

Regional Food Security

Using the concept of virtual water

Richard Meissner
Research Associate, African Water Issues Research Unit (AWIRU) at
the University of Pretoria

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Introduction

In March 2001 the UN warned that food shortages might occur within the Southern African Development Community (SADC) region. It stated that bad weather and conflict could negatively affect the food supply of many SADC states. Now, in 2002, the region is indeed facing the predicted shortages. The impact may be mitigated by international and regional assistance but the underlying factors need to be remedied.

The regional conflicts have mainly political causes and need to be addressed within political fora. Bad weather, though, however unpredictable, is to be expected now and again, and tools exist which can be used for long-term forecasting. The concept of 'virtual water' is one such method. It refers to the amount of water required to produce a certain commodity or service. Maize, for example, requires a certain amount of water per tonne. A state can thus calculate roughly how much water it requires to produce the maize its citizens need. The shortfall can be planned for and perhaps avoided. This commentary will assess the current food security (or insecurity) situation in the SADC region. It will also attempt to answer the question of whether a virtual water strategy can mitigate future food shortages.

Conflict aside, floods and drought were named as causes of a future food shortage in the region. For instance, the rains in Mozambique and Malawi were too late to save crops that were badly damaged by drought in January 2001. About 22,000 hectares (ha) of land in Mozambique were ruined. Of course, it was not only bad weather that had an impact. Political and market problems were also responsible. These problems resulted in less maize than usual (the region's staple food) being planted in 2001.

Food insecurity

The Food and Agricultural Organisation (FAO) of the UN defines food insecurity as a situation where people live in fear of hunger and starvation. A widely accepted definition of food security notes that all people should have access, at all times, to enough food for an active, healthy lifestyle. At present, May 2002, many SADC member countries are experiencing massive food shortages. This is the direct consequence of the region's worst drought in 50 years. The precarious food security situation means that about 19 million people are in need of food aid. This does not include the four million people already facing starvation because many countries have already depleted their maize reserves.

The countries worst affected by the current crisis are Zambia, Zimbabwe and Malawi, though Mozambique, Swaziland, and Lesotho also face severe problems. Lesotho has gone as far as declaring a state of famine. At the same time, Lesotho continues to export R200 million of water every year to South Africa through the Lesotho Highlands Water Project (LHWP). The current food problems for these countries were caused by a staggering fall in maize production in 2001 and unfavourable harvest prospects for 2002. Access to food for large sections of their populations has been severely undermined. In Malawi, for instance, maize production dropped by over 33% last year. The strategic grain reserves have been exhausted and maize imports are constrained by transport bottlenecks. As a result, maize prices in some areas have risen by more than 300% since July 2001.

In Zimbabwe the situation is just as dire where maize production in 2001 fell by 28%. Production is estimated to be only 400,000 tonnes, or 20% of demand and by mid-January 2002 the Grain Marketing Board had run out of stock. The drastic reduction in production was caused mainly by political upheaval and the subsequently reduced plantings, but also by dry spells and excessive precipitation. Strategic maize stocks are also depleted and the cost of imports is affected by a shortage of foreign exchange. Zimbabwe was once one of Southern Africa's 'bread baskets' but has now fallen on hard times. Both Zimbabwe and Zambia are now looking to the international community for food assistance to ward off the impending famine.

Swaziland, Namibia and the southern provinces of Mozambique have also been affected by the poor harvests in 2001. The Great Lakes region, particularly in the Democratic Republic of Congo (DRC) is not faring much better. In Angola, where battles between UNITA and the MPLA forces have ended for now, the peace is cold comfort for citizens without food.

The situation is expected to worsen in most of the states already mentioned in 2002 and 2003 because of projected falls in production in the early part of 2002. The current food security situation in Southern Africa is exemplified by the volume of cereal imports and food aid requirements. According to the FAO, in 2001 the region produced 19.2 million tonnes of maize. Currently it is expected that an additional 3.9 million tonnes will be needed. It is furthermore anticipated that 3.5 million tonnes will be commercially imported and that 332,000 tonnes will be needed as food aid.

In contrast to the gloom above, prospects for the 2002 maize crop in South Africa are favourable. Production is also expected to recover from last year's below-average level. South Africa is the region's largest producer and exporter of food stuffs.

The main reason for this is that South Africa has not been seriously affected by bad weather or the political and economic problems that other countries in the region have experienced. It seems likely, therefore, that South Africa will have to play a leading role in helping the region through the current food shortages.

Virtual water

Given the food insecurity in the region, it becomes plain that some attempt should be made to look beyond the current crisis and reduce the risk that this will be repeated. Since water is an important variable in crop production, it is advisable to consider how much water is needed to produce the food the region requires. When a state imports a tonne of wheat or maize, it is in effect, also importing the water it required to produce that crop. This is known as virtual water.

In international and regional economies vast quantities of virtual water are present in the international cereal market. For instance, it takes about 1,000 tonnes of water to grow one tonne of grain. This is the virtual water value of grain. Similarly, to produce one tonne of rice, 2,000 tonnes of water are needed; one tonne of wheat requires 1,000 tonnes of water; and approximately 1,200 tonnes of water are needed to produce one tonne of maize. Because virtual water is embedded in the international political

economy, every state in the international political system is subjected to trade in virtual water. This is evident in the cereal needs of many SADC countries at present.

Almost all countries have to trade in foodstuffs because they cannot produce all their food locally. This is especially true of developing states. Virtual water can therefore be an important aspect of a country's food security. This infers that as countries trade in agricultural commodities, they are actually also importing and exporting water in a virtual sense. Intra-regional trade in food is an important aspect of regional trade within the SADC region. For instance, at the end of 2001 South Africa exported about 9,000 tonnes of maize to Zimbabwe. In a virtual water sense, South Africa has exported 10.8 million tonnes of water. By knowing these figures and combining them with rainfall figures and forecasts, farmers and governments can plan their food imports or exports. States with scarce water resources can also plant crops that require less water.

In theory, when the region does not have enough water to supply its food, it can turn to the international market. The truth is that this is more complex and often quite difficult. The reasons for this are natural, political and economic in nature.

Natural threats

One of the natural threats to regional food production is a region-wide drought. International weather forecasts are suggesting that in 2002–03 the El Niño Southern Oscillation (ENSO) occurrence may make its appearance in the Pacific Ocean off the western coast of Latin America. If these reports are correct in their assessment of the coming ENSO, Southern Africa, including Southern Africa, may experience a drought in the coming season. Because many of the SADC countries are relying on South Africa for food, the future may change to such an extent that South Africa will also need to import food from the international market. It is not only drought that can have an impact on the production of agricultural commodities. Other extreme weather events, like floods, can also wreak havoc. This was the case in Malawi and Mozambique in 2001. Excessive rains and floods, together with reduced and late delivery of agricultural inputs had a severe impact on the production of agricultural commodities in these countries. Floods can devastate farmland and wash away valuable topsoil needed for the production of foodstuffs. Under such circumstances many countries can become reliable on the international food market for their food security needs.

Political conditions

Unstable political conditions can make a bad situation even worse. The food crisis in Zimbabwe can be partly attributed to the actions of the ZANU-PF government and particularly the controversial land reform policies.

In May 2002, the government declared some areas as disaster zones where 7.8 million people (5.4 million of them children) are in need of food aid. Citizens in Angola and the DRC have had their food shortages made more extreme because of conflict and political crises.

Economic factors

Economic factors, such as the availability of foreign exchange and capital outlay on infrastructure also play a role. Where government finances are stretched to the limit by debt and mismanagement, countries can have difficulty implementing infrastructural projects to facilitate the distribution of food within the region. This also means that their agricultural sectors cannot develop to their full potential. For instance, irrigation schemes cannot be financed that could lead to a better food security situation.

The implementation of irrigation schemes can make the production of agricultural commodities less dependent on rain. Most of Southern Africa's farmers rely on dry-land farming to produce food. These include both subsistence and commercial farmers. Both these agricultural sectors are equally important to a country's food security.

Conclusion

While virtual water calculations are an essential planning tool, and can be useful in determining how seasonal water can be used most efficiently to provide more food at the right times, they are dependent on all other factors (political, economic and natural) being equal—seldom the case in sub-Saharan Africa. Nevertheless, the awareness of how water is an invisible part of the food economy is already a positive step. Once states, farmers, citizens and aid agencies have more accurate information about the virtual water that is involved in their numerous transactions, they will be better able to decide on their own course of action.