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Abstract

The United States is pushing ahead with ambitious plans to have 35 billion gallons of fuel from renewable sources in the next ten years. At present, the majority of bio-fuel is ethanol which is produced from corn. Concern has also been expressed about the diversion of corn to ethanol production and the possible impact that this will have on US exports as well as the amount available for food aid to developing countries. Currently, the US is the largest contributor of food aid in the world and provides most of its donations in-kind – the World Food Programme alone relies on the US for nearly 50% of its food aid donations. While it is still too early to judge what the exact impact will be on food aid supplies to southern Africa as a result of the increasing production of bio-fuels in the US, it is time for this issue to be considered by policy makers in the region with the aim of strengthening local food production. Greater self-sufficiency is the ultimate goal and would reduce dependency on food aid as well as imports.

Bio-fuels and Food Aid: The Impact on southern Africa

Food insecurity is a real issue facing many developing countries in the world and the provision of food aid by multilateral and bilateral donors remains one of the main tools used to assist people in these countries. For the purposes of this paper, food aid is defined as "international transactions that result in the provision of aid in the form of a food commodity in a country deemed in need of receiving such aid" (FAO Committee on Commodity Problems 2005, 1).



Courtesy - Catherine Grant

The United States (US) provides more food aid than any other donor and much of this takes the form of in-kind donations of commodities to the World Food Programme (WFP) and international non-governmental organisations, such as Care and World Vision. The US policy has been criticised by some as being a means to dispose of surplus food that is produced by farmers that receive subsidies from government. There have been calls for a move towards the provision of food aid in grant form and this idea is currently being discussed by members of the World Trade Organisation (WTO) as part of the negotiations on new rules aimed at minimising the trade distorting effects of food aid.

There is a strong likelihood that if new rules on food aid are agreed by the WTO, the amount provided by the US will decrease. This possibility comes at a time when the amount of ethanol produced in the US has more than doubled since 2001 (The Economist, 2006). The emergence of ethanol as a competitor for the use of maize and other staple food supplies could result in a major adjustment in the economics and trade of global food production, including food aid. This could have significant implications for the countries of southern Africa. A number of countries in the region run a food deficit and regularly rely on food aid in order to meet the needs of their populations. The impact of the increased production of bio-fuels may have a negative impact on availability of food both from the perspective of an increased global price and lower production levels of stock for food. This paper explores some of these linkages and possible scenarios with particular reference to the impact of US policies on food aid to southern Africa.

US Food Production and Bio-Fuels

For the purposes of this paper, bio-fuels are defined as liquid fuels produced from biomass (CRS 2007, 60). In the US, a number of crops are now used in the production of bio-fuels and these include corn, soybeans, sugar and canola. As corn or maize is the staple food source for most people in southern Africa, this paper focuses on the production and use of corn as food aid and for bio-fuel. Corn is also the primary source (98%) of ethanol in the US which accounted for 4.8 billion gallons of the total bio-fuel production of over 5 billion gallons in 2006. Bio-diesel is the other major type of bio-fuel produced in the US and 90% of it comes from soybean oil (CRS 2007, 60). Both the production of ethanol and bio-diesel has been expanding rapidly in the US. In 1980 only about 175 million gallons of ethanol were produced and in 1999 only 0.5 million gallons of bio-diesel.

The US is a major player in the global corn market with its crop totalling 40% of the world harvest and 70% of world corn exports (Brown 2007, 1). Strong demand for corn at a global level is being fuelled by increased US consumption, particularly by the fuel sector. The following are some summary statistics of the US corn sector for the last four years taken from the World Bank Maize Commodity Brief (2006, 1).

Year	Production (000 metric tons)	Exports (000 metric tons)
2003/04	256,278	48,258
2004/05	299,914	46,181
2005/06	282,260	54,613
2006/07	277,005	57,153

It is interesting to note that the amount of corn exported by the US has in fact increased slightly in recent years. Nevertheless the World Bank (2006, 1) and others, such as The Institute for Agriculture and Trade Policy (Schoonover and Muller 2006), predict that US export stock will decrease dramatically (by up to a half) in 2007.

The US Energy Policy Act of 2005 established a Renewable Fuels Standard that requires a minimum amount of US fuel to be provided from renewable sources. In his most recent State of the Nation address on 23 January 2007, President George W. Bush called for 35 billion gallons of fuel to be produced from renewable sources within

the next ten years. As recently as 8 February 2007, the US House of Representatives passed further legislation to promote the development of bio-fuels and to create the infrastructure necessary to handle the supplies (Reuters 2007, 1). There are currently over 100 active ethanol plants in the US and at least another 50 are currently under construction or are being expanded. Ten years ago less than 5% of US corn production went to bio-fuel. In 2005 12% to 14% of US corn production was used for this purpose and in 2006 the amount had increased again to nearly 20%. By 2008 it is expected that half of the US corn crop will be used for bio-fuels (Business Week 2007, 1) - although officially the USDA only estimates that 60 million tons of corn from the 2008 harvest will be used by bio-fuel facilities. The Earth Policy Institute claims that this official figure is a gross underestimation (Brown 2007, 1). No matter which figures you use, the reality is that, in the short-term at least, US farmers cannot produce enough crops to meet rising demand for bio-fuels. Some of the extra corn needed might come from additional production but much is expected to be diverted from exports (Schoonover and Muller 2006, 1).

Food Aid

The overall trend in the provision of food aid at a global level has been one of slow decline in recent years (WFP/Interfais 2006, iii). There was a slight increase (10%) in 2005 to a total level of food aid of 8.25 million metric tons. This was largely driven by an increase in the levels of emergency food aid provided to developing countries. The share of global food aid delivered to sub-Saharan Africa increased to 55% of the total in 2005. In the 1990s this percentage ranged between 20% and 40% (WFP/Interfais 2006, 7). The US continued to provide nearly a half of all food aid even though there were contributions from a more diverse group of donors in 2005. The following tables provide a summary of some of the key food aid statistics for the last ten years. The information is taken from the Food Aid Flows 2006 report by the WFP/Interfais.

In 2005 the US provided 2,653,153 tons of food aid to sub-Saharan Africa. This amounted to approximately 58% of the total. Cereals represented 86% of the deliveries to the continent in 2005. Approximately 66% of this came in the form of direct transfers from donor countries. The WFP channelled 68% of the food aid received by sub-Saharan Africa.

Food Aid Deliveries to Sub-Saharan Africa (in metric tons)

Year	Total Food Aid
1996	2,570,098
1997	2,429,046
1998	2,776,666
1999	2,795,801
2000	4,011,553
2001	3,693,353
2002	2,921,591
2003	5,361,134
2004	3,780,051
2005	4,611,820

US Food Aid Deliveries

Year	Total in tons	Cereals	Non-cereals
1996	3,167,218	2,636,554	530,664
1997	3,150,337	2,720,868	429,469
1998	4,010,200	3,339,274	670,927
1999	9,549,949	8,356,274	1,193,275
2000	6,928,634	5,921,678	1,006,956
2001	6,413,040	5,319,952	1,093,088
2002	5,940,283	4,869,597	1,070,686
2003	5,554,696	4,745,027	809,669
2004	4,078,527	3,508,727	569,799
2005	4,026,382	3,439,832	586,551

The above figures illustrate a slow decline in food aid provided by the US since a peak in 1999. In 2005 most US food aid was delivered by direct transfer (3,975,934 tons) with only small amounts contributed by way of triangular or local purchases. Of the cereals provided by the US, approximately 65% was wheat and wheat flour, with some coarse grains (18%), blended/fortified products (9%) and rice (8%). In line with global trends, the majority (58%) of US food aid was used for emergency purposes. Project food aid was 31% of total US food aid and programme food aid only 11%.

In southern Africa the majority of food aid is provided in the form of maize or corn (preferably white rather than yellow in line with consumer demand). This largely comes from purchases made locally as well as through

in-kind donations from countries such as Canada and South Africa. The US only provides small amounts of food aid in the form of corn to southern Africa. In 2005 it donated 3,000 metric tons to southern Africa out of a total of 175,000 metric tons of corn given as food aid globally. There has been a general trend indicating a decline in the use of corn as food aid by the US over the last five years. In 2004 the US provided a total of 300,500 metric tons of corn as food aid and in 2001 a total of 847,700 metric tons. Southern Africa's share of this amount has remained consistently small. This decline mirrors to a certain extent the increase in the use of corn in the US for the production of ethanol.

Impact of Bio-Fuels

It has been predicted that ethanol could represent 5% of the world's transport fuel by 2010 (Fulton 2005, 1). The US and EU are currently leading the global trend towards increasing levels of production of bio-fuels while at the same time continuing to be two of the largest players in global food markets. The result is that food and energy now compete for the same stocks in these countries. The trend of high oil prices in 2006 combined with extensive support programmes for the bio-fuels sector both had an impact on the diversion of increasing amounts of corn crops to ethanol in the US. There was no immediate effect on the amount of corn that was imported and exported by the US but there was a considerable decrease in the amount donated as food aid (see above).

Prices for cereals and other related food products saw the greatest direct impact of increased levels of production of bio-fuels in the US. US corn and wheat prices reached 10 year highs in 2006 following dramatic increases. This price effect spread to other foods, including poultry, dairy and meat products that rely on animal feed. The spin-offs did not stop at the US borders however. In Mexico there was considerable concern about the spiralling cost of tortillas – the staple food for many in the South American country. Mexico relies on corn produced by the US for most of its tortilla production. It was therefore hit hard when prices reached new highs in 2006. Not only have cereal prices increased rapidly in recent times but they have also become more volatile. It has been argued that this is due to the linkages now made (in the eyes of traders at least) between the demand for bio-fuels and fluctuations in oil prices (ASX Newbie 2007, 1). This has in part contributed to greater volatility in the prices of corn, wheat, sugar and soybeans.

Food price increases are generally viewed in a negative light, especially because of the impact on consumers and other down-stream producers. Due to its importance in global cereal trade, price changes in the US also impact on the world market. Some have expressed a deep fear for those people in developing countries who spend well over 50% of their household budget on food (Brown 2007). If prices continue to increase then food insecurity may well be exacerbated in some of these countries. Without taking away from these very real concerns, it is worth noting that there are a number of potentially positive results from the increase in corn prices in the US. For example, due to higher prices the levels of subsidies provided to farmers are expected to drop in 2007 (Business Week 2007). Farmers are also expected to plant more crops which could in part offset the amount that is going into bio-fuels. The extent of these two implications is yet to be fully tested.

Other Factors

WTO negotiations

The negotiations of the Doha Round are currently suspended at the World Trade Organisation (WTO) in Geneva. Before the talks came to a stop in the middle of 2006, the issue of new rules governing food aid was on the agenda of the agriculture negotiations. The aim was to overhaul Article 10.4 of the Agreement on Agriculture so as to prevent commercial displacement as a result of the provision of food aid to a country. Any food aid that is not provided in line with the new disciplines will need to be eliminated on the basis of an agreed timeline. Article 10.4 already requires that food aid not be tied to commercial exports, that it be in grant form whenever possible and that it be provided in accordance with the FAO "Principles of Surplus Disposal and Consultative Obligations". The new disciplines are expected to create a "safe box" for food aid that is needed in an "emergency". In these circumstances it will be possible for in-kind donations to be distributed. Outside of the "safe box" greater disciplines will be applied with the aim of ensuring that the provision of food aid does not lead to commercial displacement of either imports or domestic production. It is envisaged that in these circumstances the majority, if not all, the food aid provided will be purchased using grants from donors. The monetisation, re-export and tying of food aid is also to be limited under the proposed new disciplines. Members will be asked to notify all food aid transactions to the WTO which will also co-operate more closely with food aid agencies, such as the WFP, FAO and Food Aid Convention.

Many WTO members have participated in the negotiations on food aid with the specific aim of reducing what are perceived to be trade distorting subsidies provided to American farmers under the guise of food aid policies. While much of the food aid provided by the US is still likely to fall within the "safe box", there is the likelihood that the proposed new WTO disciplines will result in a decline in the amount of in-kind donations distributed as food aid by multilateral and bilateral donors. In recognition of the impending changes and as mentioned above, the WFP is actively encouraging the US to adopt a policy that would see it provide 50% of its food aid in cash and 50% as commodities (along the lines of the approach used by Canada). Cash grants are however unlikely to be increased to levels which compensate for the reduction of in-kind food aid. This has been illustrated in the past with the drop in contributions made by the European Union since it adopted a policy of providing cash grants rather than in-kind food aid. While it is difficult to prejudge the exact impact of new WTO disciplines on food aid, it is safe to say that there is likely to be a reduction in in-kind donations from the US and therefore there will be less food aid available globally.

US Farm Bill

The US Farm Bill commonly refers to the omnibus legislation that includes the laws that govern federal farm support, food assistance, agricultural trade, marketing and rural development policies (CRS 2007, 1). The most recent farm bill was the Farm Security and Rural Investment Act of 2002. Many of the provisions of this legislation expire in 2007 and therefore the farm bill is due to be renewed early this year and is expected to be addressed in the first session of the 110th Congress (CRS 2007, 1). The US Department of Agriculture (USDA) provided an indication of the proposals that are likely to be contained in the new farm bill at the end of January 2007. Of relevance to this paper are the proposals dealing with bio-fuels and food aid.

The US government already has a support programme in place for the bio-fuels sector. Total federal and state bio-fuel subsidies have been estimated in the range of \$5.5 to \$7 billion per year (CRS 2007, 60). Federal tax credits are specifically received for the use of corn for ethanol. Federal support for the development of agriculture-based renewable energy production systems is also provided in the form of loans, grants, and loan guarantees; research, development, and demonstration assistance; educational programme assistance; and procurement preferences. Also, several states have their own incentives, regulations, and programmes in

support of renewable fuel research, production, and consumption that supplement or exceed federal incentives. (CRS 2007, 63). The USDA is proposing that the new farm bill will provide \$1.6 billion in new funding for renewable energy research, development and production. This will include \$500 million for a bio-energy and bio-based product research initiative. Support will be targeted for cellulosic ethanol and there will be additional support for \$2.1 billion in guaranteed loans for cellulosic projects (USDA 2007, 1). These proposals are expected to ensure that the current trend towards growing bio-fuels production continues and that more corn stock, in particular, is diverted towards ethanol.

With regards to food aid, the 2007 farm bill proposals by the USDA seek the authority to use up to 25% of the funds available for emergency food aid under P.L. 480 Title II for the local or regional purchase of food aid. Currently this money can only be used to purchase and ship US food stocks. The reasoning given for the proposed change is to ensure that there are effective and efficient responses to emergency food situations. It is noted by the USDA that it can take up to four months for US commodities to reach the target destination for distribution (USDA 2007(a), 81) and therefore greater flexibility is required to ensure rapid responses to emergencies, such as the Asian tsunami in 2004. To complement the suggested policy change, an increase is requested for the funds available under Title II in the 2008 financial year (an additional \$80 million is requested). This proposal is not new. The administration has been suggesting that up to 25% of Title II funds be used for local or regional purchases for the last two years. It is an idea that has been rejected by Congress following pressure by American farmers and shipping companies. In the context of the increasing use of food stocks for bio-fuels and the possible reduction in surpluses available for food aid, the USDA proposal makes sense and would be welcomed by the global food aid community.

Impact on southern Africa

Given the reliance on the US by the WFP and other food aid distributors, there is concern about the possible impact of the move towards greater levels of bio-fuel production in the US, especially when combined with the possibility of new WTO food aid disciplines. Currently the US provides nearly all of its food aid in-kind. While there have not yet been large decreases in the overall level of commodities donated, there has been a significant decrease in the amount of maize given as food aid by

the US. With the drive to increase bio-fuel production, it makes more sense for the US to provide cash instead of commodities. This would also provide a greater level of security with regards to global food aid flows. Attempts to allow up to 25% of US food aid to be donated as cash and used for local and regional purchases have so far been resisted by Congress. This proposal is however again being put forward by the administration as part of the 2007 Farm Bill.

The diversion of US corn crops to bio-fuels will not have as large a direct impact on southern Africa as on other regions in the world as very little American corn finds its way into the region as food aid. Corn or maize is likely to remain the staple product in food aid packages distributed in the region. The main impact therefore of the US drive towards renewable energy sources will be the increase in the global price of corn. This price increase will in turn raise the cost of buying food aid significantly. Ironically this price effect could be compounded by a further decrease in the amount of surplus food stock available for food aid. History has shown that when food prices go up the amount of food aid available goes down (Webb 2003, 2). It remains to be seen whether the cash resources provided by donors, including the US, will increase at a rate that matches the price increases for food. There is concern among food aid agencies that this will not be the case and that their work in the region will be hampered in the future.

Conclusion

The overall trend in recent years has seen a declining amount of food aid provided at the global level but an increasing share going to sub-Saharan Africa. This could mean that any changes to the availability of commodities for food aid would have a greater impact on the continent than in other parts of the world and it does seem likely that the diversion of US food stocks to bio-fuels will result in a decline in the amount available for food aid. Some fear that this situation will be exacerbated by the proposed new WTO rules on food aid as well as the new US Farm Bill. The WFP and other food aid distributors are already working to encourage the US to maintain the same levels of food aid assistance and to include in this a high percentage (at least 50%) of in-kind donations. The increased production of bio-fuels has also been identified as a factor in recent food price hikes. Ironically, it is this combination of factors that is most feared by food aid agencies. It is in times of high food prices that the in-kind contributions of the

US and others are most needed but are likely to drop. Southern Africa may be more affected by the increase in global corn prices than by the diversion of US stocks into the production of bio-fuels. This is because very little corn is currently provided by the US as food aid to the region. The increase in global prices will however make it more expensive and difficult for food aid agencies to procure the same amount of maize. Food aid is one aspect of development assistance that has not seen large increases in the funds made available by donors in recent years. So while it is still too early to judge what the exact impact will be on food aid supplies to southern Africa as a result of the increasing production of bio-fuels in the US, it is time for this issue to be considered by policy makers in the region with the aim of strengthening local food production. Greater self-sufficiency is the ultimate goal and would reduce dependency on food aid as well as imports.

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