



Should We be Concerned about Competition between Food and Fuel?

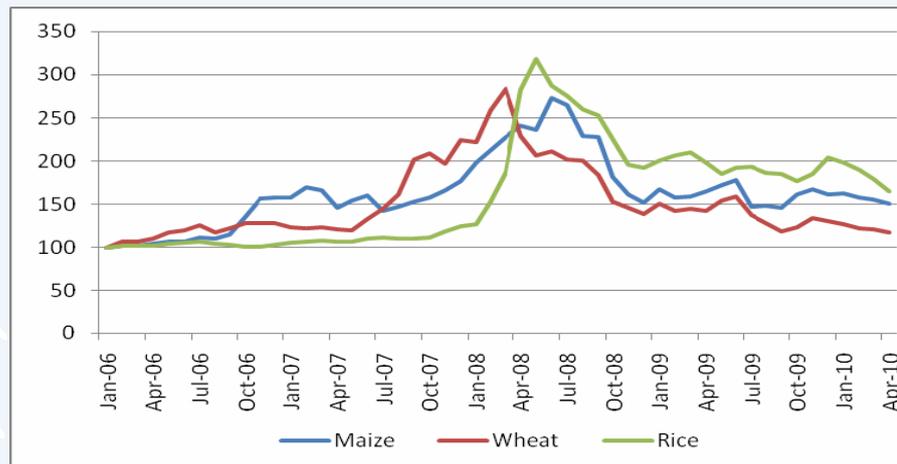
Analysis of biofuel consumption mandates in the European Union and the United States

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Introduction

From 2006 to 2008, in spite of worldwide record crops, global prices for traded food commodities, such as wheat, reached record price highs (World Bank, 2011). These and subsequent food price spikes have had disturbing consequences for poorer segments of society, who spend a disproportionately high share of their monthly income on food to meet their basic nutritional needs (International Bank for Reconstruction and Development, 2008). Rising prices for cereals and sugars (Overseas Development Institute, 2008) corresponded with a significant increase in global biofuel production and the introduction of government targets mandating the growing use of biofuels in transport fuel markets (Jung, Dörenberg, Rauch & Thöne, 2010). Figure 1 illustrates these price increases.

FIGURE 1 WORLD PRICE INDICES OF SELECTED CEREALS: JANUARY 2006–APRIL 2010



Source: Food and Agriculture Organization (FAO) (2010)



International attention was refocused on the relationship between biofuels and food commodity prices when a leaked internal World Bank study attributed 70–75 per cent of the 2006–2008 increases in food commodity prices to biofuels (Chakraborty, 2011). The study linked increased biofuel production in a number of key countries to the diversion of traditional food commodities for use as bio-feedstock (Mitchel, 2008). Food crops such as sugarcane, corn and wheat can be converted through a production process into ethanol, while feedstocks such as soybeans and palm oil can be converted into biodiesel. The “food versus fuel” debate has become an international issue, focusing on the question of whether expanding biofuels markets are resulting in farmers producing crops for biofuels at the expense of food and animal feed (Rosillo-Callé & Tschirley, 2010).

In examining the linkages between the demand for biofuels and increasing food prices, biofuel mandates are identified in the literature as the preferred policy mechanism used by governments to support the biofuels industry (Jung et al., 2010). Lane (2011) identified at least 25 countries that had implemented biofuel consumption mandates or blending targets by June 2011. The consumption mandates adopted by the United States through the Renewable Fuel Standard (RFS) and the European Union’s Renewable Energy Directive (RED) will arguably have the most significant impact on future global demand for biofuel and feedstocks (Mitchel, 2008). The role of consumption mandates is therefore an important one in the context of understanding biofuels’ impact on rising food prices.

This policy brief examines whether *biofuel consumption mandates in the European Union and United States play a significant role in increasing global food commodity prices*. Findings from studies evaluating the influence of biofuels in previous food price spikes and modelling assessing their potential future impact on food commodity prices will be reviewed. In particular, the policy brief will highlight the size of the consumption mandates in the United States and the European Union and how they interact with food commodity markets. It is recognized that expanding biofuel production is only one of a number of factors, such as extreme weather-related production problems and market speculation, contributing to rising food commodity prices. See Gerber, Eckert & Breuer (2008) for a more in-depth discussion on other contributing factors. Due to the complexity of global food commodity markets, it is difficult to isolate the role of biofuels and mitigate any negative impact they may have. However, this policy brief provides some policy recommendations that could help ease any negative impact increasing biofuel consumption could have on rising food commodity prices.

An Overview of the United States’ and the European Union’s Consumption Mandates

The following table summarizes the key characteristics of the United States and European Union markets, which currently account for 62 per cent of global biofuel consumption (International Energy Agency [IEA], 2010).

	EUROPEAN UNION	UNITED STATES
2009 national subsidies (IEA, 2010)	US\$7.9 billion	US\$8.1 billion
Overarching energy legislation	RED 2009/28/EC, 10 per cent target for renewable energy in transport fuels by 2020	The Energy Independence and Security Act, 2007 (EISA)
Implementation policies	Fuel Quality Directive (FQD) 2009/30/EC, Biofuels Directive 2003/30/EC, National consumption mandates	Renewable Fuel Standard (RFS-2) Clean Air Act
Projected annual biofuel production due to consumption mandates	21.2 billion litres of ethanol, 24.4 billion litres of biodiesel in 2019 (Organisation for Economic Co-operation and Development [OECD] and FAO, 2010)	34 billion litres of renewable fuels in 2008, 136 billion litres in 2022 (U.S. Environmental Protection Agency, 2011)



Because of the high fiscal costs of supporting the biofuels industry, the United States and a growing number of European Union Member States have been or are about to phase out tax preferences and subsidies for biofuels, and relying on biofuel consumption mandates to ensure market penetration. Government biofuel consumption targets are now the main domestic policy mechanism supporting rising levels of consumption (Jung et al., 2010).

For the most part, the feedstocks used to produce biofuels meeting these mandates have predominantly been food crops—canola, corn, wheat, soybeans and sugarbeets—crops that are used as staple foods in many societies (Al-Riffai, Dimaranan & Laborde, 2010). A significant amount of research has attempted to model the future supply and demand for these crops, future prices and the role biofuels may play in parallel with other factors (Steenblik, 2007).

What are the Impacts of Biofuels on Food Commodity Prices?

A number of studies by respected intergovernmental organizations have examined the link between increases in food commodity prices in 2006–2008 and expanding biofuel production. A selection of those studies and the weighting assigned to biofuels is provided below.

ORGANIZATION	WEIGHTING (PERCENTAGE) ASSIGNED TO BIOFUELS
The World Bank	70–75 per cent (Mitchel, 2008)
FAO	10–15 per cent (FAO, 2008)
International Food Policy Research Institute	25–30 per cent (Rosegrant, 2008)
OECD	5–16 per cent (OECD, 2008)

The studies found the influence of biofuels on rising food prices ranged from 5 to 75 per cent, depending on the food commodity and country being analyzed. Caution should be exercised when comparing the findings from these studies, as the methodologies and underlying assumptions used to prepare them differ, contributing to divergent results (Gerber, Eckert & Breuer, 2008). Expanding biofuel consumption (underpinned by mandates) was, however, consistently identified as contributing in some way to rising food prices, but given the range of findings it could be concluded there is much less certainty in the literature on the actual role biofuels played vis-à-vis other factors, such as weather-related production shortfalls and short-term market speculation by trading companies buying and selling food commodities on the international market.

Other research has modelled the future effects of European Union and United States mandates on global food prices. Research conducted by Banse, van Meijl & Woltjer (2008) found that the European Union's RED, the United States' RFS and other national mandates would result in cereals increasing in price by 5 per cent and oilseeds by 19 per cent by 2020. Taheripour, Birur, Hertel & Tyner (2008) attempted to isolate the role of biofuel subsidies in the European Union and the United States from other factors, and estimated they would result in increases in the prices of coarse grains in Brazil, the European Union, and the United States by 9.6 per cent, 16 per cent, and 14 per cent, respectively. Gerber et al. (2008) attempted to synthesize the results from a number of reports and observed a general trend that biofuel programs in the European Union and the United States would raise real world prices for vegetable oils by more than 30 per cent and between 3 and 15 per cent for commodities like wheat and corn between 2011 and 2016. The findings from the studies mentioned here do not illustrate the variations in forecasted price increases across agricultural products or countries. These projections are based on a number of assumptions (concerning policies, future fossil-fuel prices, etc.), which the researchers generally acknowledge will change over time and are subject to some uncertainty. There are also complex trading relationships between countries who are both exporters and consumers of biofuels and food commodities, with potential market liberalization being a major factor affecting



feedstock and food commodity prices (Bouët, Dimaranan & Valin, 2010). A full critique of these modelling exercises is outside the scope of this policy brief; however, biofuel production is consistently attributed some role in rising prices for food commodities. But, as these modelling exercises are subject to so many uncertainties, it is difficult to conclude with much confidence what the future impact of biofuel production will be on food prices.

How Do Consumption Mandates for Biofuels Impact Food Commodity Markets?

Some of the factors that may contribute to the effect of the RED and RFS mandates on food prices include:

- * *The speed at which biofuel production has increased over the last decade may have exacerbated food price volatility and contributed to rising food commodity prices* (FAO et al., 2011). Between 2000 and 2009 global biofuel production increased from 0.19 million to 1.1 million barrels per day, equivalent to an almost six-fold increase. The IEA (2010) forecasts production will grow further to 3.5 million barrels per day by 2035. Underpinning the increase in production has been the pace at which consumption mandates have been introduced in Europe and the United States, potentially eroding food inventories before they could be replenished, and reducing the elasticity of global food markets to withstand outside shocks, spikes in demand or unanticipated production shortfalls (FAO et al., 2011).
- * *The rigidity of biofuel consumption targets and the relative inelasticity of agricultural production result in conflict between energy and agricultural markets.* Farmers may not be able to meet short-term increases in demand, as agricultural supply takes time to respond due to the natural time lag associated with crop production and harvesting cycles (Henry, 2010). Demand for biofuels to meet mandates is inelastic in response to price signals relating to feedstocks, as blending volumetric or energetic targets contained in the RED and RFS are fixed. The biofuel consumption targets will remain fixed or rise over time, as they are non-responsive to monthly or annual fluctuations in feedstock production or feedstock prices.

Policy Recommendations for Mitigating the Impact of Consumption Mandates on Food Commodity Markets

Several potential options are being discussed by policy-makers. This policy brief provides two main policy recommendations:

- * *Reduce the rigidity of biofuel consumption targets imposed by mandates to help ease competition between energy and agricultural markets.* Adjusting mandated targets down in response to forecasted supply shortfalls for food commodities could help reduce price volatility. Data or indicators on the health of inventories for food commodities during a fixed period could form the basis for adjusting mandated consumption targets—directing biofuel producers to modify their production levels accordingly (Debusquet, 2011). A clear and transparent framework guiding the application of the adjustment mechanism would be needed to give private agents some predictability in interpreting the policy. Effectively operationalizing such a mechanism across a number of countries would be politically challenging due to: a) strong opposition from the European Union and the United States biofuels industries concerned about their manufacturing base remaining idle if inventories for food commodities were to fall below set thresholds, and b) the need for significant international co-operation to prevent market imbalances and particular countries trying to game the system and increase biofuel production (FAO et al., 2011).



- * *Reporting requirements for the RED and the RFS mandates to include provisions on the use of food crops as feedstocks to ensure the issue of increasing food prices are within a formal reporting structure.* Article 17 of the RED, Sustainability Criteria for Biofuels and Bioliquids (European Commission, 2009), obligates the European Commission to report on the sustainability of biofuels, ensuring cultivation methods for feedstock production meet minimum environmental standards. Article 17 (7) also states that European Commission's pending 2012 report to the European Union parliament should: "if appropriate, propose corrective action, in particular if evidence shows that biofuel production has a significant impact on food prices" (p. L140/38). This mandatory reporting mechanism provides a link between feedstock production processes, food crop production and food commodity prices. If this reporting requirement is robustly and properly adhered to, it could ensure a formal and binding process within the RED whereby the European Commission is required to report on criteria relating to the use of food crops as feedstock. As early as 2008, the European Union already recognized the need for regular reporting on biofuels and their potential "negative impacts of food security" (European Commission, 2008, p. 12). Formal reporting between biofuel production and food prices would provide policy-makers with information on at least one factor affecting food commodity prices.



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