Why Africa has Fallen Short of Building Dynamic Agro-processing Capabilities: Constraints, Options and Prospects

Wellington A. Otieno and Ada Mwangola

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newtec@mitsumi.net

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Acronyms

ARCT	the African Regional Centre for Technology
ARSO	African Regional Standards Organization
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
DRC	Democratic Republic of Congo
FARA	Forum for Agricultural Research in Africa
FIIRO	Federal Institute of Industrial Research, Oshodi
IDDA	Industrial Development Decade for Africa
IITA	International Institute of tropical Agriculture
ILO	International Labour Organization
IMF	International Monetary Fund
KIRDI	Kenya Industrial Research Development Institute
MVA	Manufacturing Value Added
NEPAD	New Partnership for Africa's Development
R&D	Research and Development
SPAAR	Special Programme on African Agricultural Research
UNIDO	United Nations Industrial Development Organization
UNPAAERD	UN Programme of Action for African Economic Recovery and Development
WTO	World Trade Organization

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Introduction

The Food Industries in the food system

It is an accurate assessment to say that the prospects of Africa's development as it evolves into the 21st century to say that agriculture holds the key to the future. Lewis (1955) foresaw this when he said prophetically said that agriculture is the "sine-qua-non" of raising the African standard of living.

In the context of agriculture-led development strategies for African countries, vibrant food and allied manufacturing industries to conserve and convert enhanced agricultural output into maximized value-added products for global markets occupy a critical tactical niche. The food industries need to be seen as a strategic, autonomous and growth-stimulating force within the cosmos of African agricultural development. The food and allied industries constitute the motive force that drives the agricultural industry of the developed countries of the world, African countries, therefore, must learn to harness the same vital force to jump-start and sustain the engine of agricultural development in the continent. In recent years, this process has been enacted and re-enacted in one country after another in the Pacific Rim: in Taiwan, Malaysia and now progressively in Indonesia. The infant food manufacturing industries of these countries became the arena in which to acquire the experience and confidence for industrialization. In this role, food manufacturing has proved to be a veritable instrument for targeting, sharpening and enhancing the value of agricultural commodities and fostering the global marketing of the resulting products.

Collectively, the agro-allied industries as part of the production complex with agriculture, animal husbandry, fishery and forestry, constitute the heart of the food system of any country. The up-stream provides capital goods (machines, know-how, etc); intermediate production factors (seeds, fertilizers, pesticides, etc) and services. Down-stream industries are the distribution chain consumers of food products. The range of services enables the food system to function and develop (education, health, hygiene, research and development, training, finance, management, transport etc). In countries aspiring to transit from largely agricultural to predominantly industries economies, the food and allied industries assume, in addition to their Tran formative role, the vital function of economic catalysts for wider industrial development.

Both the International Labour Organization ILO (1978) and the United Nations Industrial Development Organization (UNIDO) (1977) estimate that food processing activities form the basis of nearly 30% of industrial output and 20% of employment under manufacturing in developing countries within the

formal sector of the economy. If activities in households and small-scale cottage industries in villages and urban homes are taken into account, output and employment in food processing, when considered in their widest sense, would be much larger and much more pervasive than indicated.

2. Targeted Objectives of Food Processing in Agriculture-led Development Strategy

The principal objectives of giving priority to the development of food processing in the context of agriculture-led development strategy are:

- To meet urgent food and nutritional requirements of an expanding workforce whose health is fundamental and anchored in the nutritional quality of the national diet
- To reduce qualitative and quantitative losses of agricultural products by bringing industrial processing nearer to the sources of raw material production
- To augment foreign-exchange earnings by providing the basis of the export of processed products rather than raw materials or semi-processed products
- To provide much-needed experience and training in the dispersal of industrial growth to backward and rural areas so as to generate new and enhanced employment opportunities
- To create enhanced opportunities for expanded spread of ownership of production unites
- To stimulate the development of technological capabilities in terms of the capacity and engage in different scales of productive technologies in food processing
- To foster the development of engineering capabilities to design and manufacture food processing and ancillary machinery

In each of the above stated objectives, there is a primary component of “learning by doing” that is vital to wider industrial development. As the super-ordinate infant industry, food processing can provide the experience as well as become a learning guide for industrialization.

If food processing holds such vast potential has been suggested, why has it not prospered in Africa? It is necessary to understand that the development of food processing is basically an entrepreneurial activity. It is, therefore, plagued by well known problems of enterprise-development. Food processing has not prospered as other agro-industries probably because of the African culture. There are many problems and obstacles that can be cited but, in the final analysis, the absence of an ingrained enterprise culture that comes from training and widespread practice is a major causative factor.

3. Performance of the Agro-Processing Subsector in Africa

In most African countries, ago-processing is the most important manufacturing sub-sector accounting for at least 50% of manufacturing value added (MVA) (Table 3.1). Food and beverages represent the largest part in some countries, the beverage industry (mainly breweries) is three or four times that of the food industry, such as in Cameroon, Niger, Togo and the Democratic Republic of Congo (DRC). This performance has to be considered against the 33.64% for developing countries (excluding China) and the 20.95% for the developed countries. These figures underline the agricultural basis of the African economy.

Table 3.1: Value Added in the Manufacturing Sector, by Main Agro-Industry Branches in Selected African Countries

	Sectoral Value Added in Million US$ at 1980 Prices	BRANCH PERCENTAGE SHARE					
		Food	Beverages	Tobacco	Textiles	Wearing Apparel	Total Agro Industries
WORLD	3,543,372	10.89	2.22	1.29	4.59	2.45	22.41
(I) Developed countries	3,137,564	10.6	1.97	0.99	4.11	2.39	20.95
(ii) Developed countries (excluding China)	405,829	13.07	4.15	3.57	8.25	3.03	33.64
AFRICA	26,831	17	10	-	-	-	49
NORTH AFRICA	14,038	16.64	3.25	4	10.7	4.25	42.2
SUB-SAHARA AFRICA	12,793	16.43	18.33	4.77	11.44	2.52	55.84
(I) Burkina Faso	207	45.71	15.83	1.03	15.86	1.77	83.73
(ii) Burundi	85	40.55	27.43	13.64	1.92	2.89	87.55
(iii) Cameroon	1,365	32.75	1.98	3.45	1.45	1.38	19.05637
(iv) Congo	64	14.91	16.59	5.95	6.56	1.75	51.17
(v) Kenya	893	27.68	8.79	2.66	8.13	2.67	51.07
(vi) Madagascar	172	26.53	14.57	1.76	12.28	10.24	70.41
(vii) Mauritius	1,173	42.48	6.27	1.67	5.51	27.94	82.8
(viii) Niger	30	28.07	-	21.81	3.11	-	59.73
(ix) Nigeria	4,291	10.72	19.85	2.75	14.2	0.25	50.19
(x) Sudan	363	45.16	1.87	14.39	7.68	0.27	72.19
(xi) Tanzania	144	20.99	7.63	6.09	15.06	1.23	55.19
(xii) Togo	46	10.53	36.1	-	25.86	0.02	76.82
(xiii) Zaire	200	8.61	28.69	9.22	4.81	1.95	58.16
(xiv) Zambia	1,003	11.32	23.56	7.18	8.88	3.94	57.16
(xv) Zimbabwe	1,763	15.03	16.96	7.92	13.05	2.97	58.49

Source: UNIDO, Statistics Division, July 1989

Until recently, only a relatively small part of the agricultural commodities was industrially processed (Table 3.2). Most of the foodstuffs (cereals, roots and tubers, fruits and vegetables, pulses and oilseeds) are processed at home for subsistence with little surplus for sale. Operations in the informal sector are increasingly being mechanized, although the level of mechanization is dominated by milling of grains, dehydrated tuber chips or slices, fresh or dehydrated vegetables and grating of cassava. Mechanizing whole processing operations for local foodstuffs is hindered by the inadequacy of local raw materials to meet the demands of procedures involving the use of imported technologies or local adaptations. Processing of export commodities (fruits, cocoa, tobacco, coffee, tea) is limited, in quantity and stage of processing.

Table 3.2: Raw Materials Production and Level of Processing in 1985 in Africa

Commodities	Production* (1,000 T)	(**) Industrial Processing In % of raw materials	Final products
Maize	31,624	1.2	Flour
Sorghum/millet	25.,130	0.4	
Cassava	56,527	0.1	Garl, Floor
Other roots and tubers	43,013		
Meat (beef, veal)	2,685	0.1	Canned
Fresh Milk (Cow, Sheep)	13,325	4.0	Butter, cheese, evaporated and condensed milk
Fish	3,390	16.5	Canned tune and sardine
Fruits	37,224	0.6	Preserved fruits, jam
Vegetables	26,030		
Cocoa beans	1,096	10.7	Butter, chocolate powder
Green coffee	1,232	7.3	Roasted coffee, instant coffee
Palm oil	1,444	7	Refined oil, margarine
Soya beans	342		
Groundnuts	3,793	4.4/0.8	Non-refined/refined oil
Sesame seeds	447		
Sunflower seeds	447		
Cotton seeds	2,299	13/7	Non refined/refined oil
Olives	1,232	16	Oil, preserved olive
Raw sugar	4,800		
Tea	264		

*Source: FAO Production Year Book and United Nations Industrial Statistics Year Book, 1985
**ECA Estimation

As a consequence, international trade statistics reveal that the region remains a net importer of processed agricultural products for which it is supposed to have comparative advantages. These

include sugar and edible oils, such as cotton seeds, sunflower and palm oil. Net imports of sugar, for instance, increased from 1.6 million tons in 1984 to 1.9 million tones in 1986. The corresponding figures for palm oil were 176,000 and 323,000 tons. Production of selected agro-based products is presented in Table 3.3.

Table 3.3: Production of Selected Agro-based Products in Africa (1,000 tons)

Product	1980	1981	1982	1983	1984	1985
Flour, wheat	8,337	9,330	9,524	9,107	9,176	9,660
Flour, cereal other than wheat	553	601	598	475	500	374
Oil, Cotton-seed, crude	250	263	256	277	292	299
Oil, cotton-seed, refined	161	161	613	161	161	161
Oil, groundnut, crude	278	193	269	309	222	167
Oil, groundnut, refined	40	24	40	53	35	29
Oil, olive, crude	213	145	160	234	162	196
Oils, others of vegetable origin crude	1,453	1,492	1,487	1,458	1,663	1,592
Fruits, tinned or bottled	129	139	182	164	178	188
Jams	38	39	38	34	41	44
Sugar, raw	4,165	4,350	4,540	4,613	4,620	4,800
Malt	327	321	367	444	499	566
Cocoa poweder	46	40	36	46	39	50
Cocoa butter	36	34	34	40	34	42
Chocolate and chocolate products	16	21	20	21	22	26
Coffee extracts, including instant coffee	85	96	102	83	99	90
Beef and veal fresh	2,411	2,489	2,573	2,591	2,630	2,685
Meat tinned	4	4	4	3	5	4
Mutton and lam, fresh	1,112	1,140	1,150	1,176	1,190	1,239
Poultry, dressed, fresh	984	1,028	1,138	1,201	1,215	1,275
Milk (cows), whole fresh*	7,329	7,559	7,769	9,258	9,069	9,116

Source: United Nations, Industrial Statistics Yearbook 1985 (Vol. 11: Commodity Production Statistics 1976 – 1985), 1987

* FAO, Production Yearbook, Volumes 32,33, 36 and 39. ECA/IND/GEN/1/89

A number of processing activities, such as flour milling, manufacture of beverages (beers, soft drinks) are based mainly or wholly on imported raw materials. In the flour milling industry, about 66% of raw materials were imported during the first half of the 1980s.

Production of wheat flour averaged 9.4 million tons per year during the 1980s with Egypt, Nigeria, Tunisia, Morocco, Algeria, Libya, Ethiopia and the Sudan accounting for about 80% of this output. Current trends are towards using local cereal grains and tubers to manufacture composite flour due to rising import bill of wheat and deteriorating economic conditions in the continent. The shift towards the use of local cereal grains by the flour milling, livestock feed, brewery, breakfast cereal, infant formula and snack industries has put a demand pressure on grains, such as maize and sorghum. The shift towards using composite and non-wheat flours received much support during

the second Industrial Development Decade for Africa (IDDA). Many countries in Africa have adopted the composite flour in their food processing industries.

Practically, all roots and tubers are processed by households involving family units with limited mechanized operations. The practice of fully mechanized tuber processing is still in its infancy despite the availability of locally fabricated machinery in countries like Nigeria and Cote d'Ivore, Ghana and Cameroon. Commendable processing technologies have emerged from the Federal Institute of Industrial Research, Oshodi (FIIRO), and the International Institute of tropical Agriculture (IITA) in Nigeria and the Kenya Industrial Research Development Institute (KIRDI) in Kenya.

The region is a net exporter of fresh fruits, such as citrus, banana, pineapple and dates. A number of African countries, for example, Ethiopia, Cameroon, Egypt, Kenya and Nigeria process fruits into juices, jams and marmalade for local use and export. Canned pineapple export during 1984-1986 was about 118,000 tons. Production of bottled fruits and jams in 1985 was 188,000 and 44,000 tons, respectively.

Although Africa used to play an important role in the production of vegetable oils, production has been declining during the last 15 years. Africa's share in the world groundnut production (continent's major oilseed crop), for instance, declined form 34% in the early 1969s to 25% in 1988. The same applies to palm oil production whose share dropped dramatically from 74% in 1975 to 22% in 1986 due to the entry into the markets by players like Malaysia. As a consequence, African self-sufficiency ratio which was 153 in 1961-65, went down to 112 in 1974-1976 and 102 in 1986 and is projected to decline to 86 by 2000. There is the urgency to increase oil production substantially to ensure increased self-sufficiency in cooking oil. It is, therefore, encouraging that a number of countries are carrying out pilot field studies in palm oil production.

In general, food industries have performed poorly since 1980 when assessed in terms of the targets set in the Lagos Plan of Action, the Industrial Development Decade for Africa (IDDA) and the UN Programme of Action for African Economic Recovery and Development (UNPAAERD). The most important aspect of the targets is that African countries must make every effort to process locally their raw materials. Table 3.4 shows that many agro and livestock raw-materials are still not fully processed. In the 1980s food-processing output declined by 4% annually up to 1985. This is deeply rooted in Africa's declining MVA (Table 3.5). In 1986 and 1987, however, there were increases of 3.5% and 2.5% respectively.

Table 3.4: Tropical Africa: Manufacturing Value Added (MVA) by Industry, 1980 and 1987

	(Millions of dollars)		% share of the region in world total		
	1980	1987	1980	1987	Change
Total Manufacturing	14,484	16,105	0.52	0.49	-0.03
Food Products	2,635	3,443	0.88	0.94	0.06
Beverages	1,632	1,903	2.45	2.75	0.30

Source: UNIDO: Industry and Development. Global Report 1989/90

The declining MVA growth has partly mirrored the structural weakness of the region's industry. The majority of industrial establishments were initially designed for import substitution by processing imported inputs using imported machines and spare parts. This strategy reflects the economic environment and philosophies during the 1960s and early 1970s.

The world recession of the early 1980s affected industries in the region due to the failure to ensure sufficient imports or sustain rising raw material import bills. Domestic problems, such as lack of managerial skills, frequent power failures, inadequate technical service facilities, absence of information and marketing channels also play a role in underutilization of capacity. In industry, capacity utilization declined to a regional average below 40% in 1988. A recent survey of the "Centre Nord-Sud de l'institut de l'Entreprise" Paris, in 24 African countries representing 70% of the population and 75% of GDP in sub-Sahara Africa, revealed that out of 204 enterprises, 111 (or 54% operated below break-even capacity and 46 (23%) had closed down (Table 3.5).

Table 3.5: Survey of Capacity Utilization in Food Enterprises in 24 African Countries

	Number of Enterprises Surveyed	Operating Satisfactorily	Operating below Capacity	Closed Down
Cereals	33	4	26	3
Oils and Fats	48	1	31	16
Fish, fruits and vegetables	33	5	16	12
Dairy products	15	7	5	3
Sugar	32	5	19	8
Beverages	43	25	14	4
TOTAL	204	47	111	46

Source: Survey of Economic and Social Conditions in Africa, 1986 – 1987
Centre Nord-Sud de l'Enterprise, Bilan es Persoectives de l'industries Africaine (Paris, 1985)

4. Factors Constraining Agro-Processing Industries in Africa

The depressed economic conditions that prevailed in the world in the 1980s and parts of 1990s and the multiplicity of continuing crises in Africa have had and continue to have negative impact on the processing of African raw materials. The hope that African countries would progressively increase exports of its raw materials with increasing value added has not been widely realized. Thus, the constraints inhibiting the growth of Africa's food industry include:

- inadequate agricultural, industrial and economic policy
- weak integration between agriculture, manufacturing and trade
- conceptual mistakes in the establishment of enterprise
- technological inadequacies
- poor demand stimulation
- inability to adapt to the increasing sophistication of international markets including the development of new packing materials
- lack of inter-sectoral integration between large and small enterprises, low level of domestic sub-contracting
- inadequate infrastructure
- debt service burden, inflation budget deficits and import dependence of industry

A keen awareness of these basic problems has led to the formulation of economic-reform policies by about two-thirds of the 53 countries in the sub-Saharan region. Most of them have done so with support form the International Monetary Fund (IMF) or the World Bank, as in Angola, Guinea-Bissau and Zimbabwe, while others have used their own initiatives with emphasis on foreign exchange reforms as in the Gambia, Ghana, Nigeria and Mauritania. In the food processing sector, the emphasis is on liberalizing the environment in which manufacturing operates, reducing government ownership and control, development of small and medium-scale industries using local raw materials and strengthening domestic input-output linkages.

5. Strategic Policy Directions for the Future

As a result of the economic reform policies in most African countries, the food processing industry operates in an economy where:

- many businesses have high operational costs limiting any planned expansion
- devaluation of the local currency against main convertible foreign currencies has caused severe cash flow problems
- many small-scale businesses have folded up and caused a high level of unemployment
- high cost of funds that can be invested does not encourage entrepreneurial initiatives

The pursuit of the objectives of the policy on self-reliance led to the ban on the importation of some raw materials in some countries. However, the agricultural sector of the economy is not yet in a position to supply agricultural raw materials while inputs from other sectors are equally inadequate. This had led to increased costs of production, sales and marketing, while product pricing has remained unstable. The disposable income of consumers has been on the decline and industries are not making enough profits to replace their assets. However, with many African countries having signed the World Trade Organization (WTO) protocol, tariff and non-tariff barriers is discouraged in the liberalized international trade.

Against this background, the food processing industry has entered an era of survival for the fittest. To remain in business, management must plan ahead, evolve good strategies and implement them successfully because strategy is about survival in a highly competitive world.

The challenges confronting the food industry in the 1990s and beyond are the imperatives of products of good value and consistent quality sustained by consumer demand at home and competitiveness abroad, to ensure profitable growth. This implies that all strategies must have a strong consumer orientation.

To meet the challenges, strategic directions should focus on the supply of raw materials, technology, product diversification and markets.

Inputs

Raw materials

The regular supply of raw materials to industry throughout the year requires a master plan interlinking agricultural and industrial developments that should be mapped out by the private sector and the government. To achieve the objectives of self-sufficiency and food security, seasonal saturations of primary products require appropriate technologies for storage and preservation. The efforts of governments to establish strategic grain reserves at the national level should be sustained, while other raw materials (roots and tubers, oil seeds, palm products, fruits and vegetables) also need to be emphasized in the interest of national food balance. Since agriculture has not succeeded in meeting the demands of the food-processing industry, the following activities are recommendations to boost food production, improve local value added and increase capacity utilizations:

- setting up farm settlement schemes with necessary infrastructural facilities, such as accommodation, access roads, water, energy, communication, health care and integrated network of satellite storage facilities to reduce post-harvest losses, ease transportation, reduce rural-urban migration and motivate more people to take to farming
- providing soft loans to procure or hire productivity enhancing inputs, such as fertilizers, herbicides, germicides, tractors and to expand areas cultivated
- sustaining land reclamation efforts through irrigation, reforestation or drainage, as applicable
- allocating land for agricultural production, with the zoning of crop production to areas where best suited
- formulating and effectively implementing a Guarantee Minimum Pricing policy as an incentive to local farmers to produce more
- initiating regular agricultural extension services on new technologies either by direct contact or through the electronic media
- providing adequate funding for higher institutions of agriculture specializing in crop and animal production, economics, soil science, extension, research, engineering, post-harvest technology and education, to correct the structural and functional defects of inherited colonial institutional framework for agricultural teaching, research and extension

The institutions should generate and disseminate agricultural technologies and produce the teaching manpower required to perpetuate the proper use, maintenance and repair of these technologies. Regional organizations, such as Forum for Agricultural Research in Africa (FARA) in Accra, Ghana; Special Programme on African Agricultural Research (SPAAR), the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) in Uganda are playing pivotal roles.

There should be strong linkages between these institutions and all government arms, industry and farmers to enhance productivity by disseminating research findings on improved agricultural production and post-harvest technologies.

Intermediate raw materials

The future of food processing to a large extent depends on establishing sub-contracting and trading links between large and small-scale enterprises within the industry. The production of intermediate raw materials by small and medium-scale industries as inputs to large industries, for example, will strengthen such linkages as long as the standards of quality of the intermediate products are maintained. The production of glucose syrup form the conversion of roots and grains as an input to the food and pharmaceutical industries, production of maize grits for the breweries and breakfast cereal industries and cocoa butter for cosmetics and confectionery are typical examples.

Technological issues

African countries differ in their levels of technological development, particularly agricultural production, food cultivation and commitment (investment) in industrial food processing.

In the 1990s and beyond, technological strategies should focus on achieving the broad objectives of the African economic recovery and development that include:

- developing industries to produce agricultural tools, equipment and inputs and small-scale irrigation equipment
- processing raw materials and intermediate inputs
- developing capacity for using renewable sources of energy, especially biomass and solar energy
- establishing engineering capacity for developing local spare parts and components
- providing appropriate training and developing local capacity for designing and preparing projects

Given the debt burden, an ever larger degree of local processing of indigenous raw materials should be sought. The trend should be toward decentralized small-scale, rather than large-scale processing units that are both suited to and sited in the food-producing rural areas. This arrangement would provide greater employment, improve rural industrialization, and reduce rural-urban migration, losses due to spoilage and transportation costs.

Expansion of storage systems

African governments should pursue, with vigour, a strategic crops reserve policy because efforts to boost agricultural production can only be meaningful if supported by a purposeful post-harvest food loss prevention system. Satellite grain collection depots, for example, should be established at strategic locations including rural and urban markets and agro-service centers. The warehouse sizes should be determined by the level of agricultural activities in the area.

Upgrading traditional technology

Transforming traditional food crops, through mechanized processing, into acceptable forms, such as shelf-stability and safety, consumer taste and eating patterns and convenience in handling and preparation is a technological challenge for the development of the food-processing sub-systems for the 1990s and beyond.

Strategies for achieving this goal include:

- Upgrading the current traditional technology in consonance with raw material supply and consumer demand for the end-products. This should be preceded by detailed techno-economic feasibility studies. Activities should include gradual mechanization of all unit operations, and gradual upgrading of the scale operation.
- Research and development (R&D) support should focus on modifying processing technologies and introducing design concepts for technologies especially where activities are prototypes or replicates of processes already developed and tested in other developed countries.

The informal sector

The bulk of processed food in domestic markets is produced by myriads of micro enterprises in the informal sector, especially in sub-Saharan Africa. Unfortunately, governments have not given this sector much support. There is an urgent need to improve processing technologies currently used by operators in this sector to increase incomes, generate more employment and assist in increasing raw material supplies from primary agricultural production. This calls for a comprehensive support policy.

Technical assistance will be particularly rewarding in such areas as root and tuber processing, grain milling, dehydrating fruits and vegetables and producing vegetable. Some large-scale commercial and fully mechanized operations have failed when compared with commercial operations using simple to intermediate level technologies.

Areas of emphasis should include:

- training of business owners to effectively arouse and reinforce entrepreneurial skills
- upgrading processes to make unit operations more efficient and more responsive to market demands, for example, the African Regional Centre for Technology (ARCT), based in Dakar, Senegal, has done a commendable job in injecting innovations into traditional food processing in Africa
- strengthening technical capabilities especially in fabricating and maintaining machine spare parts (There is therefore a need for urgent support of the African Regional Center for Engineering, Design and Manufacturing based in Ibadan, Nigeria)
- providing infrastructure, for example, access roads, electricity, water, and storage facilities in the factory /processing centers to improve working and living conditions (The New Partnership for Africa's Development (NEPAD) has placed infrastructure as a priority among priorities)
- prescribing grades and standards through regulatory agencies for the finished products to ensure consistently high and uniform quality (The African Regional Standards Organization (ARSO) based in Nairobi, should be supported and strengthened)
- providing information about appropriate alternative technologies and marketing assistance (A number of countries have seen the need for establishing commodity exchange organizations alongside foreign exchange centres)

Establishment of small-scale plants with possibilities of replications

A small-scale plant with possibilities for replication in a battery system offers a viable prospect for success. Such plants involve lower investment and could be established in food producing rural areas, matching processing capacity with raw material supplies. An investor could invest in one unit and proceed to expand his capacity by adding more battery-type processing units to limit the high initial investments and overheads due to underutilization of plant capacity at the initial period of operation. Smaller plants provide an opportunity for developing managerial and technical skills while avoiding the losses involved in making mistakes in large factories. Such an approach has been amply demonstrated in China with much success. The approach is especially suitable for Africa as investment funds are scarce.

Linkage development

Food-processing plants should be set up at, or near production sites for the manufacturing of intermediate products. Such products could serve as raw material for a central plant of the parent company or for other companies. Such an approach provides an immediate stimulus for nearby farmers to produce at increased levels. Moreover, intermediate processing provides rural employment thus arresting rural-urban migration. This enhances linkage development between primary food production and food-processing industries and also within the food processing industry.

Development of support industries

Setting up service food-processing industries using local and imported technologies (such as the steel, chemical and petrol-chemical industries) to supply plant components for machinery fabrication, additives, packaging materials and auxiliary equipment has been found to be a desirable side business that increases the efficiency of food processing plant in addition to facilitating the diffusion of technologies into rural areas.

To aid the foregoing, government and the private sector should set up fully equipped foundries for manufacturing machinery components to suit local machinery fabricators' specifications and aid the development of an indigenous technological base.

Research and development

Research and development (R&D) activities should include the following:

- setting up zonal R&D institutes or upgrading existing ones and designating them as zonal research centers within each country in the African region would be the logical step towards re-organizing the agricultural production
- fostering exchange of ideas in tackling similar food processing, packaging, storage, marketing and food development problems, R&D centers, should include periodic regional conventions, "trade fairs", to build close linkages between inventors, investors and manufacturers, jointly funded by member countries.

Scientists within local research institutes must take the initiative to trust one another and institutes within African countries must co-operate and do away with "selfish" attitudes of holding back

information. Having achieved that, the opportunities are immense in technology development and dissemination among African counties. Africa must take a leadership role through action-oriented measures such as:

- Bringing together people with interest in processing food crops and animal products from within the region. The idea is to enhance the exchange of information through face-to-face interactions about process research, focusing on a broad perspective of the problem areas in storage and preservation, processing, product development, engineering chemistry, microbiology and nutrition and equipment production. Sharing of local experiences would strengthen education, especially at undergraduate and postgraduate training.
- Through R&D, African countries can evolve appropriate processes and adequate plants and machinery for production by using facilities in the engineering and machine tools industry and exploring ways of using and improving upon local raw material inputs. Local innovations can make a big difference by incorporating local content into the whole process.

The need for rehabilitation and restructuring in the formal sector

Rehabilitation involves an in-depth diagnosis of the precise reasons and scopes for the problems and constraints that industries face and the increasing challenges in a sub-sector of a country. The diagnosis is to enhance the design and implementation of technical assistance projects, avoid re-establishing previous conditions for production and establish a new basis for viable production and growth. Rehabilitation and restructuring is important for Africa during this time of globalization and liberalization when goods manufactured in the continent are exposed to global competition. Such an assessment would be directed at identifying areas where each country has a competitive edge (advantage) in world trade.

At the micro-economic level, it is important to direct rehabilitation toward production and management in existing industrial enterprises. This entails introducing an effective and dynamic marketing, concentrating human, physical and financial resources in a few manageable projects or markets, analyzing market trends more closely and paying greater attention to technological development.

Emphasis should be on a more efficient utilization of existing industrial capacity rather than on new investment.

Establishing regional networks between enterprises for mutual self-help is also a crucial aspect of rehabilitation. It is for this precise reason that the NEPAD initiative is timely and appropriate. NEPAD advocates for regional integration in the face of globalization and liberalization trend. The East African Business Forum that groups businesses from Kenya, Uganda and Tanzania to share experiences and knowledge is timely.

Product Development

Many organizations will survive, given a commitment to local sourcing, development of new products and government's sustained will/policy to impose tariff and non-tariff barriers on similar products entering African markets. However, since the advent of World Trade Organization (WTO) rules and regulations, many African countries who are signatories to the WTO Treaty do not have much flexibility in imposing tariff or non-tariff barriers. The increase in the use of local raw materials in some countries poses tremendous technological and marketing challenges to many organizations. Since the successful branding and positioning of products based on local raw materials in the market place play an important role in the fortunes of the business, efforts of food industries in this direction should lead to new trends in market demands by monitoring quality products to compete effectively against foreign goods.

With regard to the sub-system under study, efforts should be directed toward:

- producing breakfast cereal, baby foods and cocoa-based beverage with cereal added
- transforming yams into a dehydrated product capable of re-hydration
- using 100% local grains to brew beer that matches the taste and quality attribute that is familiar with the consumers, for example, the model of using sorghum to produce beer in Nigeria and South Africa
- producing priority food additives, such as industrial enzymes, chemical preservatives, food colorants and flavors on a long-term basis to gradually phase out imported additives and replace them with local substitutes
- developing local raw materials and products, for example, soy flour as alternative to mix powder in milk-based recipes
- using special foods, such as military rations and diabetic foods
- preparing composite bread from non-wheat flour similar to what the consumer knows and prefers
- developing soy-based food products as a cheap means of providing nutrition for the young
- producing various vegetable oils and fats form local sources, the key challenge being that of maintaining quality through improved presentation using pilfer-proof competitive packaging
- producing many convenience foods for urban consumers

Success depends on effective Market Research that makes it possible to understand the consumer's reaction to the new products. It also depends on consumer habits and attitudes arising from a decline in purchasing power and his rating of the new product against the competition.

Use of by-products

An integrated development of the food industry involves using raw materials, by-products and residues. Many technological and marketing challenges remain unsolved in by-product utilization resulting in the waste of resources and sometimes damage to the environment. This is particularly notable in the sugar industry.

A proper combination of different raw materials and by-products can make good animal feed, at a low cost. Inadequate knowledge of the potentials of food by-products and lack of baseline data on quantity hinders the effective use of by-products.

By-products generated as some of the processing centers include rice bran and husks, cassava peels and residues from palm fruit processing. Deliberate and concerted efforts should be made to use these by-products to add value and generate more income.

Marketing

In the 1990s and beyond, marketing strategies should give priority to products, pricing and distribution over competition. This is crucial because the marketing situation, in many countries within the region, has changed from that of a seller's market to a buyer's market since the introduction of economic reforms. Domestic markets are shrinking. With increasing production costs, consumers continue to re-order priorities.

A shift away from the old routine of maintenance marketing to a more purposeful and development-oriented innovative market, fully backed by basic consumer research and opportunity identification is required. Thus, marketing strategy should ensure that all sections of the organization are consumer-oriented.

To expand the market, strategies should dwell on delivering products to consumers at affordable prices. Packaging should be modified to accommodate smaller unites. The attributes of products should be re-examined and recipes adjusted totally with consumer requirements or needs based on market research.

Regional markets

The development of regional markets presents an opportunity for cooperation among African countries to strengthen their position in penetrating international markets. Given the current development of economic units in Europe and the rest of the world, intra-African trade is a dynamic answer. This implies measures, such as harmonizing trade regulations, cooperating in improving transport infrastructure and organizing regional trade fairs.

Developing export markets

To generate foreign exchange and replace imported spare parts, food-processing industries are exploring export markets. This need assumed greater importance in the 1990s. It is difficult to penetrate overseas markets. Export markets are highly competitive because of the stringent quality standards of importing countries. Keeping up with trends in processing and packaging and legal labeling requirements is a key industrial consideration. Where export documentation and fiscal measures (trade flow charges, tariff) are unfavourable, export market access is difficult. The strategy to overcome the constraints should include:

- Contact packaging in the importing country through an agent. A classic example is to export yam flakes or grain in bulk to another country in Europe for packing and marketing.
- Joint venture: Both parties should jointly develop, monitor and assist in implementing strategies that would encourage "best practices", information flow, material back-up, training and development. Growth opportunities (new products, new markets, distribution channels) should be defined.

The aim should be to develop a powerful brand personality, creatively positioned and supported by marketing efforts to yield optimum profitability.

Advertising

The intensity of advertising must increase in the years ahead to put weight behind products made from local raw materials, for proper brand positioning and creation of the desired consumer perception. Advertising must be unique, educative, give value for money and the selection of the medium must be appropriate for the target group.

Sales and distribution

The sales force must be trained and well equipped to operate in the years ahead when competition is expected to get tougher. Sales will become difficult as costs of distribution will increase due to increasing transportation cost. Packaging must be capable of effectively protecting the product and be able to withstand the rigours in the market place.

Pricing

Pricing should strike a balance between what the consumer can pay and the profit margin required by the company to remain in profitable business. Shareholders should receive an acceptable return on investment and put the company in a position to maintain or replace its assets. This is an up-hill task in export markets. A product of good quality faces the threat of being pushed out of the international market if the price is uncompetitive.

Effective protection of the food industry

Food products and machinery that are locally fabricated from imported materials, using tariff and non-tariff barriers should be approved by governments.

6. Personnel Management and Assessment of Training Needs

The success of business is measured in terms of its profitability. One of the cardinal features of good management is that qualified manpower and other resources are used as productively.

Maximizing the capacity of manpower involves making decisions on the performance standards required for all categories of workers – managers, supervisors, technologists, craftsmen and operatives. These workers must be trained to attain the performance standards required. Thus, to attain the company's overall objective, a training policy needs to be formulated as part of the general policy of the company.

Why companies train

Companies train personnel to meet current and future needs for labour and the changes in jobs due to transfers or promotions. Other reasons include preparing people for future promotion and newly introduced jobs. Therefore, management and supervisory development should be a continuous and systematic process in any progressive organization.

Systematic training can:

- increase production
- improve quality of workmanship
- lead to less wastage of materials
- lead to better utilization of machines
- reduce damage to machines and tools
- reduce labour turnover
- lower accident levels
- reduce unit costs
- decrease amount of supervision
- reveal employee's talent
- improve labour morale
- help create greater manpower flexibility

Thus training is an investment in human resources. If the trained staff is allowed and motivated to apply the skills and knowledge acquired, the results could lead to significant benefits to industry.

Within the overall corporate development objectives, workers have established targets against which their performance is assessed. The set targets are expected to be realistic, attainable and manageable within a given time frame.

Consequently, targets successfully achieved (strengths) are identified as well as those partly achieved in a performance review between the subordinates and the superior. Those not achieved (weaknesses) and the reasons for non-achievement are also identified. In practice, factors for non-achievement usually include:

- lack of company support
- government policies
- environment changes, such as, transfers
- weakness of performer, for example, lack of requisite skill and knowledge

If poor performance of staff is caused by personal weakness, then a training need arises. It is, therefore, necessary to probe and recommend the right course including the following:

- The record of training both outside and inside the company should be evaluated to establish the training received so far
- The supervisor should probe the workers' academic preferences, skills and aptitude.
- The workers' career aspiration should be ascertained

The supervisor and subordinate should set realistic and achievable targets in clear specific language, and express the required results in precisely measurable terms

7. Conclusion

The conclusions drawn from the discussions follow below.

- After 30 years of expansive experimentation with different fashions in development strategy, African countries have come back full circle to accept agriculture-led development strategies as the appropriate response of agricultural countries to deepening continent-wide crises of poverty-driven hunger and malnutrition.
- The food industries have tactical and catalytical roles to play within agricultural-led development strategies in Africa.
- Food industries' capacity to fulfill this role depends entirely on how the paradigms of project analysis are applied to sharpen the problem-solving capacities of a new breed of entrepreneurial payers emerging in Africa food processing industry.
- Training and effective R&D support are required to build and sustain entrepreneurial capacities in food processing in Africa.
- Food research centres are well poised to contribute to the development of food industry in Africa, through technology development acquisition and application.

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Wellington Otieno is a consultant with Foodlink Resources (Kenya) and Ada Mwangola is with OXFAM (Kenya)

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