



Cultivating Governance: Cautionary tales for biofuel policy reformers

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Key Findings of the Policy Brief

This policy brief analyzes the current developments around policies of government support to biofuels internationally. Based on desk research as well as interviews with stakeholders, the policy brief is structured around three cautionary tales. The brief's key messages are universal, but may be of special relevance to policy-makers in the EU in light of the current discussion about the possible U-turn on government support to biofuels in this jurisdiction.

- Biofuel policies have been haunted by mismatches between their stated aims (climate change mitigation, innovative “green” development and energy security) and “Realpolitik” objectives (supporting agricultural constituencies). Such mismatches should be avoided. In particular, resorting to allegedly environmental causes for protection of national agriculture is at odds with the principles of the World Trade Organization (WTO).
- In addressing the frequently cited objectives of government support to biofuels, preference over subsidies should be given to first-best (i.e., market-based) solutions, including, but not limited to, phasing out support to fossil fuels and pricing carbon effectively through carbon caps and/or taxes.
- Governments need to assure good governance and base their decisions on evidence from independent research. In cases of uncertainty about biofuels’ performance, especially with respect to indirect land use change and the food vs. fuel debate, decisions should be guided by the Precautionary Principle.
- Governments should phase out support to biofuels that a) compete with food or animal-feed uses for the same feedstock crops and/or b) have negative impacts on the environment.





Rationale and Objective of the Policy Brief

Government support to biofuels through subsidies and blending mandates¹ has become one of the most controversial environmental policies in recent years not only in the EU, U.S. and other OECD countries (Hirschl, Kaphengst, Neumann, & Umpfenbach, 2012), but also in developing economies (Stromberg, Gasparatos, Lee, Garcia-Ulloa, Koh, & Takeuchi, 2010).

The criticism around the limited ability of biofuel policies to deliver against their stated policy aims—in addition to their unintended negative consequences—has recently led to a substantial revision of policy-makers' approach to biofuels. At the end of 2011, the U.S. Congress let lapse a few important ethanol subsidies such as the Volumetric Ethanol Excise Tax Credit and the Small Ethanol Producer Credit. In September 2012, both France and Austria announced plans to freeze the use of biofuels from food crops at current levels. On October 17, 2012, the European Commission released a proposal to limit the use of food-based² biofuels to 5 per cent until 2020 in contributing to the 10 per cent target of renewable energy in transport ("Proposal for a directive," 2012), which is subject to adoption by the European Parliament and the Council.

Predictably, these policy U-turns have caused a new wave of heated debates about the costs and benefits of government support to biofuels (Dunmore & Lewis, 2012; Chaffin, 2012). The global market for biofuels, which was worth US\$83 billion in 2011 (Pernick, Wilder, & Winnie, 2012), has been largely artificially created by government support estimated at US\$24 billion in the same year. The largest share of subsidies, US\$11 billion, was provided in the EU, followed by US\$8 billion in the United States (International Energy Agency (IEA), 2012). Removing all or some of this support means making the biofuel industry far less competitive (IEA, 2011), which explains the massive resistance to change.

*People who love soft methods and hate iniquity forget this—
that reform consists in taking a bone from a dog.*

John Jay Chapman (1898)

The objective of this policy brief is to provide policy-makers with a summary of governance lessons that can be learned from the experiences of state support to biofuels. In contrast to highly specialized discussions of environmental and economic aspects of various biofuels, this policy brief is written in non-technical language and is structured around "cautionary tales."

This policy brief builds on the longstanding research that IISD-GSI has undertaken since 2006 in order to investigate and promote reform of subsidies that have negative economic, social or environmental impacts. The publication is a product of the IISD-GSI project "Exploring the Political Economy of Biofuel Subsidies" funded by Nestlé S.A. and implemented in September–December 2012. The project forms part of IISD-GSI's continued efforts to facilitate discussion among all stakeholders with the view to finding a politically feasible, economically expedient and environmentally sound mix of biofuel policies in major biofuel producing countries, particularly the EU.

¹ In market support terms, mandatory blending requirements provide the same benefits to the biofuels industry as direct budgetary transfers or tax breaks. For a recent discussion of subsidy definitions see IISD-GSI's report "State of Play on Biofuel Subsidies: Are policies ready to shift?" (Gerasimchuk, Bridle, Beaton, & Charles, 2012).

² "Food-based biofuels" is the term used by the European Commission in the official press-release (European Commission, 2012). Most conventional biofuels are "food-based." For more details on the distinctions between the terms "conventional" (First generation) and "advanced" biofuels (Second and third generation) see Gerasimchuk, Bridle, Beaton, & Charles, 2012.



In particular, this policy brief succeeds the previous IISD-GSI report on the subject, “State of Play on Biofuel Subsidies: Are policies ready to Shift?” (Gerasimchuk, Bridle, Beaton, & Charles, 2012) commissioned by Nestlé S.A. to support a special discussion on biofuel policies that the company organized on the Business Day at the UN Conference on Sustainable Development Rio+20 on June 18, 2012.³

Research Approach and Scope

The paper draws both on a review of media reports and professional literature on recent changes in biofuel policies and semi-structured interviews with 19 experts from various backgrounds. Four of the interviewees have also acted as anonymous peer-reviewers of the policy brief. The authors express their gratitude to both interviewees and peer-reviewers for their insights and cooperation, without which this policy brief would not have been possible. The views expressed in this policy brief are the sole responsibility of its authors and should not be attributed to any organizations with whom IISD-GSI has liaised in the course of the aforementioned project.

The scope of the policy brief is global. However, due to its importance and timing, particular attention is paid to the situation around the European Commission’s legislative proposal of October 17, 2012.

The interviews were conducted in September–October 2012 on condition of confidentiality. Table 1 anonymously describes the sample of 19 interviewees which was formed using the snowballing technique. The objective of sampling was to ensure representation of each of the major stakeholder groups, including from a geographical perspective, but eventually also depended on the interview candidates’ availability and willingness to participate in the study. Annex I contains the interview’s questionnaire. Throughout the brief, this source of knowledge is referred to as “Interviewees, 2012.”

TABLE 1: SAMPLE OF ORGANIZATIONS’ REPRESENTATIVES INTERVIEWED FOR THE POLICY BRIEF

	INDUSTRY	CIVIL SOCIETY	GOVERNMENT AND IGOs	ACADEMIA
Global	2 multi-brand companies	1 NGO	1 transport IGO 1 universal IGO	-
EU	1 biofuels industry association	4 NGOs	1 government	1 research centre
US	1 biofuels company	1 NGO	-	1 university research centre
Brazil	1 biofuels industry association	1 NGO	-	-
South East Asia	1 industry association	-	1 government	2 university research centres

Source: IISD-GSI

³ A video of the discussion can be viewed at <http://www.iisd.org/gsi/news/side-event-are-biofuel-subsidies-ready-shift>.



The Context of Biofuel Subsidies

Subsidies are often considered the currency of politics and are used to channel resources to interest groups which have influence over a policy-makers' staying in power (Victor, 2009). This makes biofuel subsidies a particularly important tool in securing the support of rural constituencies that are traditionally important in virtually all countries (Interviewees, 2012). These rural continuances extend far beyond farmers and include land owners who benefit, as subsidies are capitalized in the value of land.

In making their decisions on granting subsidies, policy-makers are often poorly informed about their costs and benefits, and these knowledge gaps are opportune for lobbying (Helm, 2010). The IISD-GSI efforts to quantify and assess the cost-effectiveness of biofuel subsidies in different countries have constantly faced data deficiency and lack of transparency in this policy area (Jung, Dörrenberg, Rauch, & Thöne, 2010; Steenblik, 2007; Gerasimchuk, Bridle, Beaton, & Charles, 2012).

In the U.S., the electoral system may inadvertently create the opportunity and motivation for democratically elected officials to deliver significant subsidies to the biofuels sector. For example, Iowa, a large corn-growing state and producer of biofuels, hosts one of the first primaries of the U.S. presidential elections, which makes it a strategic state in the political calculations of Democratic and Republican parties and an important jurisdiction to win favour with constituents.

First generation ethanol I think was a mistake ... One of the reasons I made that mistake is that I paid particular attention to the farmers in my home state of Tennessee, and I had a certain fondness for the farmers in the state of Iowa because I was about to run for president.

Al Gore, 2010

Subsidies to biofuels are also gaining political significance as all governments are faced with increasing pressures from the WTO to constrain their agricultural subsidies (Harmer, 2009; Doornbosch & Steenblik, 2007; Josling, Blandford, & Earley, 2010). In particular, in the EU the issues of compliance with the stricter WTO rules have been addressed through the reform of Common Agricultural policy (CAP) and phasing out some agricultural support. Biofuel subsidies can be traced to the quest for its partial replacement in the EU (Interviewees, 2012; Kutas, Lindberg, & Steenblik, 2007).

In developing economies, biofuels have been praised by policy-makers as new "cash crops" that can increase farmers' incomes and provide "a chance to enhance growth in many of the world's poorest countries" (Diouf, 2007). But the political economy of biofuel subsidies often extends beyond national borders. In particular, many researchers point at the emerging alliances among governments in both developed and developing countries, local firms and multinational corporations with strong biofuel interests such as Cargill or ADM-Kuck-Wilmar (Borras Jr., McMichael, & Scoones, 2010).



A Cautionary Tale about National Subsidies and Global Markets

The political demand for subsidies is at odds with the logic of competitive markets that are by and large considered to be the first-best method of allocating resources.⁴ Under this rationale, government subsidies as well as any other interventions in markets (also referred to as “second-best solutions”) are justified only when there are “well-reasoned arguments and persuasive evidence” that markets fail to make price signals reflect particular goods’ objective costs and benefits to society (Lipsey, 2007).

Table 2 provides an analysis of the objectives of government support to biofuels. It is noteworthy that while all countries have pursued multiple objectives from the list below, in individual economies only some of these objectives might have played a decisive role. For instance, the dominant objectives in the EU, U.S. and Brazil have been, respectively: reduction of greenhouse gas emissions, rural development and improvements in energy security (Interviewees, 2012).

However, the growing body of research (as well as the interviews conducted for this policy brief) indicates a frequent mismatch between the “Realpolitik” objectives of biofuel policies and their officially stated aims. This mismatch is aggravated by two factors.

First, due to cost differentials, biofuels produced in the EU are less price-competitive than those produced in developing countries and the U.S. Based on data from OECD-FAO, 2012, and complementary to the text box below, Figure 1 visualizes this situation in more detail. In 2010,⁵ only three countries were above the diagonal line of covering their consumption with domestic production: the U.S. (for both ethanol and biodiesel), Brazil and China (both for ethanol only). The EU “ducked” significantly below the line, covering about 20 per cent of its biofuel needs by imports. Further, the trade flow situation varies in different years, and it is likely that in 2011–2012 the gap between biofuel consumption and production in the EU widened. Figure 2 uses a different data source (BP, 2012) to illustrate the drop in biofuel production in individual EU countries in 2011 which, year-on-year, amounted to 38.7 per cent in Spain, 31.9 per cent in Italy and 14.4 per cent in France.

Secondly, the mismatch between official and real objectives is reinforced by the fact that different feedstocks, particularly those traditionally grown in the EU (e.g., rapeseed for biodiesel), the U.S. (corn for ethanol) and Brazil (sugar cane for ethanol) perform differently against the above policy objectives, especially in terms of their carbon emissions and indirect land use change factors.⁶

⁴ Discussion of theoretical approaches to economic policy-making is largely beyond the scope of this policy brief. The rationale of first- and second-best options of resource allocations is widely discussed in academic literature, including Smith (1904) and Lipsey & Lancaster (1956–57).

⁵ The last year for which data were available for the major players (except Argentina and Thailand).

⁶ A detailed discussion of feedstock characteristics is beyond the scope of this policy brief. For more detail, see Laborde, 2011; IEA, 2011; IPCC, 2011; and Bowyer & Kretschmer, 2011.



TABLE 2: FIRST- AND SECOND-BEST OPTIONS TO MEET SELECTED POLICY OBJECTIVES AND THE ROLE OF BIOFUEL POLICIES AMONG THESE OPTIONS

	IS THERE A MARKET FAILURE IN RESOURCE ALLOCATION?	WHAT CAN BE THE FIRST-BEST APPROACH, BASED ON THE FREE INTERNATIONAL MARKET?	WHAT CAN BE THE SECOND-BEST APPROACH (GOVERNMENT INTERVENTIONS)?
Reduction of greenhouse gas emissions and air pollution	Yes, market prices do not reflect these negative environmental externalities.	<p>Case for gov't intervention</p> <ul style="list-style-type: none"> Phase out support to fossil fuels Internalize negative externalities through an effective cap-and-trade or carbon tax, or a combination of the two 	<p>Case for 2nd best if 1st best fails</p> <ul style="list-style-type: none"> Support a mix of low-carbon policies such as climate-friendly biofuels and renewable energy sources, fuel-efficiency, electric cars, public transport, etc. or purchase emission reductions internationally Case for support specifically to climate-friendly biofuels for uses where there are fewer alternatives to liquid fuels
Stimulation of innovations	There is both academic and practical debate whether or not there is a market failure, but overall government support for R&D is considered to be legitimate given that private R&D is generally less than optimal.	<p>Case for gov't intervention</p> <ul style="list-style-type: none"> Phase out support to mature technologies and industries, including conventional biofuels Improve conditions under which innovators can internalize positive externalities resulting from their work 	<p>Case for 2nd best if 1st best fails</p> <ul style="list-style-type: none"> Support a mix of innovations and infant industries Case for support to specific cases is complicated as it is difficult for governments to "pick the right winners," e.g., choose between specific advanced biofuels and specific advanced public transport solutions
Agricultural and rural development	Generally there is no market failure, although there are exceptions that are accounted for by the WTO rules.	<p>No case for gov't intervention</p> <ul style="list-style-type: none"> Regular government functions, including compliance with WTO rules 	
Diversification from oil as the base for liquid fuels in the interests of energy security	No, the market prices for oil have an upward trend, reflecting its depletion.	<p>No case for gov't intervention</p> <ul style="list-style-type: none"> Regular government functions, including Improving transparency over the remaining fossil fuels reserves 	

Source: IISD-GSI interpretation based on Purkus, Gawel, & Thrän (2012) and Interviewees (2012)



Selected crops used as feedstock for ethanol \diamond production:



Sugar cane Sugar beet Corn Wheat

Selected crops used as feedstock for biodiesel \triangle production:



Rapeseed Soybeans

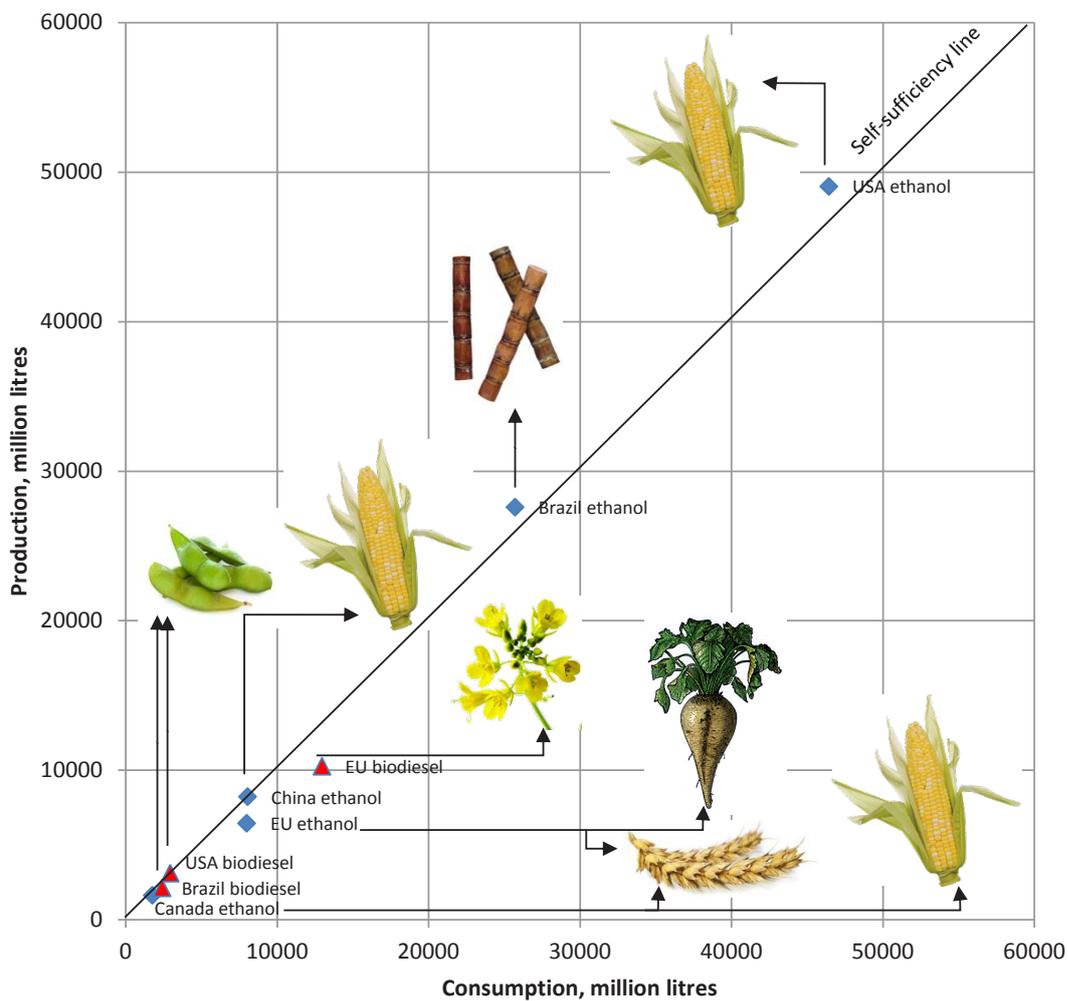


FIGURE 1: BIOFUELS' PRINCIPLE FEEDSTOCK, PRODUCTION AND CONSUMPTION IN SELECTED ECONOMIES IN 2010.

Source: IISD-GSI visualization of data from OECD-FAO, 2012; F.O. Licht, 2012.



Many interviewees from the EU shared an impression that there are only three jurisdictions that drive the global biofuels market: the U.S., Brazil and the EU. Indeed, in 2011 these accounted for 48 per cent, 22.4 per cent and 16.5 per cent of global biofuels production respectively (BP, 2012). But in reality there are more players in the global biofuel market. Argentina produces more biofuels (3.8 per cent of the world's total) than France (2.9 per cent) and Italy (0.8 per cent) combined. Thailand produces the same amount of biofuels as Canada (1.6 per cent), which is significantly larger than Spain's output (1.3 per cent) (BP, 2012).

Thus, the growing trade in biofuels and biofuel feedstocks has redirected to foreign producers some of the financial flows that policy-makers designed to benefit their constituencies. Policy-makers have reacted with a set of regulations trying to re-target the subsidies to domestic agriculture. But this second-best option is not justified, in particular, under the WTO rules, since first-best options do include international trade. In particular, Argentina complained against Spain in the WTO over discrimination against its exports of biodiesel (Agra-net.com, 2012) while Indonesia and Malaysia voiced similar concerns over losing access to the European and American markets for palm oil (used as feedstock for biodiesel) (BioRes, 2012; AgroAsia, 2012).

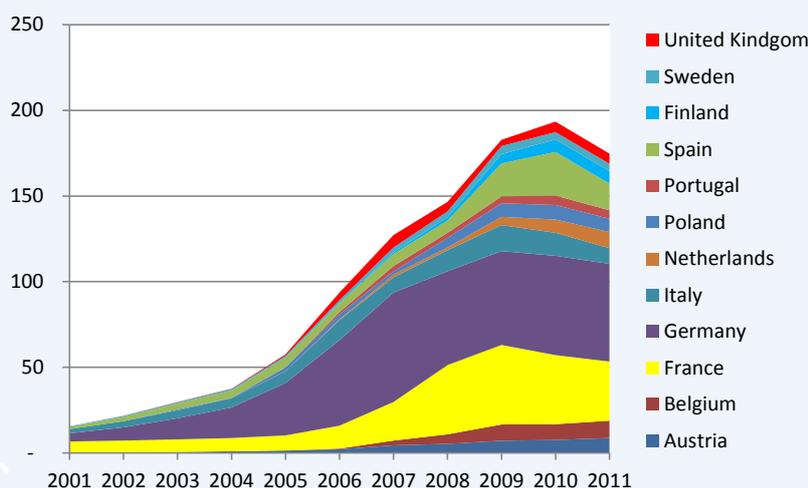


FIGURE 2: BIOFUELS' OUTPUT BY MAJOR EU PRODUCERS FROM 2001-2011, THOUSAND BARRELS DAILY

Source: IISD-GSI visualization of data from BP, 2012.

To conclude this cautionary tale, in a globalized world, the mismatch between the officially stated aims and the “Realpolitik” rationale behind biofuel—or any other economic—policies becomes less and less acceptable. Agricultural and rural development can be the objectives behind subsidies only in cases stipulated by the WTO, which is why the case for “security of supply” is even less clear.

If policy-makers are genuinely concerned about the environment and “green” innovative development, they should consider the available options in their entirety. The first-best options include the phase out of support to fossil fuels, which is estimated at between US\$45–75 billion a year in OECD countries (OECD/IEA, 2011) and US\$523 billion in 2011 in non-OECD countries (IEA, 2012). The first-best options also include pricing carbon properly by improving and extending the existing cap-and-trade systems such as the European Emissions Trading Scheme and implementing robust carbon taxes, phasing out support to mature technologies and industries, including conventional biofuels, and improving conditions under which innovators can internalize positive externalities resulting from their work.



A Cautionary Tale About the Precautionary Principle

As discussed above, and in Table 2 in particular, government support to biofuels can be justified in cases where the first-best approaches fail. But there is “the cautionary warning from second best theory that any policy may have unexpected and undesirable consequences in apparently unrelated parts of the economy that need to be watched for and mitigated where necessary” (Lipse, 2007).

Among various second-best options, subsidies in particular encourage rent-seeking behaviour and thus virtually always produce unintended recipients and negative effects because governments are generally held to be influenced by lobbying (IISD-GSI, 2010).

Ethanol is like cholesterol. There is good ethanol and bad ethanol. Good ethanol helps clean up the planet and is competitive. Bad ethanol comes with the fat of subsidies.

Lula da Silva, 2008

The difficulty of public policy evaluations lies with proving and quantifying cause-and-effect relationships between biofuel subsidies and their positive or negative outcomes. Academic research uses different econometric models to explore cause-and-effect relationships between biofuel subsidies and environmental effects (Bowyer & Kretschmer, 2011), food prices (Durham, Davies, & Bhattacharyya, 2012; Kretschmer, Bowyer, & Buckwell, 2012), vulnerability of poor households in developing countries (Huang, Yang, Msangi, Rozelle, & Weersink, 2012) and other dependent variables. However, the outcome of such research always produces a range of estimates within certain confidence intervals (always less than 100 per cent), which may serve as a basis for conflicting policy arguments.

For instance, in August 2012 José Graziano da Silva, director-general of the UN Food and Agricultural Organization argued that a suspension of biofuels mandate in the U.S. “would give some respite to the market and allow more of the crop to be channelled towards food and feed uses” in order to lower prices (da Silva, 2012). However, biofuel industry representatives maintain that there is “no convincing case that biofuels are structurally causing higher food prices” and argue that they are driven up by commodities speculation, food waste, increasing demand in emerging markets as well as droughts and other natural disasters (Euractiv.com, 2012). This controversy is explored in more detail below.

In the meantime, while basing policy on evidence in such uncertain cases may be challenging, government support to biofuels is certainly not the only area where decisions have to be taken under uncertainty, i.e., known outcomes with unknown probabilities (Moss & Schneider, 2000).

The only certainty is that nothing is certain.

Pliny the Elder (23–79 AD)

To ensure that both negative and positive impacts of biofuel—or any other—policies on potential stakeholders are taken into account, the following principles should be observed (Myers & Kent, 2001; NEAA, 2008; Interviewees, 2012):

1. **The four pillars of good governance under the Aarhus convention**, namely: a) transparency of decision making; b) broad participation of stakeholders in decision making; c) access to justice for all stakeholders; d) accountability of decision-makers (Aarhus convention, 1998).
2. **Continued efforts to reduce uncertainty** through research that should be independent from interest groups and should be periodically reviewed (Frey, 1992).



3. **The Precautionary Principle**, which states that “when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically” (The Wingspread Consensus Statement on the Precautionary Principle, 1998). This Principle is binding for all countries that have signed and ratified the Rio Declaration on Environment and Development (Tickner, Raffensperger, & Myers, n.d.) and has taken the form of Article 191 of the Treaty on the Functioning of the EU (Consolidated version of the Treaty on the Functioning of the European Union, 2008). In the meantime, the Precautionary Principle can be expanded beyond the environmental and health effects to other policy spheres.

Figure 3 uses the Precautionary Principle to summarize both literature and interviews conducted under the current project to map key stakeholders affected by biofuel subsidies. The picture uses the colour yellow to designate stakeholders who are positively affected by measures of government support to biofuels and dark red to mark those who are negatively affected. Mixed colours stand for mixed impacts. The text box on the following page provides a brief narrative explanation of the figure.

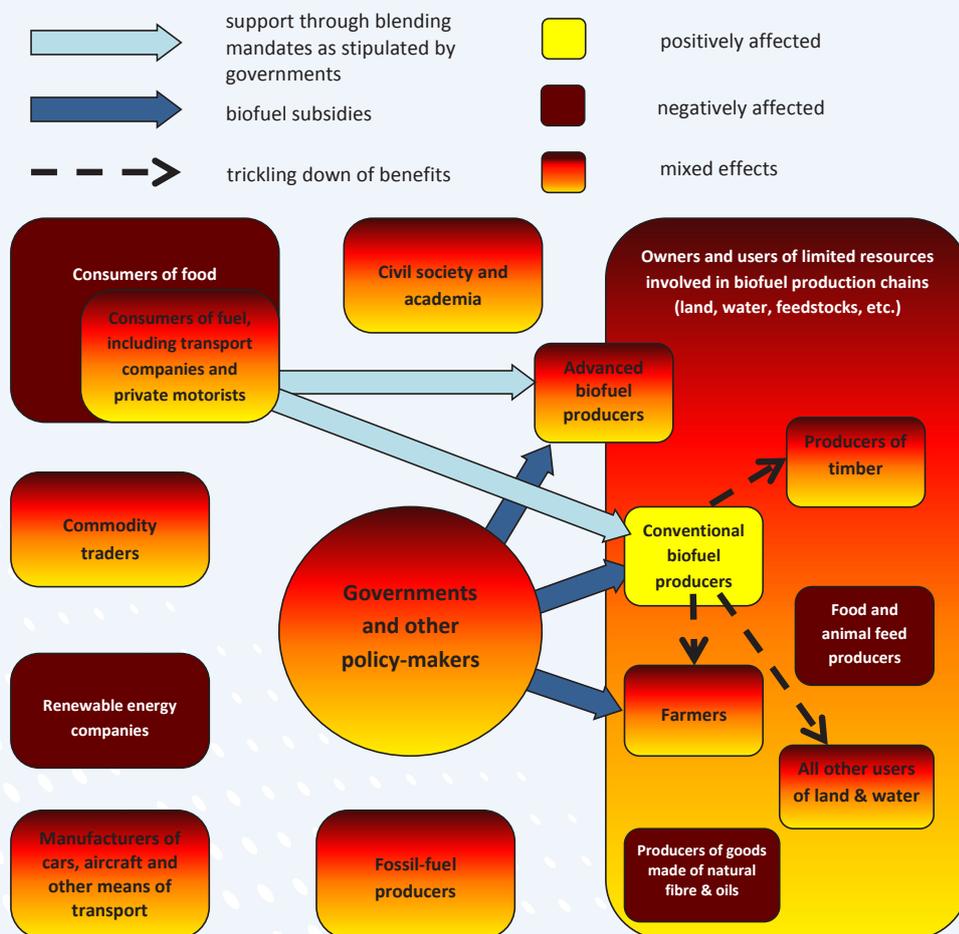


FIGURE 3: THE “PRECAUTIONARY PRINCIPLE” MAP OF KEY STAKEHOLDERS WHO ARE AFFECTED BY GOVERNMENTS SUPPORT TO BIOFUELS IN A POSITIVE, NEGATIVE OR MIXED WAY

Source: IISD–GSI visualization based on Interviewees, 2012; Koplow, 2007; Sharman & Holmes, 2010.



Conventional (mainly “food-based”) biofuel producers are the main intended beneficiaries of biofuel subsidies.

Advanced biofuel producers, if not specifically singled out as a target group for biofuel subsidies, may fail to benefit from the measures of government support such as blending mandates, since these benefits will be mostly captured by the more cost-competitive conventional biofuels.

Farmers benefit from biofuel subsidies if they grow biofuels. If they grow other crops, they may experience negative impacts due to higher costs of production factors driven by the biofuels market.

Producers of timber may benefit from biofuel subsidies through additional sale of their byproducts for biofuel production. There are also reports of companies obtaining permission for clearing woodlands officially for biofuel plantations, but in fact for the purpose of timber harvesting. On the negative side, sustainable foresters experience increasing pressures from the biofuels industry’s demand for land.

Food and animal-feed producers as well as **producers of goods made of natural fibre and oils** experience negative impacts due to higher costs of production factors driven by the biofuels market.

All other users of land, water and other agricultural production factors may experience mixed impacts as biofuel subsidies become gradually capitalized in the value of these assets.

Consumers of food, which is an all-inclusive stakeholder category, are negatively affected by the rising prices of food driven by the biofuels market. The higher the share of staple foods in their diet (i.e., the poorer the consumers) the more severely they are affected.

Consumers of fuel, including transport companies and private motorists, bear the cost of meeting the biofuel mandatory blending requirements. However, they may also incur some benefits in terms of emissions reductions if under pressure of environmental targets.

Producers of fossil (especially oil-based) fuels usually lose part of their market to biofuels due to subsidies. But they benefit from the biofuel subsidies’ effect of conserving transport based on internal combustion engines rather than electric, hydrogen cell or other modes of transport.

Manufacturers of cars, aircraft and other means of transport, experience mixed effects from biofuel subsidies both for technological reasons⁷ and depending on whether or not their products are oriented to liquid fuels.

Renewable energy companies experience additional competition on costs with biofuels if the distribution of government support to different types of renewables and biofuels is not balanced.

Civil society and academia are divided over the positive and negative effects of biofuel subsidies.

Commodity traders can largely balance negative and positive price effects.

Governments and other policy-makers experience mixed effects depending on their policy objectives and the composition of their constituencies.

⁷ For more details see, for instance, ACEA, 2012.



The Precautionary Principle is often ignored by policy-makers, and government policies to support biofuels also suffer from this mistake. In particular, the 10 per cent target for renewable (that is, mostly biofuel) energy use in transport was introduced in 2009 despite well-balanced reports on the possible negative effects of such policies, in particular, the 2008 cost-benefit analysis study of the European Commission's Joint Research Centre (Edwards, Szekeres, Neuwahl, & Mahieu, 2008). But as the negative effects of government support to biofuels manifest themselves, governments are faced with the need to undertake a U-turn on their policies.

This experience presents policy-makers with a cautionary tale underscoring the importance of the Precautionary Principle and other pillars of good governance, such as transparency of decision making and basing policies on broad consultations with all intended and unintended stakeholders as well as scientific evidence gathered and reviewed by independent research institutions.

A Cautionary Tale About the Systemic Nature of the “Food vs. Fuel” Debate

The debate over the impact of subsidized biofuel production on food prices spiked in 2006–2008 and was reinforced in 2012 against the background of falling crop yields caused by droughts. Many of the robust modelling exercises indicate that it is highly probable that diversion of significant volumes of feedstock in a market that is already strained by other factors has considerable impact on food prices, particularly on prices of staple foods.⁸

Transforming food into fuels is a monstrosity . . . [It is] killing the poor masses through hunger.

Fidel Castro, 2007

Castro was right.

The Economist, 2007

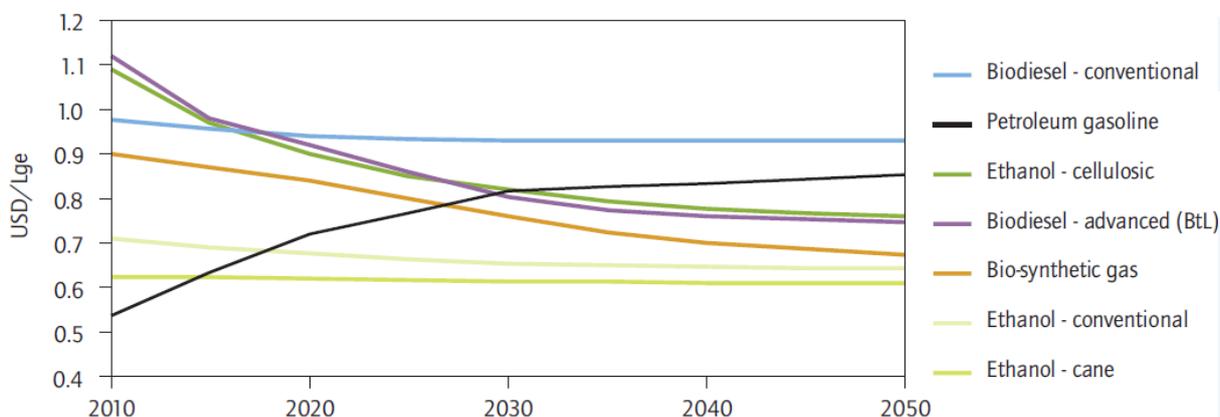
The message of this cautionary tale is different and consists in the premise that the biofuel support policies might have just accelerated the advent of the “food vs. fuel” controversy that was on its way in any case as fossil-fuel prices have an upward trend due to the depletion of non-renewable resource base. There are different scenarios of when prices for oil-based fuels and biofuels may reach a break-even point as illustrated, for instance, in Figure 4. But all scenarios show that this point will be reached, and at this point the market forces, without any subsidies, will start diverting biomass, including food crops, for biofuel production.

Government support to biofuels simply aims to replace oil-based liquid fuels with biodiesel and ethanol and thus conserve the combustion engine without stimulating energy savings or innovative solutions such as commercialization of electric or hydrogen cell cars. In order to avoid much stronger negative effects on food markets and land use change in the future, the governments should prioritize policies that reduce the demand for liquid fuels and energy.

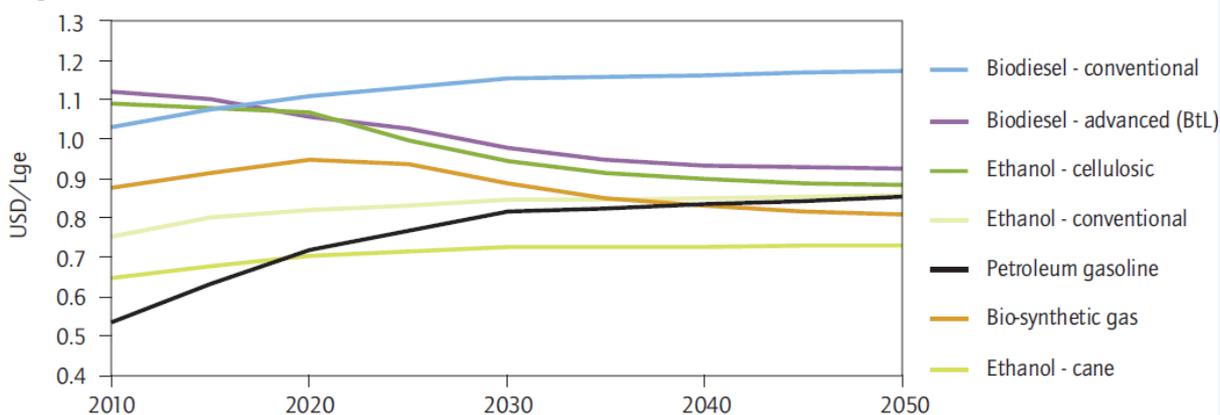
⁸ Discussion of the accuracy of various models' tests of the cause-and-effect relationship between stimulated demand for biofuels and food price hikes in 2006–2012 is beyond the scope of this policy brief and can be found elsewhere, i.e., Durham, Davies, & Bhattacharyya, (2012) and Kretschmer, Bowyer, & Buckwell (2012).



Low-cost scenario



High-cost scenario



Note: costs reflect global average retail price without taxation. Regional differences can occur depending on feedstock prices and other cost factors.

FIGURE 4: COSTS OF DIFFERENT BIOFUELS COMPARED TO PETROLEUM GASOLINE

Source: IEA, 2011. Reproduced with the permission of IEA.

Recent developments in government support to biofuels have staged the unique experiment of testing the existing relationships in the commodity markets. The outcomes of this experiment should be incorporated into long-term policy visions and prove the case for improving the governance of commodity and food markets in general.

In particular, in 2011, a group of key international organizations released a report entitled “Price Volatility in Food and Agricultural Markets” (FAO et al., 2011) that stressed that government-imposed consumption mandates aggravate the price inelasticity of demand that contributes to volatility in agricultural prices. The report recommended that G-20 governments should “remove provisions of current national policies that subsidize (or mandate) biofuels production or consumption.” However, in recognition of the political economy challenges of such a step, the recommendation also provided for a “second-best option”: when global markets are under pressure and food supplies are endangered, the countries should replace the rigid biofuel production or consumption targets with more flexible arrangements.



The reference point in this respect is Brazil, which uses flexible biofuel support policies to reconcile its interests in both remaining the world's largest exporter of sugar and increasing the share of bioethanol from sugar cane in the domestic transport fuel mix.

The price mechanics of the food and fuel markets' interactions are yet to be fully understood. But it is clear that, in the light of both market and government failures, the challenges of optimal resource allocation between food-and-feed and fuel uses of crops will require a politically feasible, economically expedient and environmentally sound mix of both first-best and second-best options in the light of the key governance principles discussed above.

Concluding Policy Recommendations

Good governance is key to adequately addressing the pressures of various players on both global commodity markets and national markets of public choice. Government support to biofuels is only one case, albeit an extremely illustrative and interesting one. The recommendations that can be drawn from the cautionary tales summarized in the Policy Brief suggest that it is advisable for policy-makers to:

- **Avoid possible mismatches between the stated aims and the “Realpolitik” objectives behind biofuel policies.** Resorting to allegedly environmental causes for protection of national agriculture is at odds with the principles of the WTO and the logic of first-best (market-based) solutions for addressing environmental problems.
- **Consider first-best (market-based) options for addressing the frequently cited objectives of government support to biofuels:** reduction of greenhouse gas emissions and air pollution, stimulation of innovation, agricultural and rural development, and diversification from non-renewable fossil fuels in the interests of energy security. These first-best options include, but are not limited to: phasing out support to fossil fuels, pricing carbon effectively either through improving and extending the existing carbon cap-and-trade systems such as the European Emissions Trading Scheme or implementing robust carbon taxes, phasing out support to mature technologies and industries (including conventional biofuels), and improving conditions under which innovators can internalize positive externalities resulting from their work. Unlike biofuel subsidies, these first-best solutions focus on encouraging energy savings rather than just replacing oil-based fuels with biodiesel and ethanol without curbing demand for energy.
- **Assure good governance in designing measures of interventions with the biofuel markets in cases where government failure precludes or hinders the use of first-best options.** The four pillars of good governance are: a) transparency of decision making; b) broad participation of stakeholders in decision making; c) access to justice for all stakeholders; d) accountability of decision-makers. Good governance also requires continued efforts to reduce uncertainty through research that should be independent from interest groups and should be periodically reviewed. Finally, good governance hinges on the application of the Precautionary Principle which states that “when an activity raises threats of harm . . . precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically”. In terms of biofuels, the Precautionary Principle is particularly relevant in dealing with uncertainty around biofuel policies' impacts on indirect land use change and food price hikes.



- **Think in the longer-term and phase out support to conventional biofuels.** In the short term, governments should abstain from introducing new forms of government support to conventional biofuels and replace the rigid biofuel production or consumption mandates and targets with more flexible arrangements in order not to block interactions between the global markets of biofuels, food, animal-feed and related products during the periods when food supplies are endangered and there is a threat of food price hikes. In the middle term, governments should establish and implement a plan for removing national policies that support consumption or production of biofuels that a) compete with food uses for the same feedstock crops and/or b) have negative impacts on the environment.

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Annex I. Questionnaire for Semi-Structured Stakeholders Interviews for the Project “Exploring the Political Economy of Biofuel Subsidies”

Q1. The stated policy objectives of biofuel developments are creating jobs, mitigating climate change and ensuring energy security. Which objective of biofuel policies has been most important politically? And which objective should be most important in your own opinion?

Q2. Scientifically, there is still a lot uncertainty about the effects of biofuels' development on job creation, climate change and food prices. Both proponents and opponents of biofuels development have presented reports on benefits and costs of biofuels with contradicting conclusions (from “biofuels are panacea” to “biofuels are evil”). In this situation, what would be your advice to policy-makers on the criteria against which they can take informed decisions on biofuel policies under uncertainty?

Q3. What criteria should be used to evaluate effectiveness of biofuel policies?

Q4. France and Austria have recently taken a U-turn on their biofuel targets, and on October 17 the European Commission released a legislative proposal to impose a 5 per cent cap on crop-based biofuels in contributing to the 10 per cent target of renewable energy in transport. In your opinion, what stakeholders and in which countries will suffer most from such a U-turn in the biofuel policies?

Q5. What policies or steps could be taken to mitigate any negative impacts of biofuel subsidy reform on the biofuels industry? (Optional follow-up question: In your opinion, what could be realistic alternative uses of the existing refining capacity for conventional biofuels?)

Q6. Beyond the biofuels industry, may biofuel subsidy reform have negative impacts on other stakeholders? Who are they?

Q7. What have been the major barriers to reducing the costs of conventional biofuels production in the U.S. and Europe? Is it plausible to assume that the same cost determinants will apply to advanced biofuels? (Optional follow-up question: is there a way to minimize risks relating to stranded capital or investments for advanced biofuels?)

Q8. Beyond the distinction between conventional and advanced biofuels, do you think there are other expedient ways to target government support to particular types of biofuels or biofuel producers? How detailed can governments go in determining what is a 'good' or 'bad' biofuel?

Q9. Do you have any suggestions for restructuring/altering biofuel consumption mandates in the EU, U.S. and other countries?

Q10. In your opinion, do politicians and governments undertake sufficient stakeholder consultations to form an informed opinion about which way biofuel policies should go? On what levels does participation take place? On what levels is there a lack of consultation? Could you give examples of bad and good practice of stakeholder dialogue for the countries/regions you are most familiar with? Any particular events?

Q11. Could you describe the main approaches the biofuels industry has adopted in communicating to governments the type of policies they would like, and communicating to government what the consequences may be if government subsidies are reduced or removed?

Q12. What is your forecast of the development of the debate over reducing government support to biofuels by the end of 2012? In three years? What peculiarities do you expect this debate will have in the U.S.? In Brazil? In developing countries? In the EU? (Optional follow-up questions: in the EU, do you think there will be a renegotiation of proposed the 5 per cent cap in the EU? If yes, what cap do you think it will lead to eventually and why?)

THANK YOU!



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