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US corn ethanol fuels food crisis in developing countries

The US ethanol programme pushed up corn prices by up to 21 per cent as it expanded to consume 40 per cent of the harvest

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The United States is by far the largest producer and exporter of corn in the world [EPA]

Record drought in the US farm belt this summer withered corn fields and parched hopes for a record US corn harvest, but US farmers may not be the ones most severely affected by the disaster. Most have insurance against crop failure. Not so the world's import-dependent developing countries, nor their poorest consumers. They are hurting.

This is the third food price spike in the last five years, and this time the finger is being pointed squarely at biofuels. More specifically, the loss of a quarter or more of the projected US corn harvest has prompted urgent calls for reform in that country's corn ethanol programme.

Domestically, livestock producers dependent on corn for feed have led demands for change in the US Renewable Fuel Standard (RFS), which mandates that a rising volume of fuel come from renewable sources. Up to now that has been overwhelmingly corn-based ethanol. In November, the US Environmental Protection Agency (EPA) will rule on a request for a waiver of the RFS mandate to reduce pressures on US corn supplies.

But US livestock producers aren't the only ones affected by shortages and high prices. The most devastating impact is on the poor in developing countries, who often use more than half their incomes to buy food. It also hurts low-income developing countries dependent on corn imports.

As I showed in my recent study, "[The Costs to Developing Countries of US Ethanol Expansion](#)", the US ethanol programme pushed up corn prices by up to 21 per cent as it expanded to consume 40 per cent of the US harvest. This price premium was passed on to corn importers, adding an estimated \$11.6bn to the import bills of the world's corn-importing countries since 2005. More than half of that - \$6.6bn - was paid by developing countries between 2005 and 2010. The highest cost was borne by the biggest corn importers. **Mexico paid \$1.1bn** more for its corn, Egypt \$727m.

Besides Egypt, North African countries saw particularly high ethanol-related losses: Algeria (\$329m), Morocco (\$236m), Tunisia (\$99m) and Libya (\$68m). Impacts were also high in other strife-torn countries in the region - Syria (\$242m), Iran (\$492m) and Yemen (\$58m). North Africa impacts totalled \$1.4bn. Scaled to population size, these economic losses were at least as severe as those seen in Mexico. The link between high food prices and unrest in the region is by now well documented, and US ethanol is contributing to that instability.



Biofuel impacts on food prices

The debate over biofuels has grown urgent since food prices first spiked in 2007-2008, ushering in a food crisis characterised by repeated jumps in global food prices. Prices for most staple foods doubled, fell when the bubble burst in 2009, then jumped again to their previous high levels in 2010-2011.

After a brief respite in the first half of this year, the US drought triggered a new wave of price spikes, the third in just five years. Corn prices were particularly hard-hit, reaching record levels of more than \$8.00/bushel, and more than \$300 per metric tonne. Before the first spikes, prices had languished around \$100/metric tonne.

Experts have debated how much of the price increases should be blamed on global biofuels expansion. Few argue now that the contribution is small. A [US National Academy of Sciences review](#) attributed 20-40 per cent of the 2007-2008 price spikes to global biofuels expansion. Subsequent studies have confirmed this range for the later price increases.

Why is the impact so large? Because so much food and feed is now diverted to produce fuel, and so much land is now used for biofuels feedstocks - corn and sugar for ethanol, soybeans, palm oil and a variety of other plants for biodiesel. This rapidly growing market was fuelled by a wide range of government incentives











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and mandates and by the rising price of petroleum.

Nowhere is the impact clearer than in the diversion of US corn into ethanol production. Ethanol now consumes roughly 40 per cent of the US corn crop, up from just 5 per cent a decade ago. The biggest jump came after the US Congress enacted the RFS in 2005 then expanded it dramatically in 2007.

"That 40 per cent of the US corn crop being put into US cars represents an astonishing 15 per cent of global corn production."

A blending allowance of 10 per cent for domestic gasoline added to the demand, a level now potentially being raised to 15 per cent. These mandates for rising corn ethanol production combined with tax incentives to gasoline blenders and tariff protection against cheaper imports to create today's massive ethanol demand for corn.

As corn prices rose farmers increased production, but not enough to accommodate the increased ethanol demand. So prices just kept rising and corn stocks just kept getting thinner and thinner. They were at dangerously low levels - about 15 per cent of global use - when the first price spikes happened in 2007-2008. They are at 14 per cent now.

Impact on developing countries

Corn is probably the most problematic feedstock for biofuels. In many parts of the world it is grown as food for human consumption, serving as the staple grain for some one billion people worldwide. It is also a key feed for livestock, giving it another direct link to the human food supply through meat, dairy and egg prices.

US corn ethanol is particularly disruptive to international markets. The United States is by far the largest producer and exporter of corn in the world. That 40 per cent of the US corn crop being put into US cars represents an astonishing 15 per cent of global corn production. The diversion of so much corn from food and feed markets has produced a "demand shock" in international markets since 2004.

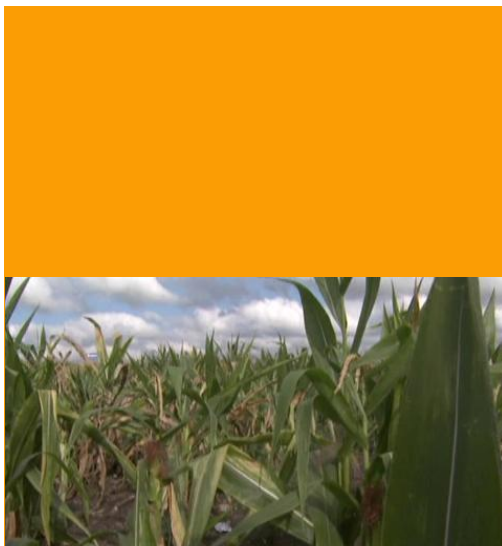
For our study of the impacts on corn importers, we relied on estimates of how much lower corn prices would have been if ethanol production had not grown past its 2004 levels. The impacts rose with ethanol demand, reaching an estimated 21 per cent in 2009. We took those annual estimates and calculated the added cost each year, 2005-10, to the world's net corn-importing countries based on their net import volumes.

The largest importer by far is Japan and the ethanol premium cost Japan an estimated \$2.2bn. But our interest was developing countries because of their vulnerability to food price increases.

Over the last 50 years, and particularly since the 1980s, the world's least developed countries have gone from being small net exporters of agricultural goods to huge net importers. The shift came when structural reforms in the 1980s forced indebted developing country governments to open their economies to agricultural imports while reducing their support for domestic farmers. The result: a flood of cheap and often-subsidised imports from rich countries, forcing local farmers out of business and off the land.

In the price spike of 2008, the world's least developed countries imported \$26.6bn in agricultural goods and exported only \$9.1bn, leaving an agricultural trade deficit for these overwhelmingly agricultural countries of \$17.5bn, more than three times the deficit recorded in 2000 (\$4.9bn). This squeezes government budgets, strains limited foreign exchange reserves and leaves the poor more exposed to food price increases.

Guatemala, for example, saw its import dependence in corn grow from 9 per cent in the early 1990s to around 40 per cent today. This in a corn-producing country, the birthplace of domesticated corn. According to our estimates, Guatemala saw \$91bn in ethanol-related impacts, \$28m in 2010 alone. How big an impact is that? It represents six times the level of US agricultural aid that year and nearly as much as US food aid to Guatemala. It is equivalent to over 10 per cent of the



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Guatemala. It is equivalent to over 10 per cent of the government's annual expenditure on agricultural development. It is devastating for a country in which nearly half of children under five are malnourished.

Drought to reduce US corn crop yield

Of course, poor consumers are the ones most hurt by ethanol-related price increases, especially those in urban areas. Even in a net corn exporting country like Uganda, domestic corn prices spiked as international prices transmitted to local markets. Ugandans spend on average 65 per cent of their cash income on food, with poor urban consumers getting 20 per cent of their calories from corn purchased in the marketplace. More than half of Ugandans were considered "food insecure" in 2007, and the price spikes have only made that worse.

US ethanol expansion has accounted for 21 per cent of corn prices in recent years, so it has forced thousands of Ugandans deeper into poverty and hunger.

Stop fuelling the food crisis

The US and other Northern governments can stop fuelling the food crisis with reckless biofuels expansion. The US can waive the RFS mandates to allow tight markets to adjust in a year of drought. It can join the European Union in reconsidering its mandates. It can halt the increase in blending targets to 15 per cent.

On World Food Day, October 16, the FAO will convene an emergency meeting on the food crisis in Rome. Disgracefully, the **G-20 group of economically powerful nations declined to convene** its own emergency meeting, with a US spokesperson saying that "agricultural commodity markets are functioning".

Global leaders should take a strong stand in Rome against biofuels expansion, endorse the use of food reserves to cushion markets in times of drought, demand rules to end financial speculation on food commodities and restrict the land grabs that are driven largely by global demand for biofuels.

It's time we put food before fuel and people before cars.

Timothy A Wise is the Policy Research Director, Global Development and Environment Institute, Tufts University, Medford.

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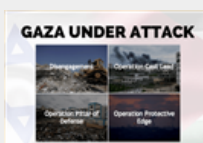
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