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The multilateral trade and investment context for biofuels:

Issues and challenges

Contents

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Acronyms

ACP	Africa, Caribbean and Pacific Countries
ADM	Archer Daniels Midland, a multinational firm
AoA	Uruguay Round Agreement on Agriculture
BP	Formerly British Petroleum, now Beyond Petroleum, but known as BP
CAFO	Confined Animal Feeding Operation
CAFTA	Central American Free Trade Agreement
CAP	Common Agricultural Policy
CBI	Caribbean Basin Initiative
EU	European Union
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
G33	Group of 33
GATT	General Agreement on Tariffs and Trade
GATS	General Agreement on Trade and Services
GSP	Generalised System of Preferences
IATP	Institute for Agriculture and Trade Policy
IFOAM	International Federation of Organic Agriculture Movements
IIED	International Institute for Environment and Development
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
TBT	Technical Barriers to Trade
TRIMs	Trade-Related Investment Measures
TRIPs	Trade-Related Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation
U.S.	United States
WTO	World Trade Organization

N.B. Throughout the report, the term corn is used for the crop that in most of the world is more commonly known as maize.

1 Introduction

This paper looks at the multilateral trade and investment context for biofuels. Biofuels are a relatively new arrival in the world of global trade, though not quite so new to investors. A few countries, notably Brazil, have a biofuel industry that dates back to the 1970s, but it is only in the last few years that biofuels have captured the headlines and really taken off. The production, investment and the time given to biofuels on the policy agenda have all increased exponentially since 2003.

For some, biofuels are creating an exciting opportunity to develop new markets and boost depressed commodity prices, to give farmers and rural communities an independent source of energy or a way to combat climate change by diminishing reliance on fossil fuels. For others, biofuels are a classic case of "greenwash," a product sold as good for the environment that in practice does nothing to challenge the unsustainable nature of either the global energy or agricultural policies. To further confuse the issue, the technology to produce the biofuels now commercially available is widely expected to give way to a so-called "second-generation" of biofuels that will perform better from an environmental perspective because the feedstocks involved use less inputs, because more of the plant can be used to generate energy, and because a greater variety of feedstocks can be used, so that the feedstocks can be more appropriate to local growing conditions. The new wave of biofuels, however, could raise their own set of concerns from an environmental and social policy perspective.

Biofuels bring together at least four areas of policy: energy, environment, agriculture and rural development. These areas, in turn, are strongly shaped by international trade and investment rules. Linked to these are concentrated market power, subsidies, trade barriers, and tax policy, all of which generate significant policy distortions in both the agriculture and energy sectors.

Government policies at the local, national, regional and international level are playing a major role in shaping the growth of this industry. This creates opportunities for investors and would-be exporters, but also a fluid environment with attendant risks that policies might change without much warning. The energy sector as a whole is similarly heavily distorted by state policies at different levels. Dependence on fossil fuels has created its own set of imperatives for investors and producers in oil or coal. Public policies, including myriad subsidies, have shaped fossil fuel use, too. Biofuels are a new and already heavily contested sector.

The biggest producers and users of biofuels at the global level are interested in quite different aspects of biofuels, which adds to the complexity of the policy context. In the United States, the primary thrust has been about domestic production and use; Brazil has a long standing domestic production and use programme, but is now aggressively pursuing export opportunities, for biofuels themselves and for the related technologies that Brazilian firms have developed; the European Union (EU) is a large producer but has set targets for use that will require at least 20 percent of its consumption to be imported, and perhaps more than that if barriers to trade are reduced. China and India are both interested in production for domestic use, but both are also investing in production in other developing countries for import back to their markets.

The multilateral rules that govern biofuels are neither unified nor consistent: at the World Trade Organization (WTO), for instance, ethanol is classified as an agricultural product, while biodiesel is considered an industrial chemical. This means that these two biofuels are subject to quite different rules on permitted tariff and subsidy levels. It is timely to take a closer look at what rules and policies now govern the sector, and to consider what rules and policies governments might consider to move biofuels production in a sustainable direction.

There is no single obvious place to host a multilateral discussion of the treatment of biofuels. The WTO has not discussed the issue particularly, although there is some interest to include biofuels as part of the negotiations on environmental goods and services. The UN Conference on Trade and Development (UNCTAD) has a special project that is part hub for UN activities on biofuels and part capacity-building initiative to help developing countries develop biofuels markets. The UN Food and Agriculture Organization (FAO) is another anchor for some UN inter-agency work, and has raised concerns about biofuels competing for land and water with food crops. There is an inter-agency group called UN Energy, under whose auspices some of the UN analysis has been published. The World Bank is interested in the potential of biofuels as a new export market for developing country producers, but concerned, as is the Organisation for Economic Co-operation and Development (OECD), that industrialised countries are skewing the markets with subsidies, tax breaks and other market distortions.

This paper is focused on the agricultural crops that are being converted into liquid fuel on a commercial scale, especially, but not only, in response to the recent surge in demand from both the EU and the United States, two of the world's largest energy users. The biofuels reviewed are ethanol and biodiesel, which are the principal traded biofuels. The second generation of biofuels (based on cellulosic residues from plant matter) are still not in commercial distribution and face significant challenges before they can come on stream.[1] Ethanol is principally derived from sugarcane and corn[2] but can also come from sugar beet, wheat, barley and other crops. Biodiesel is generated from oilseeds and vegetable oils, such as canola (rapeseed), palm oil, and soybeans. These crops are the feedstocks primarily referred to in the paper.

Trade in biofuels remains small. In 2004, about 3 billion litres of ethanol were traded internationally, compared to 920 billion litres of crude oil.[3] In 2005, about ten percent of total biofuel consumption was traded internationally.[4] This trade will expand, probably rapidly, as a result of the various targets created in several industrialised countries to create a minimum use for biofuels. The EU target in particular will necessitate significant imports. Moreover, tropical crops tend to have higher energy yields per tonne, while it is mostly in temperate countries that the largest use targets have been established. Countering this pressure to trade is a strong preference, especially in the United States, for domestic fuel production, motivated both by agricultural interests (new markets for domestic producers) and a bid for energy security (reducing imports of energy). This complexity is then overlaid with still to be hammered out environmental standards for biofuel production and use, which will further complicate the trade and investment patterns that emerge.

This paper briefly introduces the context surrounding biofuels and then looks more particularly at some of the factors driving the rapid expansion in biofuel production and use. The analysis looks at trade issues for biofuels, investment issues for biofuels, and some of the issues on developing standards. The paper concludes with some proposals for how governments, particularly small and medium-sized economies, might develop appropriate trade and investment rules to support a fair and sustainable biofuels sector.

2 Context

Biofuels, also called by some "agrofuels" to highlight that most of the feedstocks in commercial use are monocropped agricultural commodities, pose a number of challenges and opportunities for the goal of creating a more fair and ecologically sustainable basis for the world's economies. The rapid expansion in the use of agricultural commodities as biofuels has been met both with strong support and equally strong opposition. Often the two sides differ because they are talking about different sources of biomass, different technologies, different economic and geographical contexts, each in turn with vastly different implications for energy efficiency, food supply, greenhouse gas emissions, water use, returns to farmers and rural development. Different interests in the debate also have different priorities: including but not limited to the need to curb greenhouse gas emissions, to reduce dependence on imported oil, and to find new markets for agricultural commodities. The debate is also moving fast, driven by speculation and uncertainty, scepticism and hope. New developments, whether in technology or policy or empirical research, are published almost daily, making comprehensive and timely analysis a challenge.

For many developing and industrialised countries, facing distinct but not unrelated crises in their rural economies, the recent surge in demand for biofuels offers potentially important new markets for producers, which producers themselves in many cases have embraced. Biofuels also offer one element of a strategy to reduce dependence on oil for agricultural production, which for many farmers has become a significant and rising input cost.

Yet the challenges to harnessing biofuels as a tool for sustainable rural development are huge. Decades of falling returns for commodity trade and failed attempts to rationalise industrialised countries' agricultural trade practices sound an important note of caution to those looking for new export markets to meet the demand from industrialised countries. International channels for trade in both agriculture and energy are tightly controlled by a relatively small number of firms. At the same time, transportation costs have increased rapidly in recent years: the Financial Times reported on August 5, 2007, "The Baltic Dry Index, the best gauge of the world's dry bulk shipping costs, last week rose above 7,000 points for the first time – an increase of 103 percent in the past year. The index, which closed at 7,007 on Friday, has jumped almost fivefold since 2000."[5] The increased demand on shipping routes and ports, itself the result of significant growth in demand for commodities in international markets, has prompted a surge of shipbuilding. Freight costs are expected to start to fall some time in 2008.[6] Nonetheless, the market is tight and prices are volatile.

Moreover, the market for biofuels depends on their "green" image: they have to do (significantly) better than fossil fuels from an environmental perspective to stay in favor.[7] Yet the available technologies to generate biofuels are energy-intensive and the environmental costs of agriculture, particularly industrial scale monocultures from which most biofuel feedstock is sourced, are significant and rising, as water supplies run dry, soil is depleted and biodiverse ecosystems are destroyed to make way for more monocultures.

On the other hand, biofuels offer governments an opportunity to engage in some "joined up" thinking, bringing together energy and food policies with better management of their natural resource base and more viable livelihoods for rural populations. This thinking cannot happen in isolation from the global context; both environmental concerns, such as climate change, biodiversity and sustainable natural resource management; and, trade and investment policies, which are not yet designed to properly support fair and sustainable outcomes. Governments have a strong, prior obligation to ensure access to nutritionally adequate and culturally appropriate food for all their people. Arable land is a potential source of food, feed and fuel; public policies should aim to encourage ecologically sound and remunerative returns from different combinations of all three elements.

3 Policy drivers affecting trade and investment

As for the energy sector more broadly, biofuels production and marketing are strongly affected by public policies. The Brazilian government's decision to develop gasohol, the EU's decision to set a target for minimum levels of biofuel in the total liquid fuels market, the United States targets and tax incentives; around the world, governments have embraced biofuels and used a variety of public policy tools to encourage their production and use. The following section looks at some of the drivers behind the recent biofuels expansion as they relate to trade and investment.

Climate change is a powerful contributor to the public's receptiveness to biofuels policies, although in practice the political lobby that champions climate change related policies is nothing like as strong as the lobbies pushing for subsidies to increase agricultural production, or to reduce dependence on imported oil. Whilst the Kyoto Protocol is silent on the issue of trade, it is clear that the next iteration of governments' multilateral commitments to reduce greenhouse gas emissions will have to address trade. Agriculture will also have to be a feature of the Climate Change agenda if greenhouse gas emissions are to be reduced. It is not just the transportation of agricultural commodities but industrial agriculture itself that makes a significant negative contribution to climate change. Monocultures of soybeans, canola or sugarcane whether for use as biofuel feedstock or feed for livestock, particularly if production is expanded onto peat lands, tropical rain forest or other environmentally sensitive areas, are part of the problem; they are not the way to better management of the earth's precious natural resource base. It is not yet clear, beyond some form of carbon emissions trading, what kinds of commitments governments will undertake to reduce their greenhouse gas emissions and how biofuels, and international trade and investment in biofuels, will be affected.

Public policies on biofuels are also shaped by claims to "energy independence" through reducing reliance on fossil fuels. The reality shows that biofuels are in fact closely linked to fossil fuels, indeed, that is part of their attraction: they offer an easy (but also small) step towards making renewable energy sources mainstream. People can burn ethanol or biodiesel mixed with their regular petrol in their current car, cutting pollution and improving octane performance without buying a new machine. To date, the importance of "energy independence" has been rhetorical, providing politicians with sound bites but not reflected in the biofuel strategies endorsed by national governments, which are mostly designed to obtain at least some of their biofuel feedstock and/or biofuels as imports. The notion of independence in a world confronting cli-

mate change is anyway anachronistic: it is no longer possible to take decisions about energy without reference to the wider world. Even so, the idea will remain something of a "wild card" in the policy mix, something that would be exporters should not ignore; just as agriculture for the most part remains carefully protected as countries industrialise, so the notion of energy independence has already complicated efforts to build an open market for biofuels.

Indeed, many developing countries spend a very large share of their foreign exchange earnings on oil. Alternative energy sources that diminish this dependence could make a significant contribution to overall economic productivity, freeing money for investment in other areas. Biofuel technology is an opportunity for governments to take a new look at energy and agricultural policies to decide the best balance of uses for their arable land and rural workforce. Relieving small farmers of the cost of external inputs, particularly petrol and fertiliser, could significantly improve net farm income and therefore rural communities' welfare (through knock-on effects for rural workers and rural service providers). For now, however, biofuels are not coming as much from local feedstock for local use as they are derived from monocultures for export to a few large users. Brazil has the largest domestic use of biofuels, and is one of the loudest voices looking for expanded opportunities to export both its biofuel and its related technologies.

Three drivers behind the expansion of biofuels deserve a closer look in relation to trade and investment: minimum use targets, subsidies to biofuels and subsidies to agriculture.

3.1 Targets

The targets set by governments, particularly the targets set by the European Commission and the United States government, to bring a minimum amount of biofuels into use by given dates have become drivers of investment and trade in their own right. This is especially so in Europe, where high targets have generated a big and contentious debate. The EU will have to import biofuels to meet its internal target. The question is what conditions it will put on biofuels imports (and, hence, on the domestic industry, since the WTO rules will preclude "unlike" treatment of foreign and domestic producers). In the United States, use is already far above the target set under the Renewable Fuels Standard (RFS) established in the Energy Policy Act of 2005, making the target itself moot for now, but a new, much higher target is now under negotiation as part of the 2007 Energy Bill.

The EU has set two successive targets to increase biofuels use: first they set an indicative (non-binding) target of 5.75 percent of total energy use from biofuels by 2010; then, this year, a binding target of ten percent of total energy use from biofuels by 2020 was agreed. In the United States, President Bush has proposed making 35 billion gallons of renewable and alternative fuels available by 2017. The Senate has built on this proposal, suggesting a 36 billion gallon per year target, of which no more than 15 billion gallons could come from corn-based ethanol. This builds on the already adopted target of 7.5 billion gallons of renewable fuels by 2012. In 2007, the Renewable Fuels Association estimated production at about 6.2 billion gallons of ethanol. The level suggests that the 2012 target will not be difficult to reach. By way of comparison, total United States consumption of gasoline in 2005 was about 140 billion gallons.[8]

To meet even half of the 35 billion gallon per year target would require more than 40 percent of the United States (U.S.) corn crop projected for that year.[9] Already, production is expanding very fast, generating a lot of speculation but also holding ethanol prices down. In three years, between 2003 and 2006, the percentage of United States corn production used to make ethanol went from 12 percent to 16 percent of the total harvest.

The EU estimates it will need to import 20 percent of the volume of biofuels required to meet its biofuels target for 2020. Others think that figure might be low, and of course, what the EU needs to import and what it actually imports will not be the same thing. Depending on how open its market is imports may comprise a much greater share of the total use, especially given the relative advantages of tropical products, such as palm oil and sugar cane, over the biofuel feedstuffs widely available within Europe. Tropical crops are cheaper to grow and, in the case of ethanol, are more efficient sources of energy than sugar beet. As mentioned above, counter pressure exists in internal politics, in which agriculture plays a stronger role than environmental or even trade pressures: one of the criteria under consideration to determine which biofuels will count towards meeting the target is called "energy security." This is widely understood to mean that local (EU) producers will be given priority over imports.

The quantitative mandatory targets have two major failings from a sustainable policy perspective: firstly, the targets set to date are not qualitative, so the environmental benefits that might justify the mandated use of biofuels are not guaranteed. Worse, secondly, the targets have generated pressure to bring marginal land back into production, despite the ecological and economic arguments against growing commodities in monocultures. This puts at risk small but important environmental gains for biodiversity and the conservation of fragile and damaged ecosystems that had been taken out of production.

3.2 Subsidies to biofuels

There are significant subsidies available for biofuel production in industrialised countries. The direct subsidies are still small in absolute terms compared with the subsidies for oil and gas: the U.S. spends an estimated US$ 39 billion per year on oil and gas subsidies, compared with US$ 8 billion on coal, US$ 9 billion on nuclear energy, US$ 6 billion on ethanol and US$ 6 billion on other forms of renewable energy.[10] But they are high as a proportion of their market value, and they compound the distortions created by the subsidies given to agriculture.

The main forms of biofuel subsidy provided around the world are full or partial exemptions from fuel excise taxes, and subsidies for producers who reserve their crop to biofuels. There are also subsidies for building ethanol plants, including tax breaks on the first years of operation. Tax exemptions are common but not consistent across EU member states; some countries, such as Sweden and Spain, exempt biofuels from excise taxes altogether, while others (France, Ireland, the Netherlands and some others) grant only limited exemptions for biofuels.[11] The exemption of biofuels from excise tax creates a cost advantage over fossil fuels, which are often subject to relatively high excise taxes.[12]

The United States provides a relatively low excise tax credit for ethanol of US$ 0.135 per litre. However, the exemption applies without limit and regardless of the price of petrol, resulting in considerable sums of tax revenue forgone (at 6 billion gallons of production, the credit is worth over three billion dollars a year). While not exactly a subsidy, certain trade partners are privileged through exemption from the US$ 0.54/ gallon tariff applied to ethanol (which is in addition to the 2.5 percent tariff on imports of undenatured alcohol). Exempt countries are members of NAFTA (Mexico and Canada), Israel, and the Andean countries. Duty free access for ethanol is also given to both Caribbean Basin Initiative (CBI) and Central American Free Trade Agreement (CAFTA) countries, but quotas limit the amount of imports of ethanol made from other countries' feedstock (in practice the imports are lower than the allowed ceiling). These exceptions have created their own market trends, such as Cargill's importation of Brazilian sugar to Trinidad for processing into ethanol and subsequent duty free import into the US under the terms of the CBI.

The EU also subsidises domestic biofuel producers. Ethanol is protected by a tariff of €0.195 per litre of undenatured ethyl alcohol. The standard tariff is equivalent to a 63 percent ad valorem tariff, although a number of countries have preferential access (Africa, Caribbean and Pacific (ACP) members, Least Developed Countries (LDCs), members of the Generalised System of Preferences + group and the countries of the Western Balkans), which allows them to import ethanol duty free.[13] Larger developing countries that have bilateral free trade agreements with the EU, such as Mexico and South Africa, have not been granted duty free access for ethanol.

The European biodiesel market is protected by a relatively low ad valorem tariff of 6.5 percent. For vegetable oils destined for technical or industrial uses, a definition that includes biodiesel, the rate is even lower (3.2 to 5.1 percent). Oilseeds such as soybeans enter duty free, reflecting a long-standing agreement between the EU and the United States that ensures relatively cheap feed for the livestock industry in Europe.[14]

The 2003 reform of the Common Agricultural Policy introduced payments for biofuels grown on food crop areas (as opposed to set aside land) for an area up to two million hectares across the EU. The transformed but still substantial payments to producers for food crops also apply, including direct payments based on historic production levels. Cereals (such as wheat and corn) continue to receive market price support, as does sugar, but there is no additional support for sugar beet grown for ethanol.[15]

In an important sense, the adoption of targets for a significant increase in biofuel use is in itself a kind of subsidy, as governments are thereby creating a market that would likely not exist were only private sector signals taken into account. Indeed, without any quality control, the use of quantitative targets to boost biofuel use will tend to reward the least energy efficient, if cheapest, response, rather than forcing an outcome that is good for climate change, good for biodiversity, and that provides a new source of capital for investment in rural areas, particularly in developing countries.

3.3 Agricultural subsidies and trade rules

Inevitably, the heated debate on how to sort out the trade and investment implications of policies and programmes that support agriculture in industrialised countries is also a factor in debates on biofuels. Among trade analysts, the agricultural subsidies of rich countries have attracted enormous attention: they have come to symbolise much of the injustice entrenched in global economic relations. Agriculture is among the most contentious issues for WTO negotiators, who are struggling to find a way to agreement on the agenda of trade negotiations they set for themselves in 2001, at the fourth WTO Ministerial Conference held in Doha, Qatar.

Just three WTO members spend more than 80 percent of the subsidies targeted by the WTO's agricultural trade rules: the United States, the EU and Japan. The WTO has 151 members (and more lining up to join) and many of these members depend on agriculture for a significant share of their economic activity. Many of these countries hoped the Uruguay Round Agreement on Agriculture (AoA) would create big new trade opportunities for their agriculture sectors, but they were disappointed. It is now twelve years since the AoA came into effect, on January 1 1995, yet global market shares of agricultural trade have hardly changed. The new trade rules changed the domestic politics of agriculture in both the United States and the EU, but they had little effect on trade *per se*.

In relation to policy considerations for biofuels, the limited and arguably unhelpful role of existing trade rules needs to be borne in mind, since the production of biofuels depends on agriculture. Aspects of the trade rules that are unhelpful include: the failure to address international competition issues that have emerged as a result of falling border restrictions on trade and deregulated international capital flows; the disciplines on supply related policies, such as the restriction of public procurement and storage of grains to a strictly commercial basis; and, the strong restrictions on programmes that set production limits enforced through government price supports. At the same time, trade rules do not constrain income support to farmers, which has encouraged programmes that cost tax payers a lot of money, drive up land values and fail to moderate production.

The normative vision for agriculture at the WTO is to eliminate tariffs, production distorting domestic support and export subsidies. The vision does not tackle other aspects of market distortion, such as imperfect competition and highly concentrated market power among agricultural commodity processors and distributors. This market power reduces competition, distorts prices, reduces farm income, and causes significant damage to rural communities worldwide through highly skewed returns to agriculture that leave too little capital circulating in rural economies. Any attempt to increase biofuels production for export has to contend with these distortions.

3.4 Food, feed and fuel

There are important challenges ahead for global agriculture, given the uncertainty about how climate change will affect production and the already serious crises in some areas related to depleted or polluted water sources and the loss of arable land. Agricultural resources are not infinitely renewable; there are so called "tipping points" in nature, beyond which a resource may be irreparably damaged. Deforestation can result in such permanent loss of natural resources, just as intensive agriculture can destroy the health of soil, for instance, through excessive irrigation or insufficient rotation of crops. The implications of climate change for food security are not yet fully understood, but are likely to be significant, especially in the tropical and coastal areas that are expected to be the first affected by the rise in average temperatures around the globe.

The issue of whether biofuels can be justified in world where 850 million people face chronic hunger, and many more are malnourished, is not just complicated by these uncertainties. The relationship between availability of food and hunger is complex. There is strong agreement among experts that hunger is a problem of access rather than supply because there is enough food available in the world, and in most regions, but not everyone can afford it. This makes a focus on rural development and decent livelihoods in developing countries, where hunger is concentrated, much more important than efforts to maximise global food supply.

It is useful to remember that in the past two decades, production surpluses of a number of agricultural commodities resulted in very low commodity prices, which fuelled the creation of a polluting and inhumane livestock industry, typified by animal factories (known as confined animal feeding operations (CAFOs), with their associated environmental pollution, and animal and human health concerns. The surplus corn and soy found in U.S. markets in particular have contributed to a sugar and fat rich diet that is now costing rich countries millions of dollars as they tackle an epidemic of diabetes, obesity, heart disease and related illnesses.[16] Using some of this production for fuel instead of feed is not quite the equation that the "SUV versus the starving" commentaries would suggest.

Real short-to medium-term food security concerns remain with the creation of a link between energy and food prices, particularly with rising commodity prices. Food price spikes hurt Net-Food Importing Developing Countries (NFIDCs) in particular, a group of countries that depend heavily on imported food to meet their peoples' needs and yet that lack the money to be able to pay more for food when prices rise significantly. This was demonstrated in 1995/1996 when wheat prices (together with the prices of several other food commodities) spiked upwards by 40 percent or more, creating a significant financial burden for the NFIDCs and hunger for the people living in poverty in those countries. In the long run, many of these countries could benefit from the stimulus to production that higher prices provide, but this positive result will depend on supportive public policies to overcome market failures and to help, in many cases, to rebuild what were productive agricultural sectors that have been severely undermined by decades of neglect. Even now, though they are the highest seen in a decade, commodity prices are not especially high from an historical perspective.[17] A more equitable distribution of the profits made in the production and processing of agricultural commodities, whether for food, feed or fuel, would contribute to a fairer and more sustainable system.

4 International trade rules and the Doha agenda

Current estimates suggest international trade in biofuels is about 10 percent of total biofuels consumption.[18] There is no separate framework of rules governing trade in biofuels. Following the designation made by the World Customs Union, the World Trade Organization (WTO) treats ethanol as an agricultural product, subject to the AoA. Biodiesel, however, is considered an industrial product, and is therefore subject to the Agreement on Subsidies and Countervailing Measures.

Agriculture has only been disciplined by multilateral trade rules since the signing of the Uruguay Round in 1994. Before that, a series of exemptions and exclusions allowed agriculture to be heavily protected by countries that were otherwise committed to liberalising trade. Trade in agricultural goods remains full of exceptions to the rules that govern trade in other goods; agriculture rules allow relatively high levels of domestic support, some extremely high tariffs and for now the continued, if constrained, use of export subsidies by those WTO members that were using them when the Uruguay Round Agreements were signed. Industrialised countries tend to have relatively high tariffs and domestic support spending (subsidies) for agriculture in comparison to other sectors of their economies. Subsidies in the energy sector (such as US tax breaks for the domestic petroleum industry) are probably not compliant with WTO rules, but have not been challenged, perhaps in part because a number of the world's major oil exporters are not WTO members (eg Russia) or have only recently acceded (eg Saudi Arabia).

As an industrial product, biodiesel faces low tariffs in industrialised countries. Biodiesel feedstocks, however, as agricultural commodities, are generally protected through agricultural support payments and tariffs. Oilseeds, many of which can be used to generate biodiesel, are an exception for the EU, which has an agreement in place to accept oilseeds duty free. Given WTO norms and rules, it would be very difficult for members to introduce new, higher tariffs on biofuels, although other market access barriers exist or could arise related to standards, as we discuss below.

Developing countries tend to have higher tariffs than industrial countries, at least on average; they do not have the spectacularly high peaks that mark a handful of so called products as "sensitive" in industrialised countries, such as rice, sugar or milk. Industrial tariffs are likely to be higher than those in industrialised countries, too, at least at their bound levels. Applied tariffs on both agriculture and manufactured goods are often considerably lower than their bound levels. This allows more trade than would occur at the bound levels, but also introduces an element of uncertainty, since within the margin created between the bound and applied levels, governments are free to change the tariff, making trade and investment decisions more complex and more risky for would be exporters. On the other hand, the gap between bound and applied rates offers a simple (albeit not always effective) tool to developing country governments that wish to control imports.

4.1 Biofuels: why trade?

Arable land is not evenly distributed among the countries of the world. Biofuels production mirrors agricultural commodity production: a few counties account for much of the production. Brazil, the United States and the EU together produced 95 percent of global biofuels in 2005, with Canada, China and India producing most of the remaining five percent.[19] In agriculture, five countries grow almost half the world's wheat supply and five exporters (counting the EU as a single entity) are expected to account for 75 percent of global wheat exports from 2006 to 2015.[20,21] Soybeans, which are used primarily for feed but also now to make biodiesel, are even more concentrated: the top five producers (in descending order: the United States, Brazil, Argentina, China and India) account for 92 percent of total production.[22] Argentina, Brazil and the United States alone account for 80 percent of global soybean production and 70 percent of global soy oil production. The numbers are less concentrated for corn, a feedstock for ethanol, but still mostly grown for feed. The United States alone grows almost 40 percent of the global supply and provides 50 to 75 percent of international corn exports. Argentina is the other main exporter with China the second biggest producer.[23] This context means that any smaller suppliers will be price takers in the global market, heavily dependent on the crop results in the main suppliers for their export price. The private firms actually handling the processing and trade in these grains are also highly concentrated. The same firms are dominant in most of the major exporting countries. For example, Bunge, ADM and Cargill are by far the biggest soybean processors and traders for the US, Brazil, Paraguay, and Argentina.

Tropical and sub-tropical crops, such as palm oil and sugarcane, produce more net energy per unit of land than grain or oilseed based biofuels. This fact, coupled with the targets industrialised countries have set themselves to increase biofuel use, suggests that trade from those regions to industrialised countries makes sense. The big developing countries producers (those with arable land, transportation infrastructure, etc.) are not the countries that are eligible for preferential market access. Both the EU and U.S. governments have faced political resistance to opening borders to imports of Brazilian ethanol, for instance. As a result, Brazilian sugarcane is turned into wet ethanol at home and then shipped to CBI member countries (and now the CAFTA countries) for further processing before it is imported into the US free of the US$ 0.54/gallon ethanol tariff. The tariff blocks Brazil from doing the final processing at home before the ethanol is shipped.

A number of tropical countries have pushed industrialised country WTO members to agree to provide duty free access for tropical products as part of the Doha Agreement on Agriculture but the proposal has not been accepted. The difficulties include the lack of an agreed list of such products, and the sensitivity of several of the products included, especially sugar, which has temperate as well as tropical sources. Should a Doha Agreement on Agriculture eventually emerge, it will probably have some particular clauses focused on tropical products (which in addition to sugarcane, are usually understood to include certain oilseeds, vegetable oils and tropical woods).[24]

This agenda of eliminating tariffs on tropical products pits some small and medium-sized developing countries against one another, because it effectively undermines the value of preferential schemes that some of them benefit from, including the Generalized System of Preferences (GSP) and the Lomé Agreements between the EU and the ACP.[25] The EU agreements with the ACP affect several actual and potential biofuel feedstuffs, most notably, sugarcane. Recent assessments of the stand off between Latin American countries, which lead the push for significant tariff cuts for tropical products, and the ACP, which benefit from privileged access that depends on high tariffs for other exporters, consider that there is little scope to narrow the differences with regards to the treatment of sugar.[26]

In any case, the point of the Doha Agenda is to remove barriers to trade. This is an agenda that inherently erodes the value of preferential agreements. The Uruguay Round also downgraded special and preferential treatment for developing countries. While in the 1960s and 1970s trade theorists supported distinct provisions for developing countries to accommodate their economic structures and relative dependence on industrialised countries, by the 1980s the vogue was for unilateral liberalisation if multilateral agreements did not go far enough, so strong was the belief that free trade was the best way to increase wealth and ensure development.

For many smaller developing countries, competition with relative powerhouses such as Brazil and South Africa is a significant challenge to securing a strong export share in agricultural commodity markets, even were the industrialized countries to eliminate their support measures and tariffs.

4.2 The Doha impasse

The WTO has reached an impasse on negotiations and agreement on the Doha Agenda. The Doha Agenda is a series of agreements comprising agricultural and non-agricultural goods, environmental goods and services and other issues. Even if WTO members do eventually come to an agreement, the proposals under consideration will not change the underlying structure of domestic support for agriculture in industrialised countries, which have increasingly shifted towards income support for farmers and away from market interventions that provide a floor price for producers. The effect of the Uruguay Round, and the domestic policy reforms that accompanied its negotiation (the MacSharry reforms in Europe) and implementation (the 1996 Farm Bill in the United States) have encourage under priced production, production that is sold at less than cost of production prices. This practice, called dumping in trade circles, created significant cost savings for processors, including livestock firms that buy grain to feed their animals. Dumping from big consumers and exporters of grain, particularly the United States, had a depressing effect on production in countries that depend on agriculture to provide livelihoods. [27]

Dumping is less of an issue in 2007. Indeed, a run of bad harvests in several of the world's major cereal producing countries (such as Australia) has contributed to a price spike that has shocked a lot of commentators, who see the demand for biofuels arriving at a time when food is scarce. Higher commodity prices have relieved some of the pressure on US negotiators, because U.S. support to agriculture is in large part counter cyclical, designed to counter price falls by raising payment levels in response.

Tariff reductions may not make a significant difference either, should the Doha Agreements be finalized; the talks are proposing to create a category of "sensitive products" for rich countries and to allow developing countries to designate "special products," which are those that are important for food security and rural livelihoods. Industrialized countries that protect certain crops, the United States and the EU both protect sugar producers, for example, will likely use this exemption to avoid new obligations to cut domestic support or tariffs for those crops under WTO rules (through regional agreements and internal reforms are already changing the rules and increasing access at least for some). A Doha Agreement on Agriculture is unlikely to create new export opportunities for many, especially not the small and medium-sized countries, who will face stiff competition from the already dominant developing country agricultural exporters in most crops. Several projected outcomes based on the proposals now being negotiated at the WTO suggest a number of smaller countries will in fact lose market share in agriculture under the proposed new rules.[28]

Despite the Uruguay Round Agreement on Agriculture, WTO members are by and large reluctant to apply normal GATT rules to their agriculture sectors. Industrialised countries continue to push for access abroad for their firms while maintaining protection at home, ostensibly for their producers. Meanwhile, some 40 or more developing countries participate in the Group of 33 (G33), a negotiating bloc established to guard their national "policy space" to protect food security and rural livelihoods while negotiating rules that will by and large liberalise their agriculture sectors. Even the most aggressive exporters, such as Australia, New Zealand and Brazil, have developed ways to protect their production at home. Both Australia and New Zealand, for instance, enforce some of the most stringent sanitary and phytosanitary standards in the world, ostensibly to protect their agriculture from disease, but thereby also ensuring that most of the domestic market in horticulture is met by domestic producers. Brazil has a Ministry of Rural Affairs as well as a Ministry of Agriculture, and the latter has become a voice for the producers in the country that have not welcomed foreign trade and investment because the resulting loss of rural livelihoods in some sectors, such as dairy, has been devastating.

The point is that countries putting their hopes in a WTO agreement to remove market and non-market barriers to trade in agricultural commodities should be cautious; the Doha Agenda, if successful, will only take small steps to reducing tariffs and very little change in actual spending on domestic support is projected, though the new ceilings would be a constraint on future programmes. The new rules could make the environment more predictable, but it will not offer significant new trading opportunities.

The biofuels debate has emerged during the time of the stalled and difficult negotiations on the Doha Agenda. Biofuels raise a number of issues that governments chose not to consider in this round of talks, including the acceptability of production and processing standards, as opposed to product standards, as a basis for discrimination among goods; the legitimacy of trade restrictive measures if they can be shown to support the realisation of goals set out in a multilateral environmental agreement; the urgent need to address the market distorting effects of highly concentrated commodity markets and commodity production chains; and the effects of private standards, which de facto govern market access alongside tariffs and any non-tariff consideration such as sanitary standards.

The new trade opportunities opening up in industrialised countries with the strong interest in biofuels are not likely to be protected by the rules-based system of the WTO, but in the less reliable form of a country's unilateral decision to allow more imports to meet a given domestic demand. For instance, a tariff could remain in place but not be applied. Or a lower tariff could be applied to a given volume of imports before the maximum tariff went into effect. If the imports then proved politically sensitive, because local producers or processors were threatened, or because the environmental standards in place in the production of the import was deemed inadequate by consumers, then the border could immediately close again without recourse for the exporting country or firm.

4.3 Environmental goods and services

The Doha Agenda explicitly includes environmental goods and services as part of its mandate; the impetus behind its inclusion was to try to avoid the creation of market access barriers for new areas of the economy that would improve environmental management. The processing of most biofuel feedstocks into biofuel is energy and water intensive and not "green" in any sense; nor are biofuels included in the list of environmental goods and services that WTO members have developed (which includes such things as technologies for air pollution control and waste management). Nonetheless, Brazil has proposed the inclusion of biofuels as an environmental good, a proposal that falls into the negotiations on so called non-agricultural market access, which encompasses all non-agricultural goods.

The rules to govern the export of the technology to process feedstocks into biofuels fall in the category of services at the WTO. Services, under the General Agreement on Trade in Services, or GATS, include the rules that govern the operation of foreign firms in domestic economies, whether by the transfer of staff, the establishment of a subsidiary firm, or through the sale of a service via phone or Internet to a client living in another country.

A strong argument against including biofuels and related technologies in a list of environmental goods and services relates to the production and processing involved, which is often energy intensive and polluting. It is difficult for WTO members to raise this objection, however, as the rules do not allow production and processing to be factored into the treatment of products; an anomaly that still awaits correction.

WTO negotiations on services have been strongly promoted by a group of multinational service firms, working in finance, tourism, health and education, among other areas, that want access to contracts in the larger developing countries. Industrialised countries are the principal drivers of these talks, although some developing countries, such as India, have strong service sectors interested in expanding their exports.

The GATS talks are meant to be a very open umbrella within which countries can propose which service sectors they might include and which sectors in other countries they wish to be able to access. The EU and some other WTO members have been pushing to have some general principles that would apply to all services sectors, known in the negotiations as "benchmarks," but this has not been agreed by all members as yet. The services talks have not proposed banning local content requirements.

5 The investment context

It is increasingly recognised that liberalized capital markets make investment rules as important, if not more important, than trade rules in the effort to create the basis for sustainable production and distribution. If trade in biofuels remains relatively small, constrained by a number of factors that are unlikely to change in the near future, investment in biofuels is significant and growing. A July 2007 report from the non-governmental organization (NGO) Grain lists three primary sources of foreign investment: the world of agribusiness (including ADM, Cargill, and Noble); the world of petroleum (BP, Mitsui, Petrobras and PetroChina); and, not least, banks (including Rabobank and Barclays, as well as investment funds such as Goldman Sachs).[29] A number of wealthy entrepreneurs, from Richard Branson to George Soros to Bill Gates, have also invested heavily in the sector.

Among developing countries, Brazil is the largest recipient of investment in biofuels, from both local and foreign investors. Foreign direct investment (FDI) in Brazil's sugar and bioethanol sector now accounts for around six percent of total investment in the sector, and is expected to increase to ten percent by 2013. These are not small numbers considering the extension of the biofuels production chain. Most FDI in biofuels in Brazil comes from the United States and Japan is also an important source.[30] Malaysia, the biggest palm oil producer, is also attracting increasing amounts of investment for biofuels development from both local and foreign investors. By the end of 2006, the government had approved 75 biofuels projects, worth a total of US$ 2 billion, of which 69 percent was domestic capital and the balance foreign capital.[31]

Investment is also coming from the South; the trade agreement under negotiation between China and the Philippines, for example, proposes significant Chinese investment in biofuel production in the Philippines for export back to China. China is also looking at biofuel production in Africa. Global investments in sustainable energy projects as a whole doubled in the last two years, from US$ 27.5 billion in 2005 to US$70.9 billion in 2006, while for 2007, the total is predicted to reach over US$85 billion. Biofuels comprise a significant share of this total.[32]

Huge investments are also being made in the next generation of biofuels. According to a recent article in the technology magazine Wired, "Venture capitalists have invested hundreds of millions of dollars in cellulosic-technology start-ups. BP has announced that it is giving US$ 500 million for an Energy Biosciences Institute run by the University of Illinois and UC (University of California) Berkeley. The (U.S.) Department of Energy pledged US$ 385 million to six companies building cellulosic demonstration plants. In June the DOE (U.S. Department of Energy) added awards for three US$ 125 million bioenergy centres to pursue new research on cellulosic biofuels."[33]

In the flood of capital being invested in biofuels, it is important to look at the role of biotech companies. Consider the "gift" from BP to the UC Berkeley, mentioned in the quote above. That deal, which will last ten years, will allow BP to retain patent rights over any discoveries made by BP scientists, and to share royalties on patents from discoveries made in collaboration with university scientists. The research will be carried out in a facility that will cost Californian taxpayers US$ 40 million.[34] According to a biotechnology industry consultant, patents granted in industrial biotechnology, largely for biofuels production, increased from 6,000 in 2000 to 22,000 in 2005. Several thousand more patent applications are still awaiting approval.[35]

Investment rules have come up repeatedly in trade negotiations but have proved extremely controversial. Despite strong pressure from the EU and some other WTO members, the majority of developing countries rejected the inclusion of investment as a topic for a new agreement as part of the Doha Round. Instead, there are now three places where investment is handled at the WTO: a working group to discuss the relationship between trade and investment at the WTO; the committee that monitors implementation of the Trade Related Investment Measures Agreement (TRIMS) that was signed as part of the Uruguay Round in 1994; and, the aspect of services negotiations that addresses the establishment of a services based business in a foreign country. Energy services are now under negotiation as a specific sector within the services talks at the WTO, but as yet there are no rules in place that deal specifically with energy services.

The TRIMs Agreement requires WTO members to treat foreign and domestic investors alike (national treatment, under Article III of the GATT) and prohibits quantitative restrictions on trade which would limit the extent of investments. For example, WTO members are not allowed to limit exports from foreign owned factories, or to restrict imports of inputs needed by foreign owned industries. Local content requirements are banned. Existing laws that do not conform to TRIMS were to be phased out in two years by industrialised countries, five years by developing countries and seven years in LDCs (from the date of implementation: January 1, 1995). The TRIMs Agreement applies to manufacturing industries, not to the services sector: it would apply to the construction of an ethanol plant, but not to the sale of technology or the provision of an energy service.

The liberalization of investment is a logical extension of market deregulation through removing barriers to trade at the border. A third or more of global trade occurs within firms that operate multinationally. These firms are as interested in the movement of capital, staff and technology as they are in the exchange of goods and they want a base in Europe to take advantage of the privileges extended with the European Community to member states. They want a base in or near India, China, South Africa, Brazil and other large developing economies, so as to sell to consumers in those countries and to finance business opportunities there. The food and agriculture sector, for example, has expanded rapidly in the newly industrialising countries, where consumption of processed foods and meat has been growing at a tremendous rate. Supermarkets, many of them part of chains that have headquarters in industrialized countries, have also shown explosive growth in developing countries over the past five to ten years. These firms include Wal-Mart, with an estimated six percent of worldwide grocery sales, and also Carrefour and Ahold.

The current expansion in biofuel production for export in developing countries is piggybacking on the broader expansion of food and agriculture investment in certain developing countries. For example, 25 percent of Paraguay's arable land grows soybeans. Firms such as Bunge and Cargill, who were looking for animal feed to supply their livestock operations serving markets in Latin America and Asia, encouraged this expanded production. The World Bank and the regional Inter-American Development Bank provided financing for the infrastructure to move the crops from the field to ports for export. The demand for biofuels has created a new impetus for their investment, and has intensified the pressure on available arable land.

Monitoring investment trends is an important way for governments to understand the likely future direction of biofuels production and use. The investment on the feedstock side (as opposed to processing facilities) is not easy to categorise clearly because the same crops can, and do, feed people, animals and generate energy. Nonetheless, an understanding of what production and transportation capacity exists (and is projected) for the principal feedstocks globally is essential to making informed choices about how to develop a local or national biofuels sector.

6 Standards

Much of the agricultural production providing the biofuels industry with feedstock is unsustainable. The production relies on monocrops that require significant external inputs. The market structures are inequitable, dominated by oligopolies that extract more than their fair share of the profits available. Current policy on biofuels, particularly in the form of targets that create significant new demand for biofuels in industrialized economies without addressing the urgent need to reduce overall consumption of energy, is encouraging further investment in these unsustainable and inequitable agricultural systems.

Both for optimal public policy outcomes, and for proper functioning of the market, governments, producers and consumers need to be able to distinguish among biofuels on the basis of their relative energy efficiency, on the sustainability of their production (considering water, soil and other impacts), on their returns to small (not just large scale) producers, and on their paying a decent wage to the workers employed in the sector. Two kinds of standard setting need to be distinguished: the first would establish a floor for the sector as a whole: for example, to count as a biofuel in X market, the biofuel in question must meet A, B and C standards. The second is voluntary, in which standards are used to create a distinct market, as is the case with organics or fairly traded goods.

Considerable work has already gone into developing various voluntary standards, some of them led by governments (the UK and The Netherlands, for example, both have initiatives in this area), some by NGOs (such as the World Wide Fund for Nature, which is working with the European Commission), and some a mix of private and public actors, such as the different sustainable roundtables, on soy, palm oil and, most recently, the Roundtable on Sustainable Biofuels, also called the Groupe de Lausanne, which plans to have a first set of draft sustainability criteria available early in 2008. A number of environmental NGOs have argued that there is no possibility of meaningful standards for biofuels because the problems associated with the feedstock production are too complex to be resolved in this way. In July 2007, many of these organizations signed a

call for a moratorium on EU incentives for biofuels, EU imports of biofuels and EU use of biofuels using feedstock grown in monocultures.[36] A similar coalition of environmental and development groups called for a moratorium on the expansion of the proposed Renewable Fuels Standard as part of U.S. energy legislation in October 2007.[37]

The June 2007 moratorium call gave four arguments for why certification based on standards was impossible to get right:

1. Certification cannot allow for the likelihood that high biofuels prices and standards will displace other agricultural production to marginal areas, leaving biofuels on the best land so as to meet high standards related to soil, water and other conditions surrounding production;
2. Certification efforts to date have ignored the central importance of working with the local communities where production takes place to ensure their informed consent;
3. Biofuels production is expanding too rapidly for certification efforts to keep up; and,
4. The countries involved in production for export have only limited capacity to over see and enforce standards.

Despite the controversy, the European Commission has proposed two principal environmental standards that would set a floor for the sector: to count towards the EU's 2020 target, biofuels must reduce greenhouse gas emissions over the emissions of an equivalent quantity of fossil fuels; and their production must not jeopardize so called "mega biodiverse" zones (such as rainforests). The discussion at the Commission has not, to date, included social standards.

With a large guaranteed market at stake (created by mandatory targets), the firms that dominate the trade and processing of biofuel feedstock, together with the firms that dominate the highly concentrated fossil fuel market, have every reason to seek to control the policy debate and set the rules in their own favor. The biggest biofuel producing countries, not least Brazil, also has a considerable vested interest in directing public policies for the sector. The battle for strong environmental standards will be tough, but perhaps winnable, but it will take a big, indeed enormous, political effort to ensure that the further expansion of biofuel use is framed by rules that favour locally rooted, small-scale producers.

Nor is it clear which agency in the multilateral system might oversee discussion or negotiation of any multilateral standards, and how they might achieve sufficient buy-in to withstand scrutiny. The WTO has already found itself at a loss on how to manage the new sanitary and phytosanitary standards (SPS) that are increasingly being established and implemented by the private sector without any governmental input or control. Private standards, such as EurepGAP (now renamed GlobalGAP), are vital determinants of whether producers will find a global market for their production.[38] These private standards fall outside governments' realm of control, leaving negotiators with difficult challenges in creating appropriate regulations.

All these concerns are valid, but the push to develop standards is unlikely to stop. They cannot by themselves guarantee an environmentally sustainable and socially equitable industry but standards and regulations are an important tool to that end. To be credible, any standards will need independent, third party verification; the regulations based on them will have to be mandatory, and applied equally to domestic and foreign sources; and, both standards and regulations will need to be geared to facilitate the participation of smaller producers. One of the lessons learned from the experience of organic labels is that a plethora of standards, as well as expensive certification processes, have created an unlooked for trade barrier that favours larger producers.

To work, any standards applied to biofuels production and trade will also need to be developed in a transparent, participatory and locally led process that learns from other experiences, such as organic certification and fair trade models. One approach, adopted by the International Federation of Organic Agricultural Movements (IFOAM), takes a kind of meta-standard approach: they have negotiated and agreed general principles and benchmarks for the substance and content of appropriate organic standards that leave the specific content of those standards to be set in a local context, where differing needs and constraints can best be addressed. For example, in some places water is abundant, while in others, it is a precious and scarce resource; how water use is treated in the standard setting process should reflect such local variations. Similarly, the process for deciding and setting standards will be very different in a relatively rich but sparsely populated country such as Australia and a much poorer, more densely populated country such as Indonesia.

The IFOAM template for organic standards has been used as the basis for national standards in the United States, the Philippines and elsewhere, modelling a path that starts with a voluntary, private initiative and culminates in national law. It is possible, under WTO norms, to imagine a similar role for IFAOM or similar standards at the multilateral level, where governments agree to make the privately derived code the reference point for trade disputes that involve organic products.

Drawing on the experience of ISEAL (the International Social and Environmental Accreditation and Labelling) Alliance, as well as NGOs such as the International Institute for Sustainable Development (IISD) and others in the field, governments can draw on guidelines to help think through how to standards could be derived. Ideas include:

1. Ensure a transparent process to develop the standards, with time and resources to support comments and amendments from stakeholders.
2. Introduce new standards in such a way as to minimise the economic cost for compliance, especially for smaller suppliers.
3. Work towards international agreements on standards where it makes sense to, while accepting that different technologies or approaches may achieve the same objective (so as not to exclude a diversity of potential suppliers).
4. Provide money for training, technology transfer, establishing and maintaining centres for testing and certification; and other costs that arise from creating a compliant supply chain.
5. Provide a complaints resolution mechanism.
6. Publish standards promptly and make them available at little or no cost.[39,40]

Such an approach would be consistent with the WTO's requirements concerning Technical Barriers to Trade (TBT). It is at the TBT Committee that most standards related issues are discussed.

Biofuels standards could also suggest a country review its food security status, the shifting of food production to marginal land may prove impossible to control, but if a country is required to indicate its food security status and its plans with regard to food production and purchase, it might encourage national policies that do not jeopardise food supplies for the sake of growing biofuels feedstock.

Standards cannot by themselves ensure fair and sustainable production of biofuels, but they can make a positive contribution, particularly if they are complimented with strong regulation, in recognition of the market power that both agricultural processors and energy companies enjoy.

7 Conclusions

The surge of interest in biofuels offers a number of opportunities for developing countries despite important limitations in the scope for sustainable trade. Biofuels are not poised to dominate fuel markets, but they offer a range of important new technologies, particularly for people who lack access to energy in rural areas. Governments have the opportunity to rethink their agricultural land use policies, whether for food, feed or fuel. Any such policies should, of course, form part of a wider rural development strategy.

The feedstocks that now dominate biofuel production are agricultural commodities whose markets are heavily distorted in a variety of ways. Those distortions are not going to change quickly. Should WTO members adopt the Doha Agenda of trade agreements, for example, important barriers to trade will remain firmly in place. WTO members are far from agreed on how best to structure global trade rules for agriculture. Moreover, to sell an agricultural product in Europe, it is not just tariff levels that matter, but also the demands of the potential buyer. Those buyers are increasingly setting their own standards. GlobalGAP is an instance of such private standards, which may prove as difficult for small producers and exporting firms to satisfy as it is difficult to get past a quantitative restriction or exceptionally high tariff.

Energy markets are distorted, too. Given political and economic sensitivities, and the organized and concentrated wealth of petrol companies (and many of the countries) that dominate oil production, the sector is not a likely candidate for an open, competitive market. The emergence of trade in biofuels feedstock will happen against this imperfect background, driven as much or more by public policy interventions of different kinds as by economic logic, such as lowest cost producers.

Governments cannot develop a sustainable biofuels program without looking at agriculture as a whole. Within agriculture, governments face a number of obligations, some of which are in tension with one another. Governments must ensure that the people within their borders have access to adequate amounts of nutritious food. They are responsible for rural development strategies, too, setting regulatory frameworks and sometimes providing inputs that affect land tenure, rural credit, irrigation, seeds, soil fertility, pest management, transportation infrastructure, working conditions of rural labourers, smallholder livelihoods, food processing, food storage and food distribution.

Within the WTO negotiations on agriculture a difficult debate is taking place that has a profound impact on these responsibilities. On both sides, cynical and ideological interests are in play: there is a dispute between those who believe that the least possible restriction on all trade and investment will lead to the best possible outcome for the most people, and those that believe governments should more actively manage their trade and investment to ensure optimal outcomes for development. At the same time, there are more nakedly self-interested forces at work, where governments are either pushing to expand export markets for the firms based in their countries, or they are pushing to block market access as far as possible, to protect uncompetitive domestic industries.

Those who make an honest attempt to find a way through these discussions have acknowledged that there are good points on both sides of the argument. A strong body of literature suggests that, especially for the poorest countries, protecting agriculture from unregulated import flows is important to allow capital formation to start.[41] These countries are not well served by the WTO agenda, and although not politically powerful, these countries continue to fight for a differentiated system of rules that does not require all countries to act alike. The history of government interventions in agriculture, in both industrialized and developing countries, suggests that policies are hard to get right, but there have been plenty of successes to set alongside the failures.

The existing balance of power at the multilateral level makes it difficult for governments to respond to social or environmental crises without first checking policies for their WTO compliance. Whether any government intended WTO rules to limit environmental measures that limit trade is open to question. The fact is they do so in practice. Governments too often use WTO rules to protect vested domestic interests from the economic consequences of policy changes that would promote stronger environmental or social standards. Yet most people would consider the WTO's purpose, namely, the facilitation of commerce, to be secondary to protecting the right to food or cutting greenhouse gas emissions. Where there are strong multilateral rules in place, such as the Biosafety Protocol, WTO members are at a minimum able to refer to the agreement and argue that other members should be guided by such legislation. To protect the possibility for a biofuels sector, whether for domestic use or export, that provides livelihoods for smallholders and does not jeopardise local food production, a clear multilateral framework would be valuable.

At this time, none of the strong drivers of global trade in biofuels is looking hard enough at sustainability. One driver is the European Union, with a large, mandated demand that cannot be met from domestic production. A few exporting countries, particularly Brazil, are well placed to meet the new demand, but a number of smaller countries are also hoping to add biofuel feedstock to their existing exports to Europe, particularly countries in Africa. Private investment, from banks, oil companies and agribusiness, is also a big driver. Most of this money is from industrialized countries, but some private and public investors from some developing countries, particularly Brazil, China and India, have also joined the fray. If recipient governments want to shape this investment to ensure it meets public policy goals, such as access to energy for local communities, or sustainable management of water, or protecting landholders from land grabs, they need to develop a national strategy quickly and to decide how they want to manage the money that comes in.

The United States is an important player, but for now it has a largely domestic biofuels industry, with the most important trade effects being the reduction in grains available for export (which were mostly destined for feed). The United States is also an important source of investment capital for the biofuels industry worldwide and home to many of the leading corporations engaged in some aspect of biofuel production. Effective standards for fair and sustainable production are possible, but only if countries are willing to cooperate at the multilateral level. There is a real risk the EU will set standards internally that will have significant effects on agriculture and biofuels development globally without any reference to the concerns of other countries, including the countries where the feedstock for biofuels imports is produced. Domestic biofuels policy in the United States, similarly, has significant implications for the wider world, particularly in Central and South America.

Some international guidelines could help to complement what will ultimately be local and national governments' decisions. In part, this could carve out some space for policies that are dictated by human rights and environmental norms, as well as trade and investment obligations. A multilateral agreement could also help to balance the pressure coming from those developed countries that are setting minimum use targets with the importance of ensuring sustainable supplies, wherever they are sourced.

At the national level, governments will also want to consider their objectives for a biofuels sector. Are they interested in climate change mitigation? Providing energy to regions and communities that are not yet part of the national grid? Creating a new market for agricultural commodity producers? Decreasing their dependence on fossil fuel imports? Attracting foreign direct investment? These and surely other objectives are all valid, but they do not all require the same policies or the same technologies. Trying to do it all will create policy incoherence and could well end in failure.

Depending on the goals chosen, governments will then have to further develop a number of areas. WTO members should consider their position on the possible inclusion of biofuels, and the wider bioenergy sector, in negotiations on environmental goods and services (the latter could include biofuel technologies). For now, biofuels are not on this agenda at the WTO, but were proper criteria in place, aspects of biofuel production and processing could arguably be included. For now the agenda is about ensuring open markets for environmental goods and services, developing country governments should consider if this is their agenda, too, or whether they want some conditions on import and export access so as to shape the development of biofuels in their countries. It may be that some developing countries will want to look at the possibility of regional trade as a priority over global trade, and therefore ensure they protect this possibility in their WTO negotiating positions. Similarly, governments may wish to privilege investors from the region over those from industrialized countries. If so, they will need to avoid signing on to rules at the WTO that preclude such policy choices, either in controlling where investment comes from, or on the conditions that are placed on investors to protect the public interest.

For those countries that are interested to trade biofuels, proper capacity to participate in standard setting is vital. To date, few developing countries have been able to join adequately in standard setting bodies, such as Codex Alimentarius, which sets standards for food safety. Developing countries will have to maintain the pressure they have already brought to bear on donors to provide the funding necessary to ensure they can participate fully. Standards for sustainable biofuels are likely to be strongly influenced by the transnational firms already deeply invested in the sector; governments will have to work with this reality, but also protect the policy space they need to meet public policy obligations, both for the environment and for decent social outcomes.

To develop a domestic biofuels sector, it is also important for countries to understand the pressure they are likely to face to accept imports and how that might affect the chance of a local industry taking root: the more a country wants to export biofuels, the greater the pressure will be to allow imports because the international trade system is based on reciprocity. Exceptions, such as those created by preference schemes, are out of favor. In any case, the wider effort to lower all tariffs has reduced the scope for industrial economies to offer preferential access even if they continue to wish to do so.

A series of public decisions shaped the emergence of a fossil fuel based transportation system at the beginning of the twentieth century. Similarly, public policies encouraged the expanded use of fossil fuels, and derived products, in virtually all agricultural production in industrialized countries, and in parts of most developing countries' agricultural production as well. Energy policy remains an area that is strongly dictated by governments the world over. Agriculture, too, is heavily managed by governments. Existing public policies are shaping the biofuels sector, and will continue to do so. International trade and investment are being driven by public policy choices, and so governments have the opportunity to explore what can work best for them. In doing so, they must acknowledge the nature of the different drivers in place, but also appreciate the possibilities for shaping those drivers.

Endnotes

[1] OECD, 2007 p.5 Also UN-Energy Report (2007; Issue 8), which points out, an unknown of this "waste" plays a vital role in reducing soil erosion and in generating new soil. The use of these products as biofuel will need careful management to avoid environmental damage.

[2] The report uses the term corn for the crop commonly known in the United States as corn.

[3] UNCTAD, 2006 p.35.

[4] Doornbosch and Steenblik, 2007 p. 29.

[5] *Financial Times*, "Shipping Costs Rise on Chinese Demand," August 5, 2007. On-line edition. http://www.ft.com/cms/s/0/d5448e54-4378-11dc-a065-0000779fd2ac.html

[6] Bloomberg.com, "Freight Costs to Peak in 2008, Baltic's Drayton Says (Update2)." On-line, accessed 7 December 2007. http://www.bloomberg.com/apps/news?pid=20601012&sid=aYsNUycqlHPc&refer=commodities

[7] This is less true for the United States, where ecological considerations are not driving ethanol policy. Nonetheless, there is a public perception that ethanol is greener than petrol and the industry is therefore vulnerable to the accusation that in fact ethanol's overall impact on the environment leaves it hardly better, and by some calculations worse for the environment, than a fossil fuel.

[8] Testimony of Keith Collins, Chief Economist, U.S. Department of Agriculture to the US Senate Committee on Environment and Public Works. 6 September 2006. http://epw.senate.gov/hearing_statements.cfm?id=262516

[9] Caesar, W., Riese, J. & Seitz, T., 2007 "Betting on Biofuels," *The* McKinsey *Quarterly*.

[10] Doornbosch and Steenblik, 2007 Chart on p. 29.

[11] An excise tax is charged on a specific good (for instance tobacco, alcohol or gasoline) or activity, as opposed to taxes based on income or wealth.

[12] Jank, J. *et al.*, 2007 p.22.

[13] Among other things, GSP + countries must meet criteria to show their economies are "dependent and vulnerable," meaning dependent on favoured access to the European market for a large percentage of their total exports.

[14] Jank, J. *et al*., 2007 p.21.

[15] Jank. J. *et al*., 2007 p. 22-23.

[16] Muller, Yeldon & Schoonover, 2007.

[17] Food & Water Watch *et al*., 2007 *The Rush to Ethanol*. USA. http://www.fwwatch.org/food/pubs/reports/rush-to-ethanol

[18] Doornbosch and Steenblik, 2007 p.29.

[19] Doornbosch and Steenblik, 2007 p.29 citing IEA, 2006b.

[20] This is down from the 85 percent over the preceding period. The drop is because of new production coming available from the former Soviet States. The five exporters are the United States, the EU, Canada, Australia and Argentina.

[21] Wheat production numbers from FAOSTAT (on-line statistical database). Accessed 7 July 2005.

[22] Clay, 2004 p.175.

[23] Clay, 2004 p.409.

[24] The indicative list used for the Uruguay Round (which was never formally adopted) is provided as an annex in: WTO Committee on Agriculture, Special Session Market Access, Chair's Reference Paper, *Tropical and Diversification Products*. 17 May 2006. http://www.wto.org/english/tratop_e/agric_e/ref_paper_tropprods_e.pdf

[25] These agreements are being renegotiated as Economic Partnership Agreements, for completion in Dec. 2007.

[26] Stephens, C. & Kennan, J., 2006. "Tropical products under Doha: Balancing liberalisation and the avoidance of preference erosion," ICTSD, Geneva. http://www.agtradepolicy.org/output/ictsd/tropical%20products-preference%20erosion_Stevens-Kennan_June2006.pdf

[27] Ritchie, R., Murphy, S. & Lake, MB., 2003 and Murphy, S., Lilliston, B. & Lake, M., 2005.

[28] Polaski, S. 2006. *How Can Developing Countries Win in the Doha Round?* Carnegie Endowment for International Peace, Washington, DC.

[29] Grain, *Seedling*, July 2007 p. 11.

[30] Dufey A., 2007 (forthcoming) *"Exploring New Sectors for FDI Attraction: the case of biofuels"* IIED, London.

[31] Dufey A., 2007 (forthcoming) *"Exploring New Sectors for FDI Attraction: the case of biofuels"* IIED, London.

[32] UNIDO, Africa, pdf 2007.

[33] *Wired,* "One molecule could cure our addition to oil." Article by Evan Ratliff, 24 Sept. 2007. http://www.wired.com/science/planetearth/magazine/15-10/ff_plant

[34] Suppan, S., 2007, "Patents: Taken for Granted in Plans for a Global Biofuels Market," IATP. Minneapolis. http://www.tradeobservatory.org/library.cfm?refid=100449

[35] Suppan, S., 2007, *ibid*.

[36] The moratorium call can be viewed at http://www.econexus.info/biofuels.html.

[37] Press release and letter on-line at http://action.foe.org/pressRelease.jsp?press_release_KEY=273.

[38] GlobalGAP standards are self-advertised as "an equal partnership of agricultural producers and retailers who wish to establish efficient who wish to establish efficient certification standards and procedures."

[39] Cosbey, A., 2001, IISD. Canada.

[40] Gascoine and O'Connor & Co., para 43, p.28.

[41] FAO, 2005 Trade Policy Briefs on Issues Related to the WTO Negotiations on Agriculture, No. 14.

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