

Chapter 7

Trends and opportunities

From the baseline analysis, the anticipated impacts of expanded irrigated production and the 2030 projections in Chapter 6, it is possible to arrive at three principal conclusions. First, despite certain exceptions at the national and sometimes regional levels and in the absence of new initiatives, sub-Saharan Africa will continue to depend heavily on imports, particularly in key cereal staples. Second, it can be concluded that: (i) irrigation has a potentially significant and strategic role to play in reducing such import requirements; and (ii) there is land in abundance that could be irrigated, and water in abundance (at least at the macrolevel) with which to irrigate. Finally, the high risks, especially environmental risks, which must be mitigated, may be offset by attractive positive impacts at the economic, production, commercial and social levels.

Therefore, the first two sections of this chapter are concerned with an assessment of the kind of demand for which a sub-Saharan Africa irrigation development strategy might be appropriate between now and 2030, while the remainder of the chapter attempts to address the four questions raised in Chapter 2 in order to see how irrigation could, after all, contribute to strategic food objectives.

THE INTERNATIONAL TRADING ENVIRONMENT

International trade in agricultural commodities is subject to a complex set of international, regional and bilateral intergovernmental agreements, and to individual national schemes that tax and otherwise regulate imports. This section briefly describes the main agreements to which all sub-Saharan Africa countries are subject.

The Generalized System of Preferences

In 1968, the United Nations Conference on Trade and Development recommended a Generalized System of Tariff Preferences (GSP) under which industrialized countries would grant trade preferences to all developing countries. Preferential treatment granted under the GSP should not discriminate between developing countries, except for the benefit of least developed countries (LDCs). The preferential treatment should also be granted autonomously without negotiation and there should be no agreement under which beneficial countries make mutual concessions. In practice, there is significant variation in the preferences granted by individual developed-country schemes, with significant differences in product coverage, rules of origin and the size of tariff reductions.

The Uruguay Round Agreement on Agriculture

The most all embracing of existing trade agreements is the Agreement on Agriculture (AoA), negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), which became effective for all members of the World Trade Organization (WTO) in 1995. In April 2004, 147 countries were members of the WTO and a further 28 countries were negotiating to join.

The AoA is envisaged as the first step in a continuous reform process among members of the WTO aimed at the progressive reduction of agricultural support and protection. A new round of WTO negotiations – the Doha Development Round – commenced in 2000.

The negotiation of the AoA was of major importance because, unlike for industry, previous rounds of GATT had not addressed the heavy support and protection

afforded to domestically produced agricultural commodities and processed products. This protection and support has been provided through:

- direct protection from imports in the form of import tariffs and quotas;
- the subsidization of exports;
- the subsidization and support of domestic production.

The AoA contains provisions to reduce these means of protection. The WTO has developed a set of rules and procedures for resolving disputes between member countries and regional groupings that cannot be settled by negotiation between the parties concerned. The WTO dispute settlement system works well for developed countries, most of whom have sufficient resources and expertise to have full access to it. However, it needs modification if it is to be used effectively by developing countries, especially those that are small and/or least developed.

The Agreement on the Application of Sanitary and Phytosanitary Standards

The Agreement on the Application of Sanitary and Phytosanitary Standards (known as the “SPS agreement”) was also negotiated during the Uruguay Round but is separate from the AoA. It covers all agricultural commodities and products and refers to the use by governments and their agencies of food safety and agricultural health standards. Such an agreement is necessary because standards can impede exports and distort international trade either because they result in the banning of imports or because the cost of compliance reduces the profitability of production, processing and marketing and, therefore, the incentive to export. This agreement is designed to provide a set of multilateral rules that recognize the legitimate need of countries to adopt sanitary and phytosanitary standards while creating a framework for minimizing their distortion of trade.

The agreement represents a significant improvement on the prior situation but in essence it only provides a set of basic ground rules. These give significant leeway for interpretation as there are many areas in which no agreed international standards exist and many emerging areas in which scientific knowledge is incomplete. Moreover, sanitary and phytosanitary standards are costly to implement and countries consequently apply them as part of a risk management strategy. As resources and perceptions of risk differ between countries, the agreement necessarily allows for national measures also to differ. sub-Saharan Africa countries are likely to be particularly hard hit by the tendency for developed countries to focus their controls on national sources that they consider have inadequate sanitary and phytosanitary standards. The necessarily loose nature of the agreement also means that there remains scope for sanitary and phytosanitary standards to be used as a back-door means of protection.

The adverse impact of the protective use of such measures has been compounded in the past decade by a greatly increased public awareness and concern with food safety in developed countries in the wake of a set of internationally publicized health scares relating to food, including bovine spongiform encephalopathy in beef, E. coli in fast food, SARS from caged exotic animals, and bird flu from poultry. Governments have reacted by making significant institutional changes in food safety oversight and reforming pertinent laws and regulations. There has been a tightening of existing standards in developed and middle-income importing countries and new standards are being applied to address previously unknown or unregulated hazards and potential hazards that could arise from new techniques, such as genetic modification of organisms.

The high cost of testing products at the border and the imprecise nature of sample-based testing has led to a growing number of health and safety requirements being based on standards relating to processes by which commodities are produced, processed, stored and marketed. This requires parallel development of a national capacity in exporting countries to certify that particular processes have been followed. This is likely to be particularly difficult for the less-developed sub-Saharan Africa countries as tracing products back to their source is problematic where production is

dominated by small-scale farms and where monitoring and certification institutions have yet to be developed.

From this brief discussion, it is evident that such import controls remain an important impediment for sub-Saharan Africa exporters seeking to access developed-country markets.

Trade agreements and preferences

Developed countries employ sets of tariff schedules under which the rate charged depends on the status of the exporting nation. The lowest rates are normally charged under reciprocal trade agreements, with a subsequent hierarchy of rates running from LDCs, developing countries, developed country WTO members, and other countries. Here, the focus is on the world's two largest markets, the European Community (EC) and the United States of America.

The EC was the first to implement a GSP scheme in 1971 and it now operates a scheme that covers the four-fifths of its tariff lines that are subject to most-favoured nation (MFN) import duties. For imports to qualify for GSP treatment, they must conform to rules of origin which seek to ensure that real value-added has been created in the beneficiary country. For the purpose of determining which countries will qualify for GSP treatment, the EC decides each year upon the countries that it will treat as "developing". Within non-LDC countries that qualify for the GSP, the EC excludes exports from the scheme if it deems that they derive from sectors that are sufficiently developed to no longer require preferential EC access.

EC GSP rates are normally equal to its MFN rate less a flat rate reduction specified in percentage points. The general arrangements of the EC's GSP cover about 7 000 products, of which 3 300 are classified as non-sensitive and 3 700 as sensitive. The former enjoy duty-free access, while sensitive products are subject to tariffs that are set at a discount to their MFN rate. Sensitive products are those that the EC considers require border protection in order to enable them to compete with duty-free imports from developing countries.

In February 2001, the European Union Council approved an Everything-but-Arms (EBA) Regulation. Its intention is ultimately to grant duty- and quota-free access to imports of all products other than arms and munitions to countries classified as LDCs. In April 2004, 47 countries were so classified, including 37 from sub-Saharan Africa. The EBA initiative currently covers all dutiable imports other than bananas, sugar and rice, for which there will be transitional periods during which tariff rates will be gradually reduced. The EBA Regulation specifies that the special arrangements for LDCs will be maintained for an unlimited period of time and not be subject to the periodic renewal of the EC GSP scheme. Most sub-Saharan Africa countries also qualify for preferential market access to the EC under the EC-ACP Cotonou Partnership Agreement, signed in June 2000 by the EC and 77 African, Caribbean and Pacific countries.

The policy of the United States of America is to negotiate free-trade agreements with interested sub-Saharan Africa countries. The first such possible agreement, between the United States of America and the countries of the Southern African Customs Union (SACU) is currently under negotiation.

Since May 2000, the United States of America has been giving preferential treatment to imports from African countries under its African Growth and Opportunity Act (AGOA). The AGOA provides African countries with the most liberal access to the market in the United States of America available to any country or region other than those with which the United States of America has a free-trade agreement. To be eligible for the trade benefits of AGOA, African countries must pursue policies acceptable to the Government of the United States of America. In 2004, 37 out of 48 African countries were deemed eligible. This compares with 45 covered by the GSP of the United States of America.

The AGOA provides for duty-free access under the GSP for any article that the Government of the United States of America considers is not import sensitive when imported from sub-Saharan Africa countries. Almost all products of AGOA beneficiary countries now enter the United States of America free of duty. However, agricultural imports into the United States of America remain subject to tariff rate quotas and AGOA beneficiary countries remain subject to any overquota duties for shipments above the applicable quantitative limit. The main impact of AGOA has been on apparel (Box 7). In general, the AGOA is of only minor importance for the

BOX 7

Termination of the WTO Multifibre Arrangement

The textile and clothing sector has traditionally been the first sector to develop in the process of industrialization. The manufacture of textiles and clothing is labour-intensive and countries tend to lose their comparative advantage in this activity as their economies develop and wage rates rise. Developed countries have responded to their loss of comparative advantage by protecting their textile and clothing industries, principally through border measures. From the 1960s, this was done largely outside GATT/WTO through separate arrangements, the last of which – the MFA – commenced in 1974. The MFA allowed developed countries to impose bilateral quotas on imports of textiles and clothing which caused or threatened to cause serious damage to the industry in the importing country. This represented a major departure from GATT principles, particularly the principle of non-discrimination.

The MFA was intended to be temporary, to give importing countries a breathing space in which to adjust their industrial structures. In the event, the MFA was renewed five times through to the late 1980s. During negotiation of the Uruguay Round, it was agreed that the MFA would be phased out through implementation of a transitional WTO Agreement on Textiles and Clothing. This provided for a gradual opening up of developed-country markets, with textiles and clothing becoming subject to the full provisions of the GATT/WTO on 1 January 2005.

Developing countries as a whole will gain significantly from the end of the MFA. However, the MFA benefited high-cost developing country exporters because it provided them in importing country markets with a degree of protection from competition from low-cost exporting countries. This led to heavy investment in manufacture in relatively inefficient producing countries where the MFA provided fewer constraints to exports, most notably Bangladesh. Within sub-Saharan Africa, the African Growth and Opportunity Act (AGOA) gave qualifying countries the right to export textiles and clothing into the United States of America free from both import duties and the bilateral quotas imposed on the major exporting countries under the MFA. This resulted in foreign enterprises investing in textile and clothing production in sub-Saharan Africa countries, especially those with high unemployment. Relative to the country's size, investment was particularly heavy in Lesotho. In 2004, about 50 000 people were employed in the Lesotho textile industry, making it a source of livelihood for about one-sixth of the country's households. Prior to the termination of the MFA, Lesotho accounted for 30 percent of the value of all textiles exported to the United States of America under the AGOA.

The AGOA will continue to provide an advantage for African exports to the United States of America because of the duty-free access that it affords. However, costs in countries such as Lesotho tend currently to be so much higher than in China and Southeast Asian countries that the edge given by the AGOA is proving insufficient in the post-MFA era. Thus, the advantages bestowed by the AGOA were short-lived and the countries that benefited now face a period of painful adjustment. However, the proportion of total population of sub-Saharan Africa that is affected is small. Moreover, much of the textile and clothing manufacture in sub-Saharan Africa is based on imported cotton and synthetics, entirely so in the case of the two most dependent countries, Mauritius and Lesotho. Thus, although having received much international publicity, the termination of the MFA will not have a significant impact on the demand for sub-Saharan Africa irrigated production.

agricultural products of sub-Saharan Africa countries because the majority of GSP tariffs are zero and, consequently, AGOA affords no additional tariff-rate advantages.

MARKET PROSPECTS FOR THE MAIN CROP GROUPS

General considerations

Other than for root crops and highly perishable crops that tend not to be traded across national boundaries, currency exchange rates will remain an important determinant of the profitability of domestic production, including production under irrigation. In response to pressure from the International Monetary Fund (IMF) and other external agencies, there has been a progressive liberalization of exchange rate controls in sub-Saharan Africa and movement towards rates determined by market forces. While generally desirable, it does make the currencies of sub-Saharan Africa countries that rely on a small number of export commodities for the bulk of their foreign exchange earnings particularly vulnerable to changes in world commodity prices. This in turn could be particularly damaging for irrigated staple crops that sell in domestic markets in competition with imports. For example, irrigated producers of rice in a cocoa exporting country could face a fall in domestic market prices should international cocoa prices rise, causing the national currency to revalue and the cost of rice imports specified in the national currency to fall. Countries with significant exports of oil or other minerals could also find that the profitability of production for the domestic market is hampered by strong non-agricultural export earnings. This may be a particularly difficult problem to overcome in countries such as Namibia (whose main exports are minerals and fish) that have traditionally protected their agriculture in the face of a strong exchange rate, but which will be less able to do so as regional and international trade agreements progressively preclude such protection.

The trade data for sub-Saharan Africa in wheat, rice, coarse grains, oils and fats, and sugar for the period 1990–2003 is presented in Annex 6. Box 8 presents the current state of the rice market in sub-Saharan Africa.

Cereals

The agricultural resources of sub-Saharan Africa are overwhelmingly focused on the production of food for human consumption and livestock. Despite this, sub-Saharan Africa produces insufficient food to meet the requirements of its population and has to import basic staple foodstuff. Within sub-Saharan Africa as a whole, cereal production

BOX 8

Rice: market prospects in sub-Saharan Africa

FAO currently anticipates a 2.5 percent contraction of world rice trade in calendar 2006 to 28.5 million tonnes, still the second highest level on record. The retrenchment from the 2005 exceptional trade performance is anticipated to result from a general weakening of import demand by countries in Africa, where good crops were harvested in 2005. **Nigeria** accounts for much of that contraction, where shipments are forecast to drop from 2.0 million to 1.6 million tonnes, reflecting a ban on milled rice imports since the beginning of 2006. Though falling, shipments to **Côte d'Ivoire**, **Senegal** and **South Africa** are likely to remain large, in the order of 800 000 tonnes, with imports from all African countries expected to reach 9.2 million tonnes, or 32 percent of the world total, about 1 million tonnes less than in 2005.

FAO Food Outlook: Global Market Analysis No. 1 June 2006
<http://www.fao.org/giews/english/index.htm>

TABLE 26
Projected national, regional and sub-Saharan Africa net trade in 2030 (1 000 metric tonnes)

	CENTRAL	EASTERN	GULF OF GUINEA	INDIAN OCEAN ISLANDS	SOUTH AFRICA	SOUTHERN	SUDANO-SAHELIAN	TOTAL SSA
	Region Total	Region Total	Region Total	Region Total	Region Total	Region Total	Region Total	
Wheat	-4 373	-3 646 700	-6 249 900	-664 500	-500 000	-1 388 700	-4 311 700	-21 134 700
Rice (milled)	-2 329	-1 212 900	-7 848 200	-912 400	-1 078 000	-400 200	-4 233 900	-18 014 700
Maize	-1 475	-1 749 000	-268 000	-339 600	1 000 000	-1 926 800	-830 000	-5 589 300
Barley	-380 700	-270 300	-253 500	-48 400	-300 000	-71 800	-130 300	-1 455 000
Millet	-200	-2 400	7 100	-300	0	300	-70 000	-65 500
Sorghum	-76 900	-126 400	0	-3 000	2 800	-40 400	-85 000	-328 900
Other	-16 500	-33 200	-56 200	-14 500	-10 800	-79 900	-174 300	-385 400
TOTAL	-8 652 500	-7 040 900	-14 668 700	-1 982 700	-886 000	-3 907 500	-9 835 200	-46 973 500

Source: FAO (2003).

in 1997/99 was adequate to meet 80 percent of demand. About one-third of the wheat and two-thirds of the rice consumed in sub-Saharan Africa was grown in the region.

Food imports into sub-Saharan Africa are dominated in terms of both value and calorie content by wheat, rice and vegetable oils. The situation is projected to deteriorate in the period through to 2030, with net imports of wheat and rice tripling and with large imports of maize, vegetable oils and sugar also being needed. Table 26 presents projections for 2030 of national, regional and sub-Saharan Africa deficits of each of the main grains. For sub-Saharan Africa as a whole, there is a projected grain deficit of 47 million tonnes, of which 14.1 million tonnes is in the eight countries that comprise the Gulf of Guinea Subregion. This largely reflects the presence of most populous sub-Saharan Africa country – Nigeria – in the region. Nigeria's projected grain deficit is 8.3 million tonnes, or some 18 percent of the sub-Saharan Africa total. This is roughly in line with its projected 17-percent share of the value of the projected 2030 sub-Saharan Africa population. Table 27 analyses the projected 2030 grain deficits into deficits per capita and per agricultural worker. The greatest deficits per capita are in low population countries that are either in semi-arid areas, have suffered from civil war or are heavily urbanized. Per agricultural worker, the greatest projected deficits are in Mauritius, Gabon, Namibia, Congo, South Africa and Mauritania. At the regional level, the smallest projected deficit per agricultural worker is in Eastern Africa, with the highest being in South Africa. However, in per-capita terms, the projected deficit in South Africa is the smallest, reflecting the likelihood that only a projected 2.4 percent of its national labour force will be working in agriculture in 2030.

In terms of the scope for irrigation to contribute to meeting these deficits, it is necessary to bear in mind that the 2030 deficits projected by FAO take account of agricultural expansion projected up to that year, including the projected expansion in irrigation.

A key factor affecting the profitability of irrigated production in the future will be changes that take place in the structure of the market into which the commodity sells. Evidence from a wide range of countries shows that high transport costs, port charges and other marketing costs in sub-Saharan Africa lead to dramatic differences between export- and import-parity grain prices (Westlake, 1987; Smith, 2003; Rosegrant and Perez, 1997). These differences are greatest in landlocked countries, such as Malawi and Zambia, which have a single annual growing season, and where neighbouring countries tend to face similar movements in annual rainfall levels. In such countries, the unit cost of exporting and importing can be of similar magnitude to the unit value of exports at the nearest sea port. Depending on the year, producer prices in such countries can be close to zero or double the price at the nearest sea port, and the vulnerability of domestic markets to import surges can be significant (Westlake, 2005).

Where prices remain determined by imports, there is consequently a greater likelihood of investment in irrigation being profitable than where prices are at export parity. In this regard, a situation of approximate national self-sufficiency may lead to

TABLE 27
National, regional and sub-Saharan Africa grain deficits in relation to population and labour, 2030

	GDP (billion US\$)	Population (million)	GDP per capita	Labour force (million)	Agricultural labour force (million)	Ratio of ag. to tot. labour force (%)	Calories per capita	Grain Deficit (m.t.)	Grain deficit per capita (kg)	Grain deficit per agric. worker (kg)
SUB-SAHARAN AFRICA	1 185.0	1 272.9	930.9	616.9	296.5	48.1	2566	46 973 500	37	158
SUDANO-SAHELIAN	299.2	212.2	1 410.2	92.4	58.6	63.4	2530	9 835 200	46	168
Burkina Faso	13.5	29.2	461.8	12.5	12.8	102.3	2529	985 700	34	77
Chad	7.1	18.7	380.1	6.8	3.3	48.6	2539	143 300	8	43
Eritrea	1.3	7.7	171.1	3.6	2.8	78.1	2186	891 900	115	316
Gambia	1.0	2.2	454.7	1.1	0.9	80.5	2875	368 700	167	418
Mali	11.7	26.9	435.1	13.5	7.7	57.1	2611	529 300	20	69
Mauritania	4.1	6.0	681.6	2.3	1.2	53.2	2953	1 106 800	184	923
Niger	7.5	30.1	249.6	12.0	10.4	86.7	2269	1 018 000	34	98
Senegal	27.0	17.9	1 508.8	8.4	5.8	69.0	2588	2 416 500	135	419
Somalia	1.4	20.8	65.1	11.4	6.4	55.5	2051	1 265 300	61	199
Sudan	224.6	52.6	4 272.0	20.9	7.4	35.5	2794	1 109 700	21	150
GULF OF GUINEA	237.5	336.7	705.4	161.8	38.1	23.6	2984	14 668 700	44	385
Benin	9.1	13.3	684.9	6.3	1.7	27.5	2872	689 200	52	397
Cote D'Ivoire	46.3	26.5	1 748.9	10.9	2.4	22.5	2913	1 548 800	58	635
Ghana	34.8	32.8	1 061.1	19.6	11.3	57.8	2828	940 300	29	83
Guinea	11.4	15.6	731.3	8.1	5.4	66.8	2539	688 200	44	127
Liberia	2.2	8.9	246.1	2.9	1.6	57.5	2502	834 900	94	507
Nigeria	127.1	220.4	576.7	106.6	12.0	11.3	3109	8 311 000	38	692
Sierra Leone	1.6	10.1	161.9	3.4	1.7	49.8	2456	1 164 800	115	682
Togo	4.9	9.1	542.4	4.1	1.9	45.6	2734	491 500	54	263
CENTRAL	119.1	207.0	575.5	83.9	41.9	49.9	2265	8 652 500	42	207
Angola	26.8	32.6	820.8	13.4	9.3	68.9	2400	1 943 000	60	210
Cameroon	45.2	25.8	1 752.3	13.2	3.4	25.5	2649	1 292 700	50	385
Central African Republic	5.0	6.4	779.1	3.1	1.4	43.9	2412	144 200	23	104
Congo	8.3	7.2	1 151.8	2.7	0.6	20.7	2492	695 400	97	1 237
Congo Democratic Republic	19.1	132.6	144.1	50.5	27.1	53.7	2126	4 200 500	32	155
Gabon	14.8	2.4	6 176.8	1.0	0.2	19.0	2878	376 700	157	1 932

TABLE 27
National, regional and sub-Saharan Africa grain deficits in relation to population and labour, 2030 (continued)

	GDP (billion US\$)	Population (million)	GDP per capita	Labour force (million)	Agricultural labour force (million)	Ratio of ag. to tot. labour force (%)	Calories per capita	Grain Deficit (m.t.)	Grain deficit per capita (kg)	Grain deficit per agric. worker (kg)
EASTERN	177.1	330.1	536.3	171.2	113.4	66.2	2317	7 040 900	21	62
Burundi	3.4	13.8	243.7	7.6	6.7	88.2	2132	216 600	16	32
Ethiopia	31.8	127.0	250.2	66.6	41.4	62.2	2216	2 076 000	16	50
Kenya	32.5	46.9	693.6	28.8	16.6	57.8	2327	2 070 700	44	124
Rwanda	9.4	14.2	661.3	7.7	7.3	94.1	2355	561 000	40	77
United Republic of Tanzania	26.2	65.6	400.2	35.8	24.0	67.1	2450	1 095 000	17	46
Uganda	73.8	62.7	1 177.3	24.8	17.3	70.0	2408	1 021 600	16	59
SOUTHERN	81.6	101.4	804.8	54.4	32.1	59.0	2451	3 907 500	39	122
Botswana	13.9	1.9	7 401.7	1.3	0.5	38.7	2781	313 500	167	645
Lesotho	2.2	2.3	986.3	1.9	0.6	30.3	2699	249 700	110	441
Malawi	5.3	21.8	245.0	10.9	8.2	75.3	2532	465 400	21	57
Mozambique	13.7	30.4	449.0	20.6	13.9	67.5	2487	978 000	32	70
Swaziland	2.9	1.2	2 401.3	0.7	0.2	23.1	2899	108 100	90	671
Zambia	9.3	21.3	438.3	7.8	4.4	57.1	2162	1 350 100	63	304
Zimbabwe	24.7	19.6	1 257.2	10.0	4.1	40.9	2528	45 400	2	11
Namibia	9.6	3.0	3 230.9	1.4	0.3	18.7	2485	397 300	133	1 558
SOUTH AFRICA	241.9	43.9	5 505.8	31.0	0.7	2.4	3209	886 000	20	1 204
ISLANDS AND OTHERS	28.5	41.5	686.6	22.0	11.7	53.0	2425	1 982 700	48	170
Mauritius	14.2	1.4	10 148.7	0.7	0.0	3.6	3298	422 500	302	17 604
Madagascar	9.2	34.3	267.7	18.5	10.4	56.1	2343	634 700.0	18	61
sub-Saharan Africa others	5.1	5.8	884.1	2.8	1.2	44.6	2702	925 500	161	745

prices swinging wildly from import to export parity, making a high-investment activity such as irrigated crop production particularly unsuitable. For the three main grains, the majority of irrigated production in sub-Saharan Africa takes place in countries that are currently net importers.

The magnitude of projected future national deficits of these crops indicates that this situation will continue. Domestic prices, including producer prices, will consequently continue to be determined directly, or indirectly through competition with imports, and domestic producers will continue to receive relatively high import-parity prices.

However, although prices in most sub-Saharan Africa countries have been at import parity, investment in the production of grains under irrigation has not proved to be economically justifiable unless combined with a high-value summer crop, such as paprika or tobacco. While adequate markets for such high-value crops can often be found for individual irrigation schemes, it may not be possible to find remunerative markets for the large output that would result from their being grown on the extensive area of irrigation that would need to be established if irrigation were to be used as a major driver of sub-Saharan Africa grain output increase.

A further key factor that will affect the profitability of grain production in sub-Saharan Africa will be the changes that are agreed to during the current Doha Round of international trade negotiations. Although much of the debate has focused on market access for developing-country exports of agricultural goods and manufactures, it is the impact of these negotiations on the prices at which staples trade internationally that will arguably be of greatest importance to sub-Saharan Africa countries. While less protection of agriculture in developed countries will raise international prices and increase the profitability of production in developing countries, it will have the drawback of also raising the cost of the food imports necessary to make good national grain deficits, thereby raising domestic food prices and harming food security. In this regard, it is noteworthy that the EC has proposed the addition of a developing-country “food security box” to the set of permissible domestic supports provided for in the AoA. This suggests that the EC anticipates that grains will continue to trade at low prices, necessitating maintained or increased support for developing-country producers. No matter what the outcome of the Doha Round and subsequent negotiations, the addition of a food security box would give developing countries greater scope for manoeuvre in terms of supporting domestic food production. It will be important that the contents of such a box be neutral in terms of their support for rainfed and irrigated production. This in turn will require supports that are neutral between investment and recurrent costs.

Of the other main grains produced in sub-Saharan Africa, both millet and sorghum are usually grown in areas of low rainfall that will not sustain maize, wheat or rice. These crops are normally not irrigated and would have lower yields per hectare under irrigation than would maize, wheat or rice. Within much of sub-Saharan Africa, there is also now a widespread taste preference for wheat bread, maize, and rice over millet and sorghum. Given their irrigated yield and taste drawbacks of millet and sorghum and the associated low irrigation benefit-to-cost ratios, there is likely to be only limited irrigation of these crops in the foreseeable future.

Non-cereal staple food crops

The most important of the non-grain staples are cassava, sweet potato, other root crops and plantains. These tend not to be traded over long distances owing to their low value-to-weight ratios and relative perishability. Prices are determined by local supply and demand, and markets usually clear. Unlike grains, where national shortages lead to highly visible imports and national surpluses lead to stock accumulation and exports, there are no significant market surpluses or shortfalls of non-grain staples. For this reason, estimates and projections of supply and demand necessarily indicate

approximate self-sufficiency. However, there is scope for market forces to lead to a substitution of root crops and plantains for grains, and vice versa. Until recently, governments in many sub-Saharan Africa countries supported grain production much more intensively than the production of root crops. Following the reduction or withdrawal of such support as part of structural adjustment programmes, market forces and rational decision-making by small-scale subsistence farmers in countries such as Malawi have led to a move in both production and consumption from maize to cassava. Even so, the FAO 2015/2030 projections for sub-Saharan Africa as a whole show a move in the opposite direction with maize and rice production and consumption increasing more rapidly than for root crops and plantains. This may well happen in response to increased consumer preferences for grains with urbanization and also as per-capita incomes expand. However, it would seem that there may well also be a move among large numbers of low-income subsistence rural farm households from grain production to the production of root crops, aimed at maximizing calorie output per hectare. Such a trend would have little impact on the potential to expand irrigation as it is unlikely that root crops and plantains could utilize irrigation investments efficiently because, despite their high yield response, they are perishable and have low value-to-weight ratios.

In addition to root crops, there will be potential for expanding the irrigated output of oilseeds, but this is likely to be limited by strong competition from imported palm oil and from the domestic and regional production of oil crops that do not require irrigation.

Other food crops

Sugar

For sub-Saharan Africa, the greatest uncertainty over future market developments is for sugar (see Box 9). The market for sub-Saharan Africa sugar have depended critically on EC arrangements with African, Caribbean and Pacific (ACP) countries and on tariff quotas in the United States of America, which both allow sub-Saharan Africa countries to export fixed amounts of sugar at higher than world prices. The future of these arrangements is currently highly uncertain. This is particularly the case for the EC-ACP Sugar Protocol under which the EC undertakes for an indefinite period to purchase and import specific quantities of cane sugar that originates in the ACP states at guaranteed prices. The EU has reformed this arrangement radically, in the face of strong opposition from the major ACP producing countries. There is also uncertainty over the Agreement on Special Preferential Sugar under which the EU undertakes to open annually a special tariff quota for the import of raw cane sugar from ACP states. The policy of the United States of America on sugar imports is also in a state of flux following a reversal of trade and domestic support policy for agriculture under the present administration. There is also uncertainty over arrangements that allow Swaziland and other Southern African producers to export sugar into the protected, high-priced South African market. The segmentation of the world market coupled with these uncertainties makes it very difficult for governments and producers to develop sugar investment policies.

However, there would seem to be one certainty, namely that mean sugar export prices in sub-Saharan Africa will fall in the medium term and are unlikely to regain the average levels seen in recent years. Although prices on the open world market are likely to rise as preferential arrangements are weakened or phased out, it is doubtful for most countries that the rise will be enough to offset the loss of the present substantial price premiums that sub-Saharan Africa nations currently receive on exports to preferential markets. Given the difficulties being experienced by new irrigating producers, which are receiving the full current benefit of national sales to protocol markets, it would seem extremely unlikely that new investment in irrigated sugar-cane production will

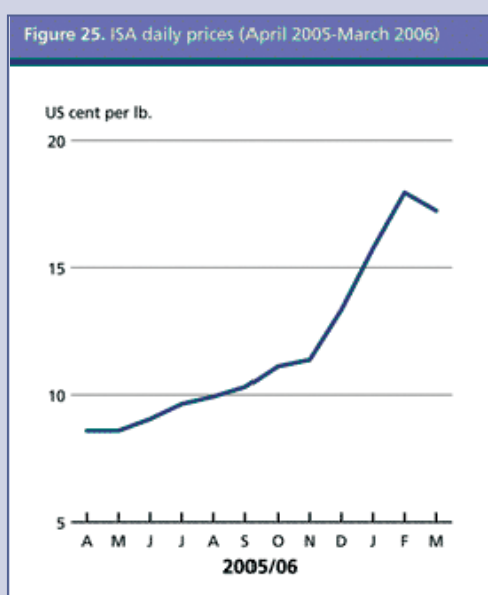
BOX 9

Sugar: market prospects in sub-Saharan Africa

World sugar prices have increased significantly since FAO's preliminary forecast in December 2005 for October 2005/September 2006, largely due to a substantial rise in crude oil prices, as well as a world supply deficit for the third consecutive year. EU sugar policy reforms are expected to reduce world exports by about 5 million tonnes and further contribute to strengthening prices. The International Sugar Agreement (ISA) daily price rose from an average US¢11.38 per pound in November 2005 to an average US¢17.24 per pound in March and reached a 25-year high of US¢19.25 per pound on 3 February. Between January and March 2006 sugar prices averaged US¢16.98 per pound, which was 91 percent higher than the same period in 2005.

Looking ahead, world sugar prices should remain firm and stable around their current levels as the supply and demand fundamentals in the world sugar market do not point to prices strengthening further, barring extreme weather events or a continuing rise in crude oil prices. At the New York Board of Trade, the October 2006 Sugar No.11 futures contract averaged US¢17.66 per pound in April 2006.

In **Africa**, sugar production has been revised upwards to 5.6 million tonnes in 2005/06, reflecting expected increases in Mozambique, Swaziland and Zimbabwe in Ethiopia and the United Republic of Tanzania. Sugar production in Mozambique has risen rapidly from 39 000 tonnes in 1998 to about 240 000 tonnes in 2005/06, largely due to improved productivity at both the farm and mill levels through a rehabilitation programme implemented by the subsector in 2000. In **Swaziland** and **Zimbabwe** sugar output is expected to increase 625 000 tonnes and 478 000 tonnes, respectively, while in **Ethiopia** and the **United Republic of Tanzania**, production is forecast to reach 300 000 tonnes and 280 000 tonnes, respectively. A factor contributing to these expansions has been the expected gains anticipated by the Least Developed Countries (LDCs) from the EU Everything but Arms (EBA) Initiative allowing unlimited and free of duty market access to LDC sugar exports from 2009/10.



FAO Food Outlook: Global Market Analysis No. 1 June 2006
<http://www.fao.org/giews/english/index.htm>

be profitable in the future. The reduction of trade barriers within Africa may mean that there is some potential for regional sales at higher than world prices, but the relative ease with which sugar can be transported suggests that price premiums for regional sales will be small and insufficient to make new irrigated cane production attractive.

Horticultural crops

Although great attention is given by international agencies to high-value horticultural exports, all but a small proportion of fruit and vegetable production in every sub-Saharan Africa country except South Africa is consumed domestically. South Africa exports about one-third of its non-citrus fruit output and trades small amounts of low-quality vegetables with neighbouring countries. For sub-Saharan Africa as a whole, FAO estimates that national imports and exports of vegetables amount to 2.6 and

1.1 percent of production respectively. For fruits, the corresponding proportions were 3.0 and 12.0 percent. About half of fruit exports by sub-Saharan Africa nations were from South Africa. Even in a country such as Kenya, which has been highly successful in penetrating export markets for fruits and vegetables, the weight of vegetable exports in 1997/99 amounted to only 8.6 percent of the weight of production. Kenya's fruit exports were equivalent to more than one-third of national production, but these comprised mainly estate-produced canned pineapples and pineapple juice.

Thus, while the returns to investment in irrigation used to produce high-value fruits, vegetables and cut flowers for export are generally attractive, the volumes involved are very small. These volumes are likely to grow in the future, but from a very small base. Total growth is likely to be constrained by ceilings on airfreight capacity to Europe and the Near East and by the small size of specialized markets for high-value fruits and vegetables, which makes them easily saturated.

Domestic markets for fruits and vegetables will remain the main source of demand for horticultural products. These markets will clear domestically, with retail prices that are unstable in the short term but which necessarily reflect domestic costs of production, preparation and marketing over the long term. The scope that this gives for the expansion of irrigation will depend principally on the relative unit costs of rainfed and irrigated production. The growth of supermarket trading and associated trading practices will give a competitive edge to irrigated production as it facilitates the supply of pre-contracted quantities of uniform quality on a predictable basis.

Livestock and dairy

The share of livestock products in total agricultural production is lower in sub-Saharan Africa than in both non-sub-Saharan Africa developing countries and the world as a whole. However, livestock products are an important element in total agricultural output. Indeed, they have a higher estimated farmgate value than grains in every sub-Saharan Africa region other than the Gulf of Guinea. Moreover, sub-Saharan Africa livestock output is projected to grow more rapidly than crop output, other than in Eastern Africa and the Republic of South Africa.

Livestock production in sub-Saharan Africa depends more on grazing than is the case in the world as a whole. Currently, feed accounts for 3.5 percent of the value of all crops grown compared with 8.1 percent in developing countries and 13.7 percent globally. However, the importance of feed in total sub-Saharan Africa crop production is projected to rise to 4.7 percent in 2030. In absolute terms, feed-crop output is projected to triple.

Within this scenario, there will be potential for a strong expansion in irrigated feed production. Depending on local growing and market conditions, this could involve the production of feed barley and maize and/or alfalfa and other green-fodder crops.

Beverage and industrial crops

The main crop in this category with irrigation potential is cotton. sub-Saharan Africa cotton production is concentrated in the Sahel and West Africa, where all producing countries are net exporters.

Globally, the flow of cotton is principally from developed to developing countries. sub-Saharan Africa is an exception to this. The FAO 2015/30 projections show that all the major producing countries will remain net exporters except for Nigeria, for which production in 2030 is projected to equal national demand. The only cotton importer in sub-Saharan Africa of significance is South Africa, which imports from other producing countries in Southern African, from elsewhere in sub-Saharan Africa and from non-sub-Saharan Africa sources. Although important in the context of Southern Africa, South Africa's net imports were equal to less than 2.3 percent of total sub-Saharan Africa production in the 1997/99 baseline. This is projected to rise to 3.8 percent in

2030. The only other net cotton importer in sub-Saharan Africa is Mauritius, but its imports amount to only around 1 percent of sub-Saharan Africa production.

The AGOA provides for duty- and quota-free imports to the US of apparel made in eligible sub-Saharan Africa countries from fabric, yarn and thread produced in the United States of America. Imports of apparel made from sub-Saharan Africa fabric and yarn are also allowed duty-free entry but are subject to a cap of 3 percent of total apparel imports to the United States of America rising to 7 percent over an 8-year period. For apparel, the access afforded to the market in the United States of America has already led to additional foreign investment in sub-Saharan Africa. For example, a Sri Lankan company has recently invested US\$2 million in a new textile factory employing 650 local workers in the United Republic of Tanzania. To the extent that domestically grown cotton is of suitable quality for use in such ventures, the AGOA will give a stimulus to the demand for cotton in sub-Saharan Africa cotton-producing countries.

Most growth in cotton products has been in developed countries. However, these countries increasingly import their textiles and clothing from developing countries, which are now the main market for raw cotton. China has become a major player in the world cotton market. It is the world's largest producer of cotton and exporter of apparel. It has a massive internal market for textiles, and its booming textile industry has also made it an important importer. The United States of America remains the world's largest cotton exporter.

International cotton prices are heavily distorted by subsidies to farmers in the EC and especially in the United States of America, and by import tariffs that average about 10 and 20 percent in developed and developing countries, respectively. To the extent that these subsidies and tariffs are reduced under the Doha Round, world cotton prices could be expected to increase sharply as supply from the United States of America and the EC falls and demand rises, especially in developing countries. Thus, export prices for cotton are likely to remain reasonably attractive. However, in none of the main sub-Saharan Africa exporting countries are producers likely to benefit from a domestic price increase that would result from a switch from export to import parity.

Of the main tropical beverages, the flow of world trade for coffee and cocoa is predominantly from developing to developed countries. As demand for these commodities is price inelastic, any increase in global output reduces the value of world trade and in effect transfers income from poor to rich. Thus, there is no justification for international agencies to finance measures that increase their output, including measures relating to the irrigation. However, tea is both produced and consumed predominantly in developing countries and, consequently, the argument against international support for production expansion does not apply.

For both tea and coffee, price prospects are poor. Both national governments and external agencies are focusing on efforts to diversify into other activities. In the case of coffee, diversification is now an accepted policy of the main international commodity body, the International Coffee Organization. Thus, there would seem little or no prospect for a market-based expansion of irrigation.

Summary

In summary, rice either requires irrigation or has significantly higher yields when irrigated. sub-Saharan Africa is no exception. There are huge national markets in rice, notably the Gulf of Guinea that could be satisfied by domestic production if consumer prices and quality could compete with imports. Where wheat and maize are grown or can potentially be grown, they also generally have much higher and more reliable yields when produced on irrigated land. Thus, there is potential for irrigation to close the large and projected widening gap between sub-Saharan Africa calorie consumption and production. However, in the absence of a substantial sustained increase in world grain prices, grain production needs to be compared with the production of a high-

value summer crop in order to be profitable. Given the large areas under irrigation that would be required in order to make a significant dent in staple deficits, it may be difficult to identify complementary summer crops with sufficiently large markets. This is particularly the case given the generally poor market prospects for most non-food crops. Cotton would seem to have the greatest market potential among the main established non-food crops that benefit from irrigation. However, the difficulties in maintaining consistent yields and the high inputs required (in terms of pesticides and fungicides), make scaled-up production a risky venture for many African farmers.

REGIONAL DEMAND AND THE POTENTIAL FOR INTRAREGIONAL TRADE IN MAIZE, WHEAT AND RICE

Within all of sub-Saharan Africa, the only country with a major surplus of maize, wheat or rice in the period 1997/99 was South Africa with an estimated average of 990 000 tonnes of maize per year. Measured in calories, the demand for staple food crops exceeded supply in every sub-Saharan Africa country including South Africa. Annexes 7 and 8 present an analysis of regional calorie surpluses and shortfalls for the baseline and 2030 respectively.

FAO projections to 2030 show these deficits increasing across sub-Saharan Africa and trend data show food import bills rising. Thus, in the absence of very substantial increases in production, there will be little potential for regular trade in basic foodstuffs between sub-Saharan Africa countries. However, there will be potential for cross-border trade where natural markets span borders and for opportunistic trading when good rainfed growing conditions lead to exceptional national surpluses. While the impact on food availability of such surpluses is to be welcomed, they often lead to substantial price instability, both in the country achieving the surplus and in other countries in the region. The potential for this has been demonstrated recently in South Africa, where maize prices both domestically and in neighbouring Swaziland have been highly unstable, as South Africa has swung between surplus and deficit. The apparent grain deficits in the Niger in 2005 were also as a result of regional price volatility, not absolute regional scarcity of grain. Indeed, the harvest in coarse grains (sorghum and millet) in neighbouring Nigeria had been good in 2004/05 with Nigeria exporting to the Sudan through the World Food Programme.

AN APPROPRIATE IRRIGATION SECTOR RESPONSE

The cost of irrigated agriculture in sub-Saharan Africa is high when projects are taken to appraisal where development finance is likely to be limited and carry considerable opportunity costs in the face of all the other developmental challenges that sub-Saharan Africa faces. Furthermore, experience shows that there is a limit to the pace of investment that sectoral economies can absorb. Consequently, it could be argued that it is necessary to restrict irrigation sector activity to those commodity groups on which it is likely to have the greatest impact.

The existing contribution of irrigation to non-cereal staple food production in the region is negligible and is expected to stay that way for the foreseeable future unless commercial production of rice in particular can start to substitute imports. Irrigation of other food crops is significant but dominated by sugar, for which increased production under irrigation is still marginal as the effects of the reforms of the preferential markets have worked through. If irrigated sugar cane should then prove attractive, it may be more appropriate for the private sector to promote and develop perhaps, where advantageous, on the basis of nucleus estates and outgrowers. Of the other food crops that are irrigated, most comprise high-value horticulture; but the quantities involved will be small and often produced by commercial entities. Even so, there may be a significant opportunity for governments to create an enabling environment for increased private-sector investments in the major staples. However, in the absence of acceptable subsidy systems, this is

likely to require the identification of marketable high-value options as second crops to complement the lower values associated with the bulk staples – not an easy task.

For all the beverage and industrial crops other than fibres, production in sub-Saharan Africa will exceed the regional requirements throughout the period under consideration. Fibres will move from a small surplus in 1997/99 to a projected small deficit in 2030. Cotton will remain in surplus regionally. The only significant importer in the region will be South Africa, whose imports are projected to be equivalent to some 3.8 percent of sub-Saharan Africa production in 2030 – strategically negligible at the regional level. Mauritius is also expected to remain a net importer, but equally on a minor scale. Nigeria, the other big importer, is expected to become self-sufficient by 2030.

THE PROSPECTS FOR FINANCING IRRIGATION

This leaves cereals and livestock feed as the dominant crop sectors for which irrigation basic solutions can be anticipated.

This is by way of acknowledging that, in addition to the desirability of requesting, participating in and contribution to publicly funded programmes, they can also implement schemes on their own or with the assistance of NGOs. There are also cases where NGOs cooperate with international development banks and bilaterals.

There will be opportunities for both the public sector, private farmers and commercial investors to become involved in the financing and implementation of irrigation schemes. However, different strategies will be necessary. Before suggesting what these may be, it is helpful to re-articulate and answer the four questions asked in Chapter 2.

Thus, whether or not increased irrigated production should be included in any publicly funded strategy to reduce the need for sub-Saharan Africa to import agricultural commodities up to 2030 would depend on:

- whether specific public expenditure represents a variable economic opportunity not only in terms of its own profitability but also when compared with the opportunity costs of water and development finance;
- the existence of a convincing and transparent legal, policy and regulatory framework to promote the economic mobility of water;
- there being adequate capacity among the planning and service institutions;
- the level of awareness and demand emanating from the beneficiaries along with their commitment to O&M and recurring-cost recovery;
- the compatibility of the proposed investment with accepted environmental responsibility.

The **extent** to which increased irrigated production can be included in any publicly funded strategy will hinge on how much can be done by when, while satisfying economic and environmental criteria. This will be determined primarily by two sectors:

First, the rate at which the institutional landscape is able to absorb and make good use of both technology and finance. Second, a rational ranking of investment opportunities with a cutoff point. Ranking will depend on their attractiveness as investments, levels of expected participation, ease of implementation, and the availability of water resources. Unless there are specific social agendas involved, such as improving social connectivity and addressing highly local food security challenges, this is likely to result in the following system of priorities:

- a. where yields are low, to increase them by means of farmer training, improved service delivery, scheme improvement and incentivization via market liberalization (which may result in short-term dips, for which short-term targeted subsidies might be required and there are doubts that many governments would have the ability or financial resources to stabilize and support prices in this way);
- b. scheme rehabilitation, upgrading and expansion;
- c. new run-of-river schemes;
- d. new storage-based schemes.

Key lessons that can be learned from past mistakes concern matters of governance, institutional capacities, poor planning and implementation of schemes, problems after the commissioning of schemes, and environmental degradation.

With respect to governance, the lesson is that sustainable, productive public-sector irrigation is unlikely to be achieved while inadequate legal and policy frameworks persist. Moreover, this is often exacerbated by low levels.

With respect to institutions, the lesson is that with inadequate capacity (in its broadest sense) and supply-driven mindsets, be characterized by low levels of participation and consultation; feasibility studies will often be excessively optimistic; and poor preparation will be followed by poor quality, badly supervised implementation. This situation is not helped by many development partners' preference for disbursement-oriented monitoring indicators.

In addition, it is now clear that low institutional capacity also leads to post-commissioning problems. These include: inadequate incentives, often because rural access and marketing arrangements have not been developed in parallel with the irrigation schemes; suitable technology being perceived as unaffordable; and affordable credit being either inaccessible or operated to the advantage of the lender or by lenders with limited familiarity with the feasible farming systems at the locations in question. Poor, unaccountable and ineffective service delivery results in low service-cost recovery. Inadequately sensitized and prepared communities prove unable to operate their schemes. A lack of suitable allocative mechanisms reduces access to water at the resource level while a lack of robust enforcement of regulations reduces equitability at the scheme level and raises environmental risks and uncertainty at both.

Finally, irrigation is not sustainable unless operated as an environmental entity dependent on the broader environmental system. In this respect, irrigation has both passive and active relationships with the environment. In addition to the potential environmental costs associated with irrigation, the schemes themselves can be compromised by changing hydrology as a consequence of catchment degradation upstream and reduced reservoir storage caused by sedimentation for the same reasons. Equally, poor pest and varietal management on one scheme can have disastrous effects on well-run schemes nearby.

The extent to which these risks can be mitigated in the future depends on a variety of factors, many of which will require greater amounts of political capital than have been available hitherto. Therefore, perhaps the most important mitigating measure would be increased public awareness leading to small-farmer empowerment and well-informed grassroots demand for irrigation. Thus, as a result of the increased political flexibility, increases in the political capital necessary to respond to new kinds of demand could be anticipated. In addition, public awareness would be expected to promulgate and enforce a sound, transparent well-disseminated regulatory framework.

More confident policies will also lead to improved donor coordination. In addition, the use of institutional reform and strengthening programmes along with framework investment strategies rather than "shopping lists" will avoid the ad hoc "hit-and-run" approaches of the past. Such framework plans will be more successful where they include or are accompanied by programmes of legal and policy framework reform, especially concerning: land tenure, water rights, the establishment of user groups, and the rights and obligations of the users of public-sector irrigation facilities. Similarly, subsidiarized, streamlined, demand-driven, accountable, service-oriented and strengthened institutions will be necessary in order to ensure the sustainable management and further development of the sector.

Finally, environmental risks will be mitigated by stronger regulation, but by regulation based on improved monitoring and forecasting functions, ideally in ways involving the communities themselves.

In summary, a three-pronged publicly funded strategy is called for. The first prong will concern: institutional reform and capacity building; improvement of the pertaining

legal, policy and regulatory framework; and the establishment of a suitably enabling investment environment. The second will be targeted at obtaining the best performance out of existing assets, while the third will be concerned with the creation of new ones. In this respect, the exigencies of economics, social upheaval and environmental risk would suggest that simple, run-of-river schemes are likely to be quicker and easier to implement than large, complex storage- or transfer-based proposals.

This chapter has proposed no specific strategy for the private sector. This is intentional, partly because this study is concerned primarily with investigating the scope for increased public investment in irrigation. However, in addition, civil society is generally being encouraged to plan its own development. With this in mind, the role of government in the future is more likely to focus on the provision of public goods facilitation, regulation and arbitration rather than direct public expenditure in and public operation of irrigation schemes (Box 10).

BOX 10

Foreword from Zambia's Irrigation Policy and Strategy Document, 2004

This Strategy Document has been the subject of various consultations within the public and private sector. It has benefited from comments received at the national workshop held in Lusaka on the 13th and 14th of January 2004. These comments have been incorporated to produce a final document for submission as a Cabinet Memorandum with a recommendation for adoption by Government.

It should also be noted that this Strategy is aimed to provide Government guidance to all levels and types of investment. The Irrigation Task Force established by the Zambia National Farmers Union and MACO in late 2003 to source finance for the expansion of commercial irrigation to buffer domestic production shortfalls (in response to the 2002/3 drought) is seen as a key financing initiative in line with the directions established by this Strategy.

In addition there are several initiatives from multi-lateral donors that are being developed in early 2004 that will have implications for the implementation of this Strategy. First is the African Development Bank funded Smallholder Agricultural Production and Market Support Project. The identification report for this proposed loan was prepared in October 2003. Second, the preparation of 'bankable projects' under the NEPAD CAADP umbrella in which land and water management is the first 'pillar' of the agriculture programme. Both initiatives are assisted by FAO Investment Centre (TCI). Finally, the World Bank funded Agricultural Development Support Programme (ADSP) for Zambia. The delivery of improved services to boost irrigation production can be expected to feature in the project.

Taken together – the Irrigation Task Force and the multi-lateral donor supported projects – these emerging initiatives could be considered the prime elements of the investment action plan recommended as the followup to this Strategy. The question remains as to what degree of balance across the whole irrigated sub-sector, that is advocated for in this Strategy, can be maintained as the preferences of donors and sector players become apparent. The danger being that development in the sub-sector becomes concentrated in one or two areas leaving others to lag or that the building blocks for sustainable development are not put in place at the right time – the staging of investment. Clearly, this will remain a risk. It is not the intention of this initiative to ask for absolute conformance to the Strategy. Rather it is up to Government to direct its efforts to ensure that continued expansion in commercial irrigation brings with it commercialisation of emergent and traditional farmers. There are high political and economic risks in not achieving a balanced progression of all Zambian farmers who depend upon irrigation as their lead input.

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