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**AGRICULTURAL TRANSFORMATION IN ZAMBIA: PAST
EXPERIENCE AND FUTURE PROSPECTS**

by

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1. BACKGROUND

From being in the top third of Third World countries at Independence Zambia has become one of the poorest for no very obvious reason. It has an excellent mineral, energy and natural resource base and it has a low population density (c. 12 per square kilometre) spread fairly evenly across an area free of deserts and of thick forest. Its low population density compared to neighbours such as Malawi, Tanzania and Zimbabwe is itself something of a mystery - especially as the country has no history of war this century and features no special endemic diseases with the exception of falciparum malaria (which few would consider adequately explains the missing millions).

Many of Zambia's tribes entered what is now the country in recent historical times (the last 160-300 years) from Zaire or from the South. The latter brought with them a tradition of cattle keeping and permanent cultivation. The Northern group, on the other hand, are largely slash and burn agriculturists and have traditionally depended upon wild animals for meat.

The low areas of Zambia (the valleys and the plains to the south-east) have unreliable rainfall averaging of around 500 mm per annum (this is "Region I" in the agro-climatological convention). Most of the country lies on a plateau at over 1000 metres altitude with rainfall varying from 750 mm (towards the South - region II) to 1200 mm (towards the North - region III). There is a single summer rainy season lasting up to five months.

Much of the land in Zambia is potentially arable with only some 10 percent actually in use. The soils tend to be sandy and on the acid side (a problem exacerbated by nitrogen fertilisation). There is a general deficiency of phosphorus (and of course nitrogen) and other deficiencies are often highly significant - particularly sulphur in the higher rainfall areas. Under proper management a wide range of crops can be produced at high yields and quality. Commercial farmers routinely produce in excess of 6 tonnes per hectare of maize. Very high quality Virginia and Burley tobacco is grown (the former by commercial/emergent farmers and the latter by villagers). Cotton and confectionery groundnuts are among smallholder crops that are renowned for their quality.

Up to 1952 Northern Rhodesia had British Protectorate status and was regarded as something of an annex to Southern Rhodesia - a colony that attracted European settlement. Little settler agriculture or industry developed in Northern Rhodesia with the exception of copper mining on the famous Copperbelt close to the Zairean border, since Southern Rhodesia proved more attractive to investors (compare with Kenya versus Uganda or Tanzania). Zambia's rural areas became suppliers of labour - to the Copperbelt and Rand mines, as well as to Southern Rhodesian farms and factories. Surplus maize production from the native population was actually taxed in the 1950s.

In 1952 the Federations of the Rhodesias and Nyasaland was formed. This was basically a stratagem to side-step the de-colonisation process by forming a political unit large enough to claim dominion status - or at least to extend colony status to Northern Rhodesia. Economically the federal arrangement merely reinforced the tendency of economic activity, other than mining, to concentrate South of the Zambezi.

The Federation collapsed and Zambia became Independent in 1964. Although the new system was plural (there were three parties in the first parliament) it was dominated heavily by Kenneth Kaunda's UNIP. Within eight years a one-party state was established and the reign of "humanism" was embarked upon. Businesses, including the mines, were nationalised; price controls introduced; parastatal companies sprung up like mushrooms; state farms run on military lines were established throughout the country; exchange rates and interests rates were set at levels that grossly over-valued the currency. The litany is familiar. While Zambia's

socialist dictatorship was benign by most standards its effect upon economic growth and per capita incomes was as deadly as that of the authoritarian regimes of Eastern Europe. The economic woes of the country were exacerbated by external factors such as the end of the Vietnam war (and the consequent fall in copper prices) and by the liberation struggle being waged in Rhodesia. The second had direct economic effects, such as cutting Zambia off from cheap and fast imports from the South, but the most baleful influence was to provide a sense of uncertainty and threat that made political opposition - and even plain speaking - more difficult.

Agricultural policy in the period of Kaunda's rule was characterised by announcements, every two or three years, of some new "agrarian revolution" or other quick fix to correct the evident backwardness of the country relative to its former partners in the Federation. We might usefully distinguish three sectors within agriculture and briefly outline the attitude of Kaunda's administration towards them:

The State Sector. This consisted of a grossly ambitious programme of State Farms and parastatal farming ventures spread throughout the country, as well as a quasi-military programme under the Zambia National Service. The Chinese (at the time of the Cultural Revolution) were quite heavily involved in technical assistance to the ZNS. There were also a wide range of other settlement schemes and state-supported co-operatives aimed at regimenting the urban unemployed or the rural non-productive. Although it was very difficult to obtain any quantitative information about the operations of the State Sector (since such information was regarded as obviously extremely useful to Ian Smith), it was clear that all was not well. Stories of irrigation canals that ran uphill and of truck loads of cabbages bought at the market and distributed across a newly ploughed field to impress Kaunda, provided some amusement if not value-for-money to the taxpayer. The current picture of the State Sector is one of encroaching bush, graveyards of machinery, and privatisation at knock-down prices. Whether in maize, tea, coffee, rice, beef, tobacco, poultry, milk or any other commodity the failure has been absolute.

The Commercial Sector. As I have pointed out above this was never very large - say roughly 10 percent of the size of its counterpart in Zimbabwe at the best of times. Kaunda's thinking towards it was always deeply ambiguous. It was, and still is, dominated by whites and therefore could hardly be considered a political priority for its own sake. The idea of Zambia becoming dependent upon an enlarged commercial sector for its export earnings (let alone its basic food requirements!), was not one that a nationalist leader could easily espouse. On the other hand, why destroy something that works and that employs 100,000 people without creating much land pressure? The resulting policy towards the commercial sector was, by and large, one of benign neglect.

The Smallholder Sector. Government's attitude towards this was also ambivalent, though for rather different reasons. As I have described the traditional (pre-Independence) economic role of Zambia's villages was not to supply the towns with food or the First World with cotton or tobacco or groundnuts. It was to supply the urban areas of Zambia and countries to the South of it with able-bodied labour, much of which migrated permanently. The aged, infirm and the obstinately rustic remained behind and subsisted largely on monthly remittances from those that had left. The economic role of the rural dweller was thus one of a net consumer of wealth rather than that of a producer. This "tradition" obviously conflicts strongly with a view that the rural population should be a net producer of wealth (given Zambia's natural advantages as an agricultural country). The double conception of Zambia's villagers as potential surplus producers, on the one hand, and as social welfare recipients, on the other, led to some very confused interventions in "peasant" agriculture. The confusion is nowhere more evident than in the case of policy in regard to maize promotion and marketing, which is discussed in detail in the next chapter.

In 1991 Zambia had multi-party elections and a new Government was elected and formed by the MMD (Movement for Multiparty Democracy), a liberal and free market oriented coalition of anti-Kaunda forces. This process, though it has many features unique to Zambia, can be regarded as part of the same process of transition to an open society that has taken place in so many countries in Eastern Europe and Africa since the end of the Cold War. The economic programme is familiar: removal of subsidies; removal of exchange and other price controls; privatisation; tight budgetary discipline; promotion of foreign investment etc. In Zambia, as in some other countries, it goes under the name of the Structural Adjustment Programme.

After nearly four years of MMD rule farmers, large and small, are deeply unhappy and inclined to blame the Government for their woes. Certainly agricultural production and profitability has fallen, but it is not easy to apportion the causes with accuracy amongst the following.

Subsidy removal. Heavy fertiliser, transport and milling subsidies were the order of the day in 1991 and were removed in 1992. Obviously this has raised costs of production, especially for low-yield and badly placed producers (as well as for consumers).

Market liberalisation. Many critics point to the removal of the State as buyer of maize and "leaving it to the private sector" as a crucial error - arguing that the private sector does not have the experience and management capacity to handle the country's crop.

Open borders. The MMD administration has been reluctant (or unable?) to do anything to regulate what many farmers see as "dumping" of such commodities as rice and wheat flour from the world markets, and of many products from Zimbabwe.

Tight money/high interest rates and the SAP generally. Tight money policies go a long way to accounting for the sufferings of the agricultural (and manufacturing) sector. It is financial incapacity, rather than any ideology, that led to the removal of subsidies. Very high interest rates and general money shortage may also be held to account for the failure of the marketing system since, in the absence of funds to bridge the gap between harvest time and consumption time no marketing system - whether private or Governmental - can operate effectively.

Drought. Zambia has experienced one extremely severe and two moderately severe droughts in the past four seasons - making the period 1991-1995 the worst four-year period on record. Not only has rural wealth been burnt up by drought but resources have had to be diverted to famine relief on a large scale. The unrealistic expectations factor. Some analysts argue that disillusion in the agricultural sector is the result of unrealistic expectations about what a new Government committed to structural reform could be expected to achieve after taking over a bankrupt country.

The defenders of Government incline to the view that "there is nothing for it" given the economic realities (both in the sense of the numbers themselves and in the sense of what the donors will tolerate). But critics tend to argue that, even within the straight jacket of the SAP, Government has been guilty of a failure to manage agriculture and the changes it must undergo. They point out that the present Cabinet is heavily urban in composition, with President Chiluba himself and many of his important lieutenants hailing from the Copperbelt or the line-of-rail. There is no minister at present with any history of close association with the agricultural industry, including the minister responsible for agriculture. This fundamental bias, the critics say, has led to limited funds being more readily spent on supporting ailing state airlines and collapsing banks than on the agricultural sector. They also point to an apparent lack of political will as regards the necessary

decentralisation of the Ministry of Agriculture, Food and Fisheries - moving it out of Lusaka into the districts where agriculture and fishing actually take place.

The past four years have coincided with the resolution of the South African crisis, a political development that has uncertain consequences for Zambia. The first tangible sign of peace in the region was the "Little Trek" - a stream of white South African farmers visiting Zambia by road and by air with a view to possible settlement. Very few actually did settle (probably fewer than thirty). The sufferings of the farmers already in the country were hardly a good advertisement! The main thrust of the Afrikaner emigration movement now appears to have shifted to Mozambique and Southern Zaire.

South Africa's new found respectability raises both fears and hopes in the smaller countries of the region. The fears concern the diversion of economic activity towards Johannesburg and the inability of the smaller countries to hold their own in the market place. Zambia, long used to being Zimbabwe's back yard, is less concerned about South Africa's threatened dominance than is Zimbabwe itself! For the Zambian it is nothing new to find shops stocked with foreign goods that have passed their sell-by date or to contemplate the fact that "privatisation" or "private investment" almost automatically imply control by companies whose base of operations is elsewhere in the region.

There are 101 initiatives aimed at closer Southern African integration - COMESA/PTA, CBI, the widening of SACU etc. It is rather unclear, in specific terms, where the benefits of economies of scale or of the exploitation of comparative advantage will actually materialise.

All countries are inclined to be protective of their agricultural sector and the countries of Southern Africa are no exception. Even with the oldest common market in existence - the South African Customs Union SACU - individual members tightly control grain markets. For example Namibia operates a guaranteed price single channel marketing system for locally produced maize and wheat and bans imports from South Africa until all locally grown grain has been taken up. There is a lot of ground to be covered by negotiators before such practices, and practices such as subsidising exports (South Africa, Zimbabwe) are brought to an end.

In the case of commodities that are less strategic than grain and that some countries cannot grow efficiently there is anyway little impediment to trade at present. Zambia exports soya bean to South Africa - utilising road and rail backload rates of some US\$50 per ton to land the commodity competitively with South America. In some years confectionery groundnuts have also been exported, but this smallholder produced commodity has proved unreliable in quantity and quality due to lack of a sound interface between commerce and the village. A recent venture by South Africans into organising Zambia's peanut industry appears to have failed due to "crop raiding" by small scale traders. This is a story that can be told over and over again in respect of many smallholder crops and is covered later.

To summarise: I have outlined some of the historical reasons for Zambia's agricultural backwardness. These include in particular the dominance of King Copper, the influence of Rhodesia aka Zimbabwe in pulling non-mining investment away from the country, and the misguided if expensive and well-intentioned policies applied during Kenneth Kaunda's reign. I have also outlined the sorry state of the industry following nearly four years of the liberal but structurally adjusting Chiluba administration.

Will the suffering ever end?

Read on.

2. MAIZE - FOOD FOR THOUGHT

Maize is far and away the major agricultural commodity produced in Zambia. It dominates both commercial and smallholder agriculture economically. More important it dominates political thinking about agriculture, about the relationship between rural and urban people, and was instrumental in overthrowing a Government that had struggled with it for 27 years. Its special status warrants it a chapter to itself since it presents the major immediate challenge to Government (and donors). If maize does not undergo transformation then it is likely that the rest of agriculture will remain in limbo, paralysed by its baleful influence.

The Zambian "maize belt" consists of agro-ecological Zone 2 (medium rainfall and high altitude) and parts of Zone 3 (high rainfall and high altitude). These areas roughly cover the plateau portions of the Southern, Central, Lusaka, Eastern and Northern provinces, and the Southern part of the Copperbelt province. In the other three provinces (Luapula, North-Western and Western) cassava and other tuber crops predominate although some maize is grown.

As is the case in many Southern African countries, Zambia's maize industry features a small number of highly efficient, large-scale commercial farmers and a large number of much smaller farmers. A conventional distinction in writings on Zambian small farmers is between those who use oxen for cultivation and those who cultivate by hand. The former are largely concentrated in the East and South of the country where a tradition of cattle keeping extends back to well before colonial times.

Zambia is the most urbanised country in sub-Saharan Africa, with about half of its population of eight million people living in cities or district centres (bomas). However, according to some studies, as many as 25 percent of urban dwellers are involved in agriculture (mainly maize) in addition to 90 percent or so of rural dwellers. All in all some 800,000 families are dependent on farming for some of their income (in cash or in kind) and maize is probably the major crop concerned for more than 500,000 of them.

The Commercial Sector

Large-scale farming (relative to the village scale) effectively started in Zambia in the 1920's when a small number of white immigrants settled on farms in order to supply the growing urban population. Maize was always the major crop grown on commercial farms. Until the introduction of "Green Revolution" technology in the late 1950's husbandry and yields were on a par with those obtaining in villages under traditional methods of husbandry. However with the development of the hybrid SR52, grown in conjunction with high levels of fertilisation, yields shot up five-fold.

Nominally there are about 1100 commercial farmers but this includes farmers who are not maize growers, who are "weekend farmers" and who have been misclassified. Effectively the commercial maize farming sub-sector is made up of some 400-500 individually or corporately owned farms in the alienated (non-customary tenure) areas of the country. These areas are concentrated along the "line of rail" that runs from Livingstone, through Lusaka to the Copperbelt. Where maize is concerned commercial farms operate at a scale of several hundred to well over a thousand hectares, employing modern technologies and generating yields that are amongst the highest in the world (on average over 5 tonnes per hectare in a non-drought year, ranging as high as 7.5 tonnes). This sub-sector obtains most of its financing requirement from equity and from the commercial banking sector.

Prior to the liberalisation of maize marketing in the 1990's commercial farmers were obliged to sell into the same marketing board (NAMBOARD) or (later) the co-operative system as small farmers. They are adapting readily to liberalised marketing, however - for example by exporting and by processing maize into meal for direct sale to consumers.

The area planted to maize by the commercial farmers can vary enormously from year to year. Current maximum capacity is estimated at 100,000-110,000 hectares which would yield in excess of half-a-million tonnes under conditions of normal rainfall. The area of maize planted by the commercial sector in the most recent season (1993/94) is estimated at some 30,000-35,000 hectares - only one third of capacity. In the 1992/93 season it was at least double this figure.

Decision-making in the commercial sector tends to be classically "rational" in that it is based upon an explicit calculation of expected costs and expected prices - and thence expected profitability. In situations of great uncertainty concerning the relevant numbers - such as prevailed over the period of 1993/94 season - the commercial sector displays a strong tendency to risk-aversion. Soya bean is the main alternative crop to maize. Its input cost, as a proportion of final value, is relatively low and the crop can be marketed to South Africa shortly after harvest.

The present dip in maize production in the commercial sector is due to the unprofitable combination of interest rates, domestic maize prices, regional prices and exchange rates that characterised the 1993 marketing season. Many commercial farmers went heavily into debt and there was a general fear that the economic conditions of 1993 (caused by the Structural Adjustment Programme) would continue in 1994 and 1995. By and large the unfavourable conditions for farmers *have* continued and profitability has been further hit by unfavourable weather conditions. It is now apparent that capacity in the commercial sector is beginning to fall as machinery wears out and is not replaced.

The Smallholder Sector

Some 400,000 small farmers - mostly villagers farming traditional land - produce the bulk of Zambia's maize off some 500,000 - 600,000 hectares. An estimated 140,000 of farmers use oxen for all or part of their cultivation and are responsible for about half the hectareage planted to maize. The remainder use hand hoes and typically cultivate only about one-third the area of an ox-cultivator. Very broadly speaking there is a tendency for hoe-cultivators to be villagers, resident in the place of their birth and cultivating communal lands; while many ox-cultivators are resident away from their village, often on land over which they have some form of security of tenure. The sociological background to the matter is complex and we will just say that there is evidence of a tendency for more successful farmers to "outgrow" their villages and move away to settlement schemes or to the traditional lands of other tribes. Some of Zambia's largest ox-cultivators are operating outside their home provinces, and some are even originally from Zimbabwe.

Output from the smallholder sub-sector varies around a mean of about one million tonnes - 11 million bags. There are however serious data-gathering problems.

Zambian villagers in the Southern, Central and Eastern parts of the country have long grown maize - a crop introduced to Africa from the Americas by slave traders in the 16th Century. However the crop became a major cash-earner for small farmers only in the 1970's - following the Green Revolution and its deliberate introduction to the traditional rural areas by the Government. While some subsistence cultivation of unfertilised and low-yielding traditional flint types continues in the country (their storage, pounding and eating qualities are preferred for subsistence purposes) this makes a small contribution to total production. The greater part of marketed production, and the greater part of retained (subsistence) production in the smallholder sector is based upon hybrid dent maize cultivars and their open-pollinated derivatives. More than 120,000 tonnes of chemical fertiliser are applied to the smallholder maize crop in a typical year.

In theory smallholder yields should be close to those of commercial farmers. The seed variety and fertiliser regimes recommended by the extension services are effectively the same "high-tech" regimes as those practised by the large farmers. Even when applied with no more machinery than a hand hoe, they can result in the same 5 tonnes-plus yields. In practice, however, the average yield of maize in the smallholder sector is little more than 2 tonnes per hectare. A major reason for the discrepancy is the lack of finance, as equity or credit, to procure sufficient fertiliser for the whole area planted. Other major reasons for the discrepancy relate to timeliness - to late land preparation, planting, fertiliser application and weeding. Hybrid maize is extremely sensitive to time of planting in Zambia - losing 5-10 percent of its yield potential for every week that planting is delayed beyond the recommended planting window for the variety and region in question. Yields also drop sharply if the farmer is unable to keep on top of weed growth.

Problems with timeliness arise partly from practical difficulties created by the mono-cropping of maize, and partly from failures of the credit and input supply "support system" that was built up under the UNIP government to bring the Green Revolution to Zambia's peasant population.

Smallholder Farming Patterns

So great was the emphasis on smallholder maize at the end of the 1970's, through the 1980's (and indeed through to the present day) that many parts of Zambia are effectively practising mono-crop agriculture. An aerial survey of the Southern Province in the wake of the 1991/92 drought showed that less than 5 percent of smallholder cultivated lands were planted to crops other than maize. The situation was qualitatively the same in the other areas suitable for maize in the country.

A variety of factors can be held to account for the over-emphasis on maize by villagers. These include the fact that, being the staple food of the urban dweller and of high political salience, the Government felt itself obliged to ensure the purchase of all maize offered for sale. Sooner or later, for the villager, a maize surplus would translate into cash. The same could not be said for any other crop - many farmers "burned their fingers" on sunflower, soya beans etc. in years where the market did not require these crops.

Very heavy subsidies on chemical fertiliser (up to 70 percent) ensured that villagers felt little incentive to practice crop rotation for economic reasons. Green manuring was a known technology to small farmers in the 1950's, but is virtually extinct today. There is likewise little appreciation of the benefits of nitrogen-fixing crops such as groundnuts and soya.

Mono-cropped maize creates cultivation problems for the hand- or ox-powered farmer. Maize is not a tilth-improving crop - the soil becomes "solid" and unworkable by hand or ox until after the first rains have fallen. Because of its open habit and the large amounts of nitrogen applied to it, maize also encourages the build-up of a heavy grass-weed load that frequently overstrains the resources of the small farmer. Mono-cropped maize thus creates management problems that, while they are easily solved given sufficient draught power and chemical weed-control, cannot be easily overcome by the villager. Note however, that the currently fashionable hypothesis concerning "exhaustion" of African soils by continuous cropping with cereals is incorrect in the Zambian context. There are tracts of land on commercial farms that have been put to maize almost every year for the past 25 years (in some cases longer) without any adverse effects on yield.

Since maize has long been "the" crop in much of Zambia - it is the case that "everyone" grows it. A consequence is that per hectare yields vary widely, accordingly with the skills and other

resources of the farmer. A study conducted in 1986 of 71 oxen-owning households in one community revealed the following distribution of maize yields:

Table 1. Distribution of Smallholder Maize Yields in 1986

Yield range (90kg bags/ha)	No. of households	% of households
< 10	12	17
10-20	21	30
20-30	8	11
30-40	9	13
40-50	6	8
50-60	7	10
60 +	8	11 *
Total	71	100

Unfortunately the reasons for the discrepancies were not well studied. Management is likely the most significant underlying factor. Weak management leads directly to low yields and indirectly to the exhaustion of financial resources. This in turn leads to a reduced capacity to plough and cultivate, and to sub-optimal input levels

What is clear from the table is the fact that "green revolution" yields are eminently achievable by small farmers, though only 20 percent actually achieved above 50 bags/ha (4.5 tonnes/ha) in the sample. Almost 50 percent, on the other hand, achieve yields below 20 bags (1.8 tonnes/ha).

The Small Farmer Support System

Zambia is a sparsely populated country, with an average density of settlement in the rural areas of only one family per square kilometre. Apart from game parks there are no uninhabited areas and the rural population of some 700,000 families is fairly evenly and thinly spread throughout the country. Maize is the major cash and subsistence crop in at least 25 districts of Zambia, which between them cover an area in excess of 300,000 square kilometres. One district alone (Mpika) is larger in area than Holland.

The problem of servicing small farmers dispersed over such a wide area through a *centralised* system of credit, input supply, extension and marketing is self-evident. Nevertheless that is what the UNIP Government attempted to achieve, starting in the 1970's. In the beginning responsibility for the supply of inputs everywhere in the country, and for the purchase of all maize in the country, was given to the National Agricultural Marketing Board (NAMBOARD), an unwieldy descendant of the colonial Grain Marketing Board.

NAMBOARD was eventually dissolved by the 1989 Agricultural Marketing Act. Responsibility for the supply of fertilisers was handed over to Nitrogen Chemicals of Zambia, and responsibility for marketing to the co-operative system grouped under the Zambia Co-operative Federation (ZCF).

Extension services were boosted and focused upon the growing of maize through the "Lima Programme" - a system based upon modules of one lima (0.25 hectare). One lima was adjudged a suitable area for hand cultivation by one family member. One lima requires one (50kg) bag of basal fertiliser, one bag of top-dressing fertiliser and one 5kg bag of hybrid seed.

The Lima Bank (the current incarnation of a series of failed Government sponsored land banks), the ZCF, and the Credit Union and Savings Association (CUSA) became - after some experimentation - Governments favoured "lending institutions" for small farmers. Every year, particularly after 1986, Government would make "top up" funds available to them, targeted at lending *for the production of maize* only. Each of these institutions established nation-wide networks - with ZCF and CUSA lending to their respective members and Lima to anyone outside the co-operative and credit union systems. Recovery rates on maize loans to small farmers were generally poor.

Government determined each season a pan-territorial (and pan-temporal) price for maize - and made available funds for the transport subsidies that were automatically implied.

The support system briefly described was extremely inefficient and unaccountable, and it cost huge amounts of money to operate. This is true quite independently of the very large subsidies on inputs, transport and milling that were introduced to try and reconcile the perceived political demands of producers, on the one hand, and urban consumers on the other.

The system was constantly "running out of money" - a fact that in combination with management weakness led consistently to late delivery of credit and physical inputs. This in turn led to late planting and low yields.

Although the view was sometimes advanced (even by professional economists) that the peasant farmer was a low-cost producer, such a view is very naive. If the administrative costs of

supporting the small farmer are included in the calculation, along with wastage of fertiliser and maize, and if subsidies on inputs and transportation are added, it becomes apparent that the system was in fact a very high cost method of producing maize and getting it to the consumer. Some estimates of support costs to the smallholder sector run as high as US\$110 per tonne of maize marketed - considerably higher than the cost borne directly by the farmer (and higher than the price received by him/her).

Marketing, Storage and Processing

Both legislated monopoly buying power, and distorting subsidies, ensured that marketing and processing proceeded by a most "unnatural" route. Maize was hauled over enormous distances (sometimes in opposite directions at once), milled at parastatal mills, and hauled once more over large distances at the expense of the treasury. Mealie-meal also had a decreed pan-territorial price, which in some years was lower, per kilo, than the price of the raw maize from which it was derived. Subsidies tended to be paid to large mills only (because of administrative problems with paying small hammer mills) with the result that there was much movement of maize out of villages and mealie-meal back again.

Maize was bought by the NAMBOARD/cooperative system locally. In most provinces this implied villagers needing to move their produce a few kilometres to a primary depot (often only a patch of earth with a lattice of logs to serve as the storage base). In some areas such as the Northern Province, where ox-drawn transport was not available, the purchasing system even collected maize on a village-by-village basis.

Storage of maize (both intra- and inter-seasonal) was partly done by centralising the crop to district depots, and partly by leaving the crop at primary depots. The bulk of the maize was stored in stacks under tarpaulins, although various donor-funded shed-building programmes meant that, with each passing year, an increasing proportion found itself inside buildings. Silo capacity in Zambia is less than 150,000 tonnes - and that is largely theoretical due to the unserviceable conditions of several silo installations in the country.

The buying and storage system lent itself to corruption and mismanagement on a grand scale. Underweight bags were the norm in rural maize buying - with the average bag missing about 10 percent of its nominal contents. Many crop receipt vouchers were fraudulently issued. A high percentage of stored maize tended to rot (due to water ingress and lack of ventilation) or to be eaten by weevils (due to lack of fumigation in storage). The problem was not principally one of technical know-how, but of discipline and accountability.

Maize as the "Social Contract" Crop

It is useful, in understanding the background to the maize industry in Zambia, to recognise that it was a vehicle for what was in effect social welfare expenditure. In the 1940s and 1950s urban incomes were high in real terms and it was standard practice for urban workers to send money back to their villages to support those members of the family who had remained at home. As urban incomes started to fall in the 1970s it was the rural areas which suffered most as the monthly "postal orders" dwindled in number and magnitude. The expensive campaign to promote the growing of maize throughout Zambia was regarded by the Government as a means of distributing wealth, as much - and possibly more than - a means of creating value-added to increase GDP. Conceptions of natural justice weighed more heavily than economic sense in decision making. For example, an early attempt to pay producers in deficit areas higher than those in surplus areas (in the 1970s) was rejected on the grounds that it was "unfair" to the latter. The steadily climbing subsidies on fertiliser and transport were likewise regarded as "humanistic" rather than economic. The fact that other crops were not treated like maize (although some element of subsidy crept into the cotton industry) militates against the view that Government simply misunderstood economic principles.

As urban poverty deepened so Government came to rely increasingly on milling subsidies as a means of cushioning the urban population. At the time MMD took power in October 1991 the official retail price of mealie-meal was less than 30 percent of its efficient economic cost. (Though so attractive was smuggling and black-marketing that mealie-meal was seldom available without queuing at the official price.)

In both the rural and urban sectors, it might be said, maize had become the very language of political discourse between the people and their leaders. In the 1980s there were two bouts of urban rioting caused by attempts to increase the price of mealie-meal. The June 1990 the widespread rioting that led to multiparty democracy and the downfall of UNIP fifteen months later were in large part attributable to a price increase a few weeks previously.

In the rural areas the politicisation of maize has made it near impossible for lending institutions to operate in any approximation of a businesslike manner. Each year a hubbub of "humanitarian" demands for fresh loans to those who have not repaid from the previous season is put up by MPs and others in many districts.

The status of maize as the "political crop" has not faded overnight. It is still the subject of political interference at high and low levels. Its growing and its cheap availability still form part of the subject matter of the "social contract" between Government and citizens. It is still considered a matter of right for a grower to have his maize bought and paid for promptly. "Instructions" relating to the meal prices are still issued by senior politicians.

Maize Production in the Southern African Region

Zambia is only a minor maize producing and trading country in a region whose cross-border trade is dominated by two countries - South Africa and Zimbabwe. The largest producer and exporter by far is South Africa which this year (1993/94) estimates production at 12.5 million tonnes and consumption at about 6 million tonnes. Zimbabwe regularly produces over 2 million tonnes, but annual domestic marketed consumption is estimated at 1.2 million tonnes.

Both Zambia's southern neighbours have consistently pursued interventionist maize marketing and pricing policies - protecting their farmers and disposing of surpluses through subsidised exports.

Many countries in the region are net importers of maize in normal years. These include Namibia, Botswana, Mozambique, Botswana and Zaire. Others are importers only in relative unusual years (e.g. Malawi and Tanzania).

An examination of patterns of trade and comparative advantage is made complex, in the case of maize, by the considerable part played by overland transport cost in the CIF pricing of the commodity. The cost of transportation of a tonne of maize from the Western Transvaal to the Zambian Copperbelt is about US\$90, almost the same as the price paid to the producer in South Africa.

Competitive Position of Zambia

In terms of pure free market economics Zambia has a considerable logistical advantage over both Zimbabwe and South Africa in respect of maize exports to several countries including Zaire, Malawi, Rwanda, Burundi and parts of Tanzania, Angola and Mozambique. It should also be able to compete on an equal footing in Botswana, Namibia and in the southern part of Angola. Zambia is also more secure against drought and should be in a position to exploit episodic regional shortages.

However, the systems of export subsidies practised to the South distort regional trade flows to Zambia's disadvantage. Not only are through-shipments of Southern maize to Zaire a commonplace phenomenon but liberalised Zambia itself is prone to import Zimbabwe maize at a time when there are unbought stocks of local maize sufficient to last several months. (This is not the case at present due to the drought-struck position of Zimbabwe but was the position this time a year ago).

So to add to the complexity of the Southern African maize trade is the problem of unequal rates of liberalisation. Zambia used to operate the same marketing board system as its neighbours but

has abandoned it in the name of competition and the free market with the consequence that it has tended to become a dumping ground for other people's surpluses.

Smuggling

The smuggling of maize out of Zambia - mostly in the form of meal - is an industry with a long history. In the past, smuggling has been exacerbated by subsidies but it still continues.

Zaire is the main illegal export market for maize - almost all in the form of meal. All along the common border with Zambia, but particularly in the area of the Copperbelt and along the Luapula River, it provides a living for many. Attempts by the MAFF to establish the extent of smuggling into Zaire in December 1991 produced estimates of between 80,000 and 100,000 tonnes annually. This was indirectly calculated from fairly inaccurate figures of consumption and population in the Copperbelt and Luapula and cannot be regarded as reliable. Furthermore, the considerable increase in the real price of mealie meal since the removal of subsidies may have changed the picture somewhat.

Maize grain is regularly smuggled into Malawi, particularly from the Lundazi area, by small farmers desperate to receive payment for their produce. It is also known that meal is moved on a regular basis across the Zambezi by dugout canoe into Namibia. This is the consequence of the Namibian Government policy of overpricing domestic maize (relative to regional prices) in order to encourage its growing in their semi-arid conditions. The unsubsidised price of Zambia mealie meal was half that that prevailed across the border in Namibia at one point in early 1993. There is only a small amount of leakage of maize and meal across the border into Zambia's other neighbours. The Tanzanian maize industry is in good health close to the Zambian border and it is inputs, rather than maize, that tend to be smuggled. Logistical problems prevent heavy movement into Angola, Mozambique or Zimbabwe.

With removal of subsidies there seems little economic reason to be concerned with smuggling - it is simply free trade. However, there are concerns expressed (sometimes by farmers themselves) that unmonitored trade may give rise to unexpected food security crises.

The Maize Sector in Transition

The maize industry in Zambia is in a state of rapid transition between a most unsatisfactory past and a highly uncertain future.

Since October 1991 there has been broad agreement between Government and donors that maize must be de-controlled, de-subsidised and de-politicised. Steps were taken throughout 1992 that resulted in milling subsidies, fertiliser subsidies and transport subsidies being entirely removed,

with the result that vigorous private sector activity has taken place in fertiliser importation and marketing, and in small-scale hammer milling.

However, it cannot be said that subsidies and losses have ceased in the system with respect to administration, credit or marketing. Progress in these areas towards a healthy free market has been, and is being, impeded by a number of factors.

In the 1991/92 season Zambia experienced the worst drought on record and had to institute exceptional measures to assure that lives were not lost in a famine. These measures included Government taking direct possession of such maize as was grown in the country (through a system of appointed agents) and setting the into-mill/into-home price structure for all maize - local and imported - in order to avoid unbearable hardship to people. So in 1992 and into the early part of 1993 maize marketing was very tightly controlled by Government.

For reasons that are unclear the system of Government-approved and -financed agents has been continued. The existence of traders operating with "government money" excluded the true private sector from dealing in grain. Mid-1994 also saw a peak in interest rates and a strengthening in the kwacha - factors that restricted exports and removed any private-sector interest in grain dealing that may have survived the "government money" factor. In practice it is clear that many Government-approved buyers will not be able to repay their loans, either in cash or in kind. Heavy losses - implicitly subsidies - have been incurred by Government on the 1993 marketing exercise despite near-perfect growing conditions.

The drought ensured that loan recoveries by the lending institutions were even lower than usual in 1992, 1994 and 1995. The tendency is to seek fresh funding for the smallholder sector in the form of countervalue funds, exceptional budgetary provisions and donor fertiliser. These are made available on rather generous terms to the smallholder lending institutions and to non-government organisations under the label of the "drought recovery programme". At least these resulted, in 1993, in a near record harvest. Unfortunately this coincided with exceptionally high interest rates that militated against any trader being interested in buying and storing maize. In real terms prices were below cost of production (which was also hiked by interest rates). Many commercial maize farmers became technically bankrupt and loan recoveries from small farmers were minimal.

Since the 1993 harvest Zambia has experienced drought conditions in both the 1993/94 growing season and the 1994/95 season. In both seasons production has been 50 percent or less of domestic requirement.

In many ways it appears that now is an ideal time to slay the dragon by pushing ahead with the liberalisation of the maize industry. Interest rates are falling overall (despite fluctuating), there is a small amount of domestically-produced maize available, and the principle of credit being managed

on a commercial basis has been accepted (and is in the process of implementation). However, there is a general election due before the end of 1996 and political pressure to dole out inputs and to buy maize on an uneconomic basis is mounting steadily.

3. POSSIBLE PATHS TO TRANSFORMATION

The Commercial Sector

There is potential for a considerable expansion of the commercial sector, especially in commodities such as sugar, coffee, soya, Virginia tobacco and maize. At present any such expansion is impeded by economic factors (specifically high interest rates and an associated overvalued kwacha) and by the low population of commercial farmers.

However, we should note that it is improbable that any Zambian government would encourage or permit a prolonged period of rapid growth of the commercial farming sector. There are several hundred thousand hectares of unused arable land on State Land (land over which the owners have 99 year lease tenure). But expansion beyond that would involve alienating tracts of land currently under traditional tenure, entailing conflict with chiefs and other representatives of rural people. It is true that there are some unpopulated areas that have been alienated in recent years and earmarked for commercial farming. These, however, have typically been parcelled out in small units of 200 hectares or so to "middle class" Zambians who wish to own farms, but who do not have the expertise or other resources required to operate them successfully.

We might summarise thus: that commercial farming may provide significant growth in GDP over a short period of time, if the commercial environment is brought into a state conducive to growth.

The Smallholder Sector - outgrower schemes

The underlying problem with the smallholder sector is how to harness it - how to "interface" it with a world that wants its products. The problems that I described with maize financing and marketing spill over into other commodities and make it extremely difficult for a commercially oriented "promoter" of small scale agriculture to make a profit out of lending money to villagers, providing extension and other inputs, and marketing the resulting crop.

There are many non-profit oriented organisations working with villagers but these often emphasise food security or local marketing rather than commercial cropping. Where they do support entry into the wider economy (e.g. through growing surplus maize) they tend to operate a highly subsidised system (e.g. giving away fertiliser) or be very soft on loan defaulters. Not only

are such interventions unsustainable (where is Global 2000 today?) but they leave behind a uncommercial culture that features outrageous expectations of the next promoter to come along.

The Burley tobacco industry in Central and Eastern Zambia provides a case study in the difficulties faced by commercial promoters. A large Zimbabwean firm, and a handful of local entrepreneurs, has for years been attempting to get tobacco outgrower schemes to take off in Zambia. These involve advancing villagers the necessary inputs, and operating a private extension service, in exchange for the right to buy the crop. In Malawi, where Burley tobacco production is 50 times what it is in Zambia, the shortage of land provides the key to enforcement of this type of contract. Smallholders become "tenants" on privately owned "estates" and eviction is the ultimate sanction against anyone who does not deliver up his produce to the owner of the estate. In Zambia, where land is plentiful to a degree that strike many foreigners as ridiculous, no such sanction could work.

Every few years the tobacco outgrower industry suffers a setback as an epidemic of "crop raiding" occurs - sometimes organised by employees of the outgrowing company. As a consequence the production of Burley remains at an extremely low level, oscillating between a value of US\$4 million and about twice that amount - a very small drop even in Zambia's non-copper export earnings.

The Zambia proclivity for local politics does not help matters at all. Members of Parliament will frequently stir up outgrowers against the companies to which they are contracted, especially if there is an election close at hand. That such interventions will simply lead to promoters pulling out is ignored, or perhaps not seen. One promoter in Eastern Province was heavily raided by private traders in 1993. One of these traders cheated a group of farmers - taking their tobacco and disappearing without paying. The local MP approached the promoter to make good the payment, on behalf of the raider, out of kindness! (The promoter instead pulled out of the business).

National level politics can also be troublesome to commerce at the village level. This year President Chiluba announced publicly that steps would be taken to provide debt relief to small farmers afflicted by drought. Since such a scheme was not in place at the time of the announcement no details were given and farmers throughout the land have taken it to mean what they want it to mean - viz. that everyone is excused all his farming debts, including debts to private individuals and companies. Belated attempts to clear the air are currently going on but *really* - would you take your life savings or go into debt to a hard-nosed commercial bank in order to go out and do business with several hundred or thousand Zambian villagers?

Outgrower wise the cotton industry is doing rather well, at least compared to tobacco. The telling factor here appears to be the difficulty of marketing the crop outside the system. Cotton needs to be ginned and there are only a handful of ginneries in the country owned by only two companies -

Lonrho and the parastatal Lintco. Both companies tend to build the costs they incur in promoting the crop into the price they pay. They do raid each other, but the battle seems to be fairly even and all ginneries are operating at high capacity, with the exception of one that is located in an area where cotton does not grow. It is perhaps the fact that ginning capacity is close to total production that ensures that both companies get the cotton they need, even if it is not strictly "their" cotton. (Lintco is currently being privatised).

To try and build a base for *commercial* rural credit the Government has recently passed through Parliament an "Agricultural Credit Act" which contains a number of interesting features. Essentially, anyone lending to a small farmer may register a charge over any of the farmer's agricultural goods (including the crop that the loan is intended to finance). The farmer is obliged to advise any trader who wishes to buy from him of the charge and the trader is obliged to ensure that the loan is repaid. Anyone who attempts to bypass these obligations is guilty of a criminal offence and may be jailed for up to three years. It remains to be seen how the Act will work in practice (a fair amount of administration at district level will be required to register charges etc.) but it provides an attempt, at least, to secure commercial money that is lent out to villagers (or to bigger farmers).

Alternative approaches to the security problem are less promising. USAID has been enthusiastic for some time about land reform - the idea being that deeded land in the communal areas might provide collateral for borrowing. However, all the outgrower and other lending operators I have ever questioned discount this idea. They point out that seizing small parcels of land in traditional areas who raise the local political hubbub to fever pitch. Besides, the land could not be sold on to outsiders since they would be driven out of the area in short order.

At the present time the three "lending institutions" - Lima Bank, CUSA and ZCF/FS - having been told to make their operations commercial, are embarked on a programme of property seizures aimed against their long-standing debtors. This involves taking possession, sometimes violently, of some pitiful assets - axes, goats, furniture etc. - and is bound to be brought to a halt by impending local government (and later national) elections.

The Tazara Corridor

The Tazara railway linking Dar es Salaam in Tanzania with Kapiri Mposhi in central Zambia was originally built to provide an outlet to the sea that did not pass through Rhodesia. Some 800 kilometres lie in Zambia, passing close to many villages as well as through tracts of unused arable land. Apart from the permanent way the infrastructure features railway stations every 20 km that consist of sidings, staff housing, communications equipment and significant storage facilities.

The idea has recently been advanced that the Zambian section of Tazara be used as the basis of a "long and thin" crop promotion/outgrower scheme focused primarily on maize. There are a number of factors that make the idea timely. These include:

- I. the recent splitting of Tazara into a Zambia and a Tanzanian section
- II. the cessation of Government subsidies to the railway
- III. the realisation by management that internal transportation provides a key to survival
- IV. the reduction of railage rates to levels that are interesting to the commercial sector
- V. the fact that the area through which the railway passes in Region 3 with reliable rainfall even in times of regional drought

Hitherto maize in the Northern region has tended to be non-commercial due to high transportation costs. The Northern heartland is some 600 km from the Copperbelt - with trucking or railage charges at around 8c per tonne/km this provides a barrier or some US\$50 per tonne to market entry. Lending institutions have also discovered that deliberate defaulting on loans is even higher in the North than it is elsewhere.

But Tazara have now reduced their rates to around 3c per tonne/km (and have waived loading and demurrage charges) in an attempt to boost their business with farmers in the North. With a properly integrated and managed scheme it might be possible to recover loans by virtue of the simple fact that prices paid for maize delivered to a railway station should be at least US\$40 per tonne higher than the prices that traders using road transportation can afford to pay - thus putting "raiders" at a serious disadvantage.

At the same time the railway infrastructure could provide cheap access for extension services, financial institutions (and even shops, clinics et.) to what is a highly dispersed population (density along Tazara is less than half the average for Zambia).

If anything comes of the Tazara idea - sometimes known as "The Green Train" - then it will provide an illustration of a particular "opportunistic" approach to agricultural development in Africa. Take a particular set of circumstances that coincide in a particular part of a particular country and turn it into an earner - both for the villagers and for the promoters. This is after all how commerce tends to work, and it contrasts with an approach by way of blueprints that are supposed to be applicable any time, any place.

Technological changes

Many of us who have farmed for a living, on the one hand, and taken an interest in the problems of the small farmer, on the other, have come to the conclusion that the agricultural methods

currently promoted in Zambia are flawed. This is not because we have some ideological commitment to alternative technologies in general, or to organic methods of agriculture in particular. It is because we have observed that the approved technologies demand resources that small farmers seldom have access to in sufficient quantity.

The very term "ploughing" used in the context of the hand or ox cultivator is misapplied. Ploughing proper, in the sense of fracturing soil to a depth of 20 cm to restore friable structure to the tilth and to turn in weeds, requires quantities of energy that are usually absent. When a smallholder "ploughs" what he or she is doing is disturbing the top 10 cm. of soil to an extent adequate to destroy weeds and to create a seed bed. Fields that are thinly cultivated in this way tend to develop shallow pans and are prone to sheet erosion at the first heavy downpour.

The consequences of the emphasis on chemical fertilisers are several. One is the demand it places on financial resources, in turn exacerbating the credit problem discussed above. All too often the credit system fails and the farmer ends up trying to cook haute cuisine without the fancy inputs. The acidifying effect is also malign - many farmers abandoning maize or rainfed wheat fields after four or five years because (as they put it) the soil has been poisoned with urea. The corrective measure of liming - routinely practised by commercial farmers - is not easily, and certainly not cheaply, available to the small farmer in the poorly serviced backwoods of Zambia. An inescapable effect of a high nitrogen fertiliser regime is that the weeds love it too - amplifying what is the small farmer's labour bottleneck and impediment to planting a larger area.

Such problems as I have alluded to in the previous two paragraphs have led to a major move among commercial farmers in Zimbabwe and (to a lesser extent) in Zambia towards minimum or zero tillage practices. The lowering of costs, the improvements in yield due to timeliness, and the increased resilience of field and crop to both drought and downpour are well-known.

That minimum tillage presents a management problem - especially in getting started - is also well known. This, and the assumption that it necessarily involves chemical weed control, are reasons often advanced for not promoting such methods amongst small farmers. However, there are features of the Zambian situation that may help to make small-scale zero tillage a viable option. In particular the abundance of land - including cleared but abandoned land - make it feasible to rotate crops such as maize with non-productive but weed-suppressing and nitrogen fixing crops. In 1992 a small research programme was initiated into the selection and breeding of sunnhemp varieties that would take full advantage of Northern Zambia's five month rainy season. The idea is to slash the sunnhemp crop before it sets seed (leaving most nutrient in the soil) and leave the stover on the ground (it is unattractive to animals). Planting of maize or other grains would be straight into the sunnhemp stubble and stover at the start of the subsequent season.

The theory (and it is only theory) is that at least four normally expensive functions can be carried out by including a dense planting of sunnhemp in the rotation before a cereal:

- VI. weed suppression (densely planted sunnhemp does this very well)
- VII. soil penetration
- VIII. nitrogen fertilisation
- IX. amelioration of the aluminium toxicity effects associated with acidity

(As regards the last it is well known that high levels of organic matter in the soil counteract toxicity - though they may not obviate the need for lime).

After many years of individual effort in the area the World Bank has now taken a keen interest in zero tillage technologies in the Zambia context. Some say that this assures its success - others that it is the kiss of death.

Farmer representation

The most cursory comparison between the agricultural scene in a country like Zambia and in an agriculturally developed country reveals a striking contrast. This is the weakness of the "agricultural lobby" in the former compared to latter. To take it to extremes: it is evident that the tiny fraction of US citizens involved in the farming industry there has more clout with the US Government than the 50 percent of Zambian farmers have with their government.

The deficiency of civic and political power in the hands of farmers in Zambia is the result of the deficiencies of 27 years of scientific socialism with a human face. Under the one-party system the idea was precisely not to allow for power to flow from the bottom up. Such structures that were put in place were intended to operate in the opposite direction as systems of top-down control. This is true whatever they were called. Zambia's co-operative movement, for example, looks on paper to be a nice egalitarian grassroots-based structure. There are primary co-operatives working at the village level grouped into district co-operative unions and provincial co-operative unions. The whole thing is unified through the Zambia Co-operative Federation residing in a huge building in Lusaka. What is wrong with this as a system for representing farmers? Unfortunately, quite a lot. The ZCF was, and is, funded scarcely at all by its members. Since the mid-80s (and arguably earlier) it has been a vehicle for dispensing patronage to farmers all over Zambia. Tens of millions of dollars annually were poured into it by Government (and regrettably by some donors) for distribution to the membership (not forgetting the membership at the top). Naturally the ZCF management had their eyes turned upwards, from whence came its salvation, and not downwards towards their grassroots members.

The primary co-operatives themselves were seldom the result of a spontaneous inspiration on the part of their founding members. They were most established at the instigation of the Department of Co-operatives - a heavily manned Government department that prided itself on "forming" co-operatives.

Orwellian doublespeak achieved remarkable heights with the formation of a "Ministry of Decentralisation" which reinforced Government and Party control over the rural areas largely through powerful District Governors. The district councillors were the Party Ward Chairmen in the district, leaving few people able to operate outside the established system and free of the influence of patronage from the top. Co-operatives themselves were closely linked to the party - their officers being essentially subject to appointment or veto by the Party.

There is a "Zambia National Farmers Union" that strives to represent all farmers. However, the habit of simply waiting for something to come from Government is so deeply ingrained amongst Zambian villagers that the ZNFU has only about 2000 members. This includes almost all the commercial farmers (it used to be the Commercial Farmers' Union in Kaunda's time) and only the most forward looking of the small farmers. (There is an alleged Peasant Farmers Union of Zambia but this appears to be a device for unlocking NGO and donor funds, rather than a genuine representative body).

More than two-thirds of Members of Parliament represent rural constituencies and one might at first sight expect a strong, even dominant, agricultural lobby in the National Assembly. Although a fair amount of noise is made in debate on agricultural topics, however, the realities of power are still much as they were five years ago. There are almost 70 ministers out of a total complement of 155. If we exclude some 25 opposition members (whose noise is discounted) we see that more than half of MMD MPs are ministers who are prevented from saying anything critical of Government. If we add to that a further 25 backbenchers who are perhaps hoping to become ministers at some point in the future (and thus improve their standard of living at least tenfold) we come to see that any agricultural lobby with the freedom or inclination to speak out is small indeed!

In my view modern agriculture presupposes "modern" politics. Until farmers know their rights and find the inclination to exercise them they will necessarily be sidelined when it comes to the allocation of scarce resources. Their industry will be restructured, if it can be said to be structured at all, by outsiders and amateurs. Perhaps part of the problem is one of "critical mass". The agricultural industry in Zambia is as yet too small in economic terms for farmers to have even an inkling of their potential muscle. The copper miners on the other hand know their power (even as production continues on its steady slide) and are prone to boast that they can make and break governments at the snap of their fingers.

Weather patterns

Complete uncertainty attaches to the significance of the recent high frequency of regional drought associated with El Nino episodes in the East Pacific. It might well be a flash in the pan; on the hand it might well not be. There is little point in trying to guess or even to consult climatologists, since they are like economists when it comes to agreeing.

Frequent drought and a reduction in average rainfall on a regional scale offers mixed prospects to Zambia. The South of the country has shared in all three regional droughts in the past four years. But North of the 14th parallel, while conditions have been drier than normal, they have still resulted in 700 mm plus seasonal rainfall - quite adequate for the growing of maize provided planting is timely.

Zambia's main irrigation source, the Kafue river, starts on the Zairean border well North of the 14th parallel. Sugar production, for example, has been unaffected by drought. Since the drought of 1992 Zimbabwe has been an export customer for Zambian sugar. There is as yet insufficient maize grown in the North of Zambia to render the country maize-secure or to provide a surplus for export - to countries like Zimbabwe - in drought years. However, if the pattern of drought continues and other conditions remain conducive it is likely that Northern Zambia will come to constitute part of a natural "food security" belt that stretches into Southern Tanzania (from which Zambia, Zimbabwe, Malawi and Mozambique are currently drawing maize).

Adaptation to drought in the South of Zambia can only be achieved if maize ceases to be the king of crops. A "drought" in the North of Zambia is said to have occurred if it ceases raining for three days in January. In the South of Zambia a "drought" is a situation in which maize yield suffers. It is still, normally, consistent with healthy yields of sorghum, sunflower and cotton. (Sorghum is in fact the traditional staple in the area - it was displaced due to the maize mania that afflicted the country once the Copperbelt began to expand). There is some evidence that crop diversification is taking place - though to a lesser extent than Ministry "planners" would like to see.