastructure should be reconsidered.

Many of these issues can and will be addressed if and when US energy policy is reconsidered in conjunction with climate change policy. States working together have laid the basis for federal cap and trade legislation. A federal cap and trade system will build on emissions reduction incentives and create new incentives for technological development. It will also require lifecycle analysis of many kinds of production, from ethanol refineries to transportation modalities.

In anticipation of this development, California's energy legislation should be crafted carefully in order to create non-discriminatory metrics by which attributes of production of biofuel feedstocks and processing can be assessed. This lifecycle assessment methodology should be coordinated with the EPA and USDA in connection with the RFS mandate. The results should be non-discriminatory with respect to feedstock origin (e.g. origin-neutral), the process should be transparent and inclusive, methodologies should be readily available to importers, and the end result should be incorporated into an instrument to which other countries can accede.

It is also obvious that present high levels of support to US agricultural producers must also be reassessed, not only in light of US spending priorities but also in light of needed domestic reform and reform of the agricultural framework of the multilateral trading system. Future support, to the extent that it is needed by those already benefiting from high commodity prices, should be made consistent with climate priorities, rewarding producers for emissions reductions stemming from use of best agricultural practices. Although this is now occurring in the private market, it could also be the focus of set-asides in federal cap and trade legislation.

A focus on sustainable agricultural production would also necessitate the elimination of the US permanent disaster assistance programme, authorized by the recent Farm Bill. If permanent disaster assistance is needed for agricultural production of particular kinds in particular areas, then should that production not be considered to be a permanent disaster? Incentives should be provided to eliminate it rather than to compensate its continued existence. Reform should also include elimination of the US sugar programme, which complicates life for potential ethanol exporters into the US market, exposes the US treasury to excessive costs for buying excessive sugar and converting it into ethanol, and has long outlived its usefulness.

7.2 Regional and multilateral trade initiatives

The recommendations described above for US domestic policies could be made most effective if they were reinforced in the multilateral system and via regional trade arrangements. Tariff elimination for biofuels would provide incentives for low-cost production and trade in other countries and would be unlikely to affect US production given increased mandates and high prices. A recent FAPRI report projected that the ethanol tariff has a large impact on ethanol imports but only a modest effect on domestic production and prices, and agricultural markets (Food and Agriculture Policy Research Institute, 2008).

Use of lifecycle assessment that includes attributes of production would benefit more sustainable production methods and tropical products that can be produced more sustainably. This would also benefit many developing countries located in tropical areas.

If such countries, and their producers, are included in efforts to develop lifecycle assessment metrics that do not discriminate against their products, then they would be less likely to challenge their application as non-tariff measures or PPMs in national programmes to encourage use of biofuels. They could also agree on definitions of such products in the context of the World Customs Organization (WCO) or the WTO. Tariff lines presently include descriptions of product-related attributes. There is no reason they could not do so for biofuels. Additionally, WTO members in negotiations such as the environmental goods and services negotiation could agree on product descriptions to be included in negotiating mandates. Reclassifying biofuels as a group, even though this poses end-use issues for some feedstocks, should be explored. Mechanisms such as duty-drawback, should there be a duty involved, could be employed where feedstocks are diverted to a different use.

The USA should continue its regional preference programmes and initiatives, but on a broader basis. Regional initiatives and technical assistance should include support for certification and labelling of sustainable biofuels in private-sector programmes and participation in lifecycle emissions standards efforts tied to regulatory programmes. These should be harmonized to the extent possible in multilateral standards initiatives and national programmes. Standards efforts should include technical standards, on which work has only just begun. Broadening this work, and making parts of it subject to an international instrument suitable for incorporation into national legislation, should be a priority.

ENDNOTES

1. Obtained from the Renewable Fuels Association. http://www.ethanolrfa.org.

2. Changes to distribution and storage infrastructure are needed because ethanol is too corrosive to flow through pipelines currently dedicated to oil. Additionally, a lack of assets dedicated to ethanol blending (called the "blend wall"), such as rail lines to refineries, and dedicated tankers and pipelines, was estimated to keep demand low for the near future. Changes to state blending specifications for fuels will help to ease the situation to some extent by allowing discretionary blending, but industry experts expect continued consolidation among producers, more oil company penetration of the ethanol market, and increased scale and marketing of ethanol in regional markets.

3. Obtained from Alternative Fuels and Advanced Vehicles Data Center, maintained by the US Department of Energy. http://www.eere.energy.gov.

4. The National Biodiesel Board is accessible at http://www.biodiesel.org.

5. Information on this initiative is available at http://www.bioenergywiki.net.

6. Although many aspects of these standards are relevant to environmental conditions, they are not governed by any one international organization, such as United Nations Environment Programme (UNEP), and industries prefer to use the International Standards Organization, a private-sector standards-setting organization based in Geneva, Switzerland, for this purpose.

7. Idem.

8. This legislation is available electronically from the US government. It is reproduced at http://www.cfr.org/content/publications/attachments/HR6.pdf.

9. The term "renewable biomass" includes only planted crops and crop residue from land planted before the enactment of the legislation and actively managed, fallow and non-forested. It also includes planted trees, and tree trimmings algae, yard waste and recycled cooking grease, but it excludes thinnings from forests that are critically imperilled, rare or old-growth.

10. Reductions are taken on a lifecycle basis over average lifecycle baselines established by EPA for gasoline or diesel, whichever is appropriate. Biomass-based diesel is defined as biodiesel with greenhouse gas reductions of more than 50 percent over such baselines.

11. Executive Order S-01-07 by the Governor of the State of California, available from http://gov.ca.gov/.

12. GATT Dispute Panel Report on US Restrictions on Imports of Tuna, 3 September 1991, GATT BISD (39th Supp.) at 155 (1993). The case was not adopted and therefore is not officially part of WTO jurisprudence. It is described on the WTO website at http://www.wto.org/english/tratop_e/envir_e/edis04_e.htm.

13. WTO Appellate Body Report on US Import Prohibition of Certain Shrimp and Shrimp Products. WT/DS58/AB/R, 12 October 1998.

14. Idem.

15. United States Standards for Reformulated and Conventional Gasoline. Description available at the WTO website at http://www.wto.org/english/tratop_e/envir_e/edis07_e.htm.

16. The US Department of Energy maintains a database of federal and state incentives and laws for alternative fuels and advanced vehicles. It is accessible from the Department of Energy's Alternative Fuels and Advanced Vehicles Data Center at http://www.eere.energy.gov.

17. "This legislation ... will put us on the road to energy independence and make real progress in the fight against global warming ..." Carl Pope, president, the Sierra Club. http://themiddleclass.org.

18. Energy Information Administration, 2008 Energy Conference, presentation by A. Michael Schaal, director, Oil and Gas Division, Office of Integrated Analysis and Forecasting, April 2008. http://www.eia.doe.gov.

19. Obtained from Exxon Mobile. http://www.exxon.com.

20. The amount of the subsidy at current gasoline price levels ($4/gallon) is difficult to project backwards. Past projections have been overtaken by events, primarily the high price of oil.

21. It has been so extended due to an IRS ruling. The National Biodiesel Board factsheet explains the difference; see http://www.biodiesel.org

22. The National Biodiesel Board reports such subsidies on its website. http://www.biodiesel.org/resources/reportsdatabase/reports/gen/20060401-gen369.pdf.

23. USDA, Economic Research Service, Farm Income and Costs: 2008 Farm Sector Income Forecast. http://www.ers.usda.gov/Briefing/FarmIncome/nationalestimates.htm.

24. The 22 percent figure is provided by the cattle industry at http://www.cattlenetwork.com/Content.asp?ContentID=230813 and is relatively conservative.

25. This potential EC challenge to the biodiesel blending credit under antidumping provisions of the WTO SCM alleges that the "splash and dash" loophole, which may soon be minimized or closed by pending legislation, amounts to US dumping on the European market of biodiesel blended in the USA in order to acquire the blending credit. The European Biodiesel Board claims that US exports of B99 (biodiesel with up to 1 percent petroleum added) to the EU rose from 100 000 tonnes in 2006 to 1 million tonnes in 2007, which is equal to about 15 percent of the entire European market. If the EC challenge is brought, then the US biodiesel industry may counter-challenge the EC on the basis that its blending specification for biodiesel is discriminatory and unfairly excludes US soy because of its iodine content.

26. United States Final Dumping Determination on Softwood Lumber from Canada. AB-2004-2, Report of the Appellate Body, 11 August 2004, WT/DS264/AB/R. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds264_e.htm.

27. USDA 2007 Farm Bill theme paper, 2007. http://www.usda.gov/documents/Farmbill07energy.pdf. The USDA further acknowledges that payments under the Bioenergy Program could be viewed as an amber box subsidy.

28. Softwood Lumber, op. cit.

29. See Waino et al. (2007) at http://www.ers.usda.gov for a general description of US trade preference programmes and their relevance to agriculture.

30. This paper does not explore the status and likelihood of each agreement to deliver significant biofuel imports, but it does note that FTAs could be important avenues of access to the US market in this sector. FTAs, unlike non-reciprocal trade arrangements, expose all the trade of the developing country to tariff elimination.

31. Established by the Caribbean Basin Recovery Act (CBERA) in 1983.

32. The CBI provides for duty-free entry of ethanol into the US market if it is produced from at least 50 percent local feedstocks. Additionally, up to 7 percent of the US market may be supplied duty-free by CBI ethanol containing no local content. This has led to a triangulated trade pattern where Brazilian ethanol is shipped to CBI countries in its "wet" form and is then reprocessed (dehydrated). It then enters the USA duty-free under the CBI.

33. See AGOA website maintained by the US Agency for International Development. http://www.satradehub.org.

34. The WTO description of the case is available at http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds246_e.htm.

35. Some suggest that no regional GSP scheme would be WTO-consistent under the rationale of the Appellate Body Ruling (Mason, 2004).

36. The website of the North American commission on Environmental Cooperation is http://www.cec.org.

37. Some experts recommend that the blender credit could be linked to the price of corn, so that blenders are not disadvantaged when corn prices are too high, as was the case in mid-2008 (Johnson and Ford Runge, 2007).

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