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**LEADING ISSUES ON AFRICA'S PATH TO INDUSTRIALIZATION: THE ROLE OF
SUPPORT SYSTEMS AND INSTRUMENTS**

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LEADING ISSUES ON AFRICA'S PATH TO INDUSTRIALIZATION: THE ROLE OF SUPPORT SYSTEMS AND INSTRUMENTS

The purpose of this paper is to highlight a number of issues that impede sub-Saharan Africa's endeavour to achieve a higher degree of industrialization, with a focus on the role of intermediate institutional support systems and instruments in assisting firms. A list of leading issues and an explanation of problems in climbing the ladder of manufacturing value added across selected African countries are followed by case studies of best practice that enabled dynamic firms to thrive in an increasingly competitive environment.¹ The paper contends that an ideal set of support systems and instruments should strengthen linkages and networking, factor market (capital, technology, skills, etc.) and compliance with technical regulations. Selected UNIDO examples of support systems and instruments are furnished with a view to highlighting the role of UNIDO in addressing issues pertaining to investment and technology promotion, small business development, quality and productivity, environmental management, industrial energy efficiency, and industrial governance and interactive policy formulation.

1. The State of African Manufacturing in Global Industrialization²

African countries continue to liberalize their domestic economies with a view to integrating into the world economy, and to this end their barriers to imports are gradually reduced. Integration offers them the opportunities to join in world economic expansion amidst formidable challenges, and undoubtedly creates competitive pressures for efficiency gains. Efficiency gains, in terms of increased value added, productivity, profitability and wages, do not seem to be abundant across African manufacturing firms, and there is little evidence that the overall performance of the manufacturing sector has improved significantly. Enhanced efficiency gains also tend to remain concentrated with dynamic firms, their affiliates and enterprises that capture market niches through quick leverage with new industrial realities, but the vast majority fails to plug into the sources of dynamic industrial growth. Sub-Saharan Africa's overall disappointing performance in the sphere of global manufacturing is evidenced by data furnished in the following tables.

Manufacturing value added (MVA) in sub-Saharan Africa (excluding South Africa) grew at an average annual rate of 3.1 per cent in the 1980s (see Table 1), and MVA growth faltered to 2.4 per cent annually during 1990-2000. According to provisional estimates by UNIDO, a 4.9 per cent MVA growth in 1998 could not be sustained in the following years. Having plunged to 3.6 per cent in 1999, MVA growth remained subdued at 0.4 per cent in 2000.

Period/Year	Growth rate of MVA* (per cent per annum) Sub-Saharan Africa (excluding South Africa)
1980-1990	3.1
1990-2000	2.4
1998*	4.9
1999*	3.6
2000*	0.4

Source: UNIDO.
* Provisional/projected figure.

Sub-Saharan Africa's share of global manufacturing value added remained unchanged at 0.4 per cent for two decades (see Table 2). The region's share of developing country MVA was estimated to have fallen significantly from 2.6 per cent in 1980 to 1.6 per cent in 2000.

While there is no single explanation for this, country experience suggests that the rapid growth of import competition, associated with globalization and trade liberalization, was a contributing factor. Low levels of investment, especially in skills development and technology, accompanied by weak infrastructure

and overvalued exchange rates have meant that African industrial enterprises lost their market share both at home and abroad.

Table 2. Share in global manufacturing value added, 1980-2000 (Percentage)

Year	Developed economies	Economies in transition	Developing economies	Sub-Saharan Africa*
1980	78.0	7.7	14.3	0.4
1990	76.3	7.1	16.6	0.4
1998 ^f	74.2	3.4	22.4	0.4
2000 ^f	73.0	3.6	23.4	0.4

Source: UNIDO.
^f Forecast.
* Excluding South Africa.

While world manufacturing exports are driven by high-technology, R&D and innovation-intensive products, these products accounted for 1.3 per cent of the sub-Saharan Africa's manufactured exports in 1998, a marginal decline from 1.4 per cent in 1985. The share of medium- and high-technology products in manufactured exports accounted for 12.7 per cent in 1998, compared to the world average of 63.8 per cent, 67.8 per cent in developed countries, 46.9 per cent in transition economies, and 53.8 per cent in developing countries. In East Asian countries (excluding the Republic of China), medium- and high-technology products accounted for 66.2 per cent of their manufactured exports in 1998, compared to 40.3 per cent in 1985.³ Sub-Saharan Africa's endeavour to edge into a higher degree of industrialization is deterred by a number of issues and constraints.

2. Leading Issues⁴

2.1. *Weak Industrial Response to Stabilization Measures*

Since the mid-1980s several African countries have adopted stabilization measures in varying degrees. But industrial supply response to growth impulses stemming from macroeconomic stability remained weak in a number of African countries. A typical example is Nigeria which enjoyed a high degree of macroeconomic stability for a few consecutive years until 1998, but industrial growth remained subdued. In recent years there were signs of mild industrial recovery, which could not be accelerated. The weak industrial supply response to macroeconomic stability is ascribed largely to supply-side rigidities and demand constraints due to the low purchasing power of a vast majority of population and lack of urban demand for locally produced goods.

Apart from addressing supply-side rigidities and demand constraints, there is a need to induce public and private, domestic and foreign firms to institute required forms of internal reorganisation of production and management systems to keep pace with the rapidly changing dimensions of industrialization. A system must be put in place to ensure the emergence and consolidation of strategic alliances among firms necessary for the enhancement of productivity and competitiveness complying with the new industrial reality of "collaborate to compete". Policy co-ordination of different actors has now become more important as the design of industrial policy must take account of commitments to collective efficiency. This requires a stronger government capacity for norm setting, ensuring compliance and sponsoring internationally competitive firms by providing a functional regulatory framework and institutional support. Targeting a wide diffusion of technological learning and strengthening of technological capabilities at the firm level is also pivotal in order to enhance industrial supply response. It should emanate from a shared industrial vision of the future, which provides a focal point for continuous interaction between the government and the stakeholders of industrial development.

2.2. *Comparative Advantages without Competitiveness*

In enabling African economies to compete in an internationally competitive market environment by transforming their comparative advantages into enterprise-level competitiveness, it is important to realize that the framework within which competitiveness can be developed and technological capability enhanced requires strengthening of supportive institutions. The experience of dynamic regions across countries lends credence to the fact that factors external to firms, i.e., intermediate institutional support systems, play an important role in enhancing the performance of firms. Firm-centred initiatives are crucial for enhancing industrial competitiveness, which is being increasingly driven by technology, knowledge, information and skills. At the same time, institutions play a crucial role in generating, disseminating, exploiting and commercialising new knowledge.

The perceived comparative advantages of agro-related industrial products will need to be strengthened and their competitiveness enhanced with a view to addressing the formidable challenges of ensuring food security, increasing agricultural productivity, and attracting resource flows. The pursuit of such an industrial development strategy would require the adoption of an integrated approach to strengthen both forward and backward agro-industrial linkages.

2.3. *The Missing Middle*

An overwhelmingly large proportion of industrial enterprises in Africa can be characterised as small or (more frequently) micro. The “missing middle” between large enterprises and small and informal manufacturing activities is the root cause of the lack of forward and backward linkages in Africa. Micro enterprises employ only a handful of workers, who are often family members or relatives. Such micro enterprises in many respects are more like household activities. They proliferate at a rapid rate, but survival rates are low. What is even more significant is that these small and micro enterprises hardly ever graduate into the formal sector.

This is in sharp contrast to the experience of small firms in many developed countries. Italian and Spanish small firms in particular have achieved high level of what is described as collective efficiency by horizontal integration and by developing organisational and technological links with large firms. Such small and micro enterprises have carved out a viable market niche for themselves. They are of considerable importance in economies such as Japan where mass customisation and concentration on core competencies by the major firms is widespread. The institutionalisation of flexible specialisation and mass customisation in an industrial system requires the presence of dynamic small firms.

Appropriate policies should be adopted to encourage industrial clustering among small and micro enterprises and to foster closer links between major producers and their suppliers. While research shows that artificially created industrial clusters often fail, intermediate institutes can do a great deal to foster the process of networking once such clusters have evolved.

It is imperative that external technical cooperation inputs be directed to the promotion of dynamism in small business.

- encouraging internationalization of SMEs that have the potential;
- identifying promising product areas and providing accurate information to labour-seeking, market-seeking, resource-extracting, and out-sourcing FDI's;
- encouraging the development of linkages between SMEs and large firms;
- adopting mechanisms that anticipate the needs of those investors a country is seeking to attract;

- establishing mechanisms that monitor and respond to the problems faced by foreign investors;
- devising mechanisms to attract knowledge and financial resources of Africans in North America and Europe; and
- identifying supply- and demand-side constraints that impede the implementation of promising pipe-line agro-industrial investment proposals.

2.4. *Slow Pace of Privatization*

Virtually all sub-Saharan African countries have now formal privatization programmes of one kind or another, but the progress remains patchy. In the event of the state failing to privatize giant industrial firms, the key issue relates to other options to commercialize and corporatise state industrial operations with a greater degree of financial and managerial autonomy and market-driven performance norms.

2.5. *Eco-Efficiency Compliance Costs*

With increasingly strict environmental regulations being imposed in the developed world, African countries are forced to meet higher environmental standards to gain market access for their exports. Environmental regulations can affect process standards, product standards and standards of discharge. Eco-labelling also imposes environmental standards on African country exporters.

Compliance costs are likely to be greater in the short run since they involve immediate investment expenditure, and compliance costs are greater for some industries than others. Chemicals, pulp and paper, mining and oil refining are likely to be among those most affected. Small and medium enterprises find these costs difficult to bear, given their lack of information about the details of overseas standards and given their lack of access to credit to cover the cost of new investments. However, environmental compliance can also reduce long-run costs by promoting more efficiency of raw material and energy use. The reduction of clean-up costs and waste can yield social as well as private benefits, as does the promotion of clean technologies generally.

2.6. *Limited Sub-Regional Integration and Industrial Complementarity*

The reasons for the limited success in regional integration through industrial complementarity are generally ascribed to similar resource endowments across countries in a given sub-region. But this is changing due to the emergence of new complementarities stemming from the fact that the process of industrialization is being increasingly driven by knowledge, skills and absorptive capacity of new technologies.

Technical assistance inputs will need to be directed towards strengthening inter-sectoral links between primary and secondary sectors through the exploitation of complementarities of resource endowments. Such integration should necessarily generate backward and forward linkages in the process of subregional development. The integration of production structures should enable countries to pool resources and establish multi-country programmes. The major components of cooperative programmes that economic groupings endeavour to promote should encompass efforts to rely more on regional rather than on imported inputs, rationalization of production, and improving facilities for repair and maintenance of plant and machinery as well as subregional efforts to standardize equipment and parts.

An immediate priority input will need to be awareness creation about the importance of regionalism in industrial development. Some of the groupings have already undertaken inventories of existing industrial potential and activities as a first step towards regional industrial development. A programme/course in regional industrial policy management for policy-makers and executives of regional organization, focusing

on the key elements of harmonizing sub-regional and regional policy initiatives to respond effectively to the new challenges and opportunities may be offered by institutions

Of special importance is awareness creation among the young generation who will lead the process of industrialization in the future. To this end, the curriculum at the post-graduate level in universities could include a subject on regional industrial development potential in Africa.

2.7. *Lack of Human and Technological Capability*

Human and technological capacity building is important even for the development of low technology, labour-intensive and resource-based industries as the incidence of technical progress occurs at all dis-aggregated segments of manufacturing. The processing of natural resources needs skills similar to those of more general manufacturing development. While North African and some (mainly higher-income) sub-Saharan African countries such as Botswana, Lesotho, Zimbabwe and Swaziland have high proportions of children of primary school age enrolled in school, primary school enrolment is still low in a number of countries. Industrial development requires continuous improvement in the whole range of human skills from shop floor via supervision, financial, engineering, procurement, marketing and general management. Skill formation is a consequence of industrial education and training acquired within educational institutions and within firms. Different types of skills are required at different levels of industrial development. Moving from one level or pattern of industrial development to another requires changing the skill creation system and its utilisation by industry.

2.8. *Infrastructural Bottlenecks and High Cost of Doing Business*

Africa's long-term industrial growth and competitiveness is greatly impeded by its poor infrastructural capacity. Relieving these constraints should be a priority for government development expenditure. Many sectors have higher costs because of deficiencies in transport systems. A lack of rural roads leads to large wastage in fruit and vegetable production after harvesting, and this is true of many other agricultural crops. This deprives agro-industries of cost-effective inputs. Poorly functioning rail transport systems make distribution costly and inefficient, and retard the agricultural productivity. Deficient electricity and water supplies raise costs and thereby discourage investment. Intermittent power cuts cause heavy damage to machines, and the cost of recoiling engines constitutes a major expenditure. Better power supplies would encourage investment in manufacturing.

2.9. *Foreign Investment Realities*

African LDCs could attract only 0.4 per cent of FDI flows in 1999 (see Table 3). Within Africa, FDI flows are quite concentrated at present on a small range of countries. Mineral resources continue to attract foreign investment, as recently has been the case in Angola and Mozambique. A few African countries have emerged as suppliers of 'exotic' fruit and vegetables to European supermarkets. Cut flowers, which can be air freighted to markets, are another area which has expanded. Although smallholders can grow fruit and vegetables, capital requirements for internationally competitive products can be substantial.

Table 3. FDI Inflows, 1988-1999

	Inflows (\$ m)		Inflows (shares)	
	1988-1993 Annual average	1999	1988-1993	1999
World	90 629	865 487	100.0	100.0
Developed countries	140 088	636 449	73.5	73.5
Developing countries	46 919	207 619	24.6	24.0
North Africa	1 388	2 992	0.7	0.3
Sub-Saharan Africa	2 084	5 958	1.1	0.7

Latin America, Caribbean	13 136	90 485	6.9	10.5
South and East Asia	27 113	96 148	14.2	11.1
Least Developed (43)	1 361	4 527	0.7	0.5
African LDCs	822	3 798	0.4	0.4

Source: UNCTAD, *World Investment Report 2000*.

Foreign industrial investment is likely to be attracted to countries with potentially large domestic markets. Privatization in a few countries, such as Zambia, Mozambique, Guinea and United Republic of Tanzania, has attracted foreign investors. Nevertheless, countries such as Sierra Leone, The Gambia, Togo, and Benin, with very small populations and *low per capita* incomes, need to attract export-oriented FDI. Lesotho has been extremely successful in attracting foreign investment in export-oriented cut, make and trim (CMT) operations.

2.10. *Problems of Edging into Higher Degree of Processing*

Countries that which hitherto served as low-wage cost locations find it difficult to sustain their competitiveness when they fail to climb the ladder of higher value added. A typical example is Lesotho. In the early 1990s a number of CMT operators redeployed their garment production from Mauritius to Lesotho in search of low-wage cost as a short cut to competitiveness. These operators started with a minimum wage of around \$50 per month, and due largely to a very strong trade union movement the wage level rose significantly. Lesotho is almost in the similar position (in garment production) that of Malaysia in semi-conductor enclave type of operations which enabled the country to over-perform in high technology activities even with low levels of education and skills. In the face of rising wages, the so-called low-wage cost competitiveness seems to be fading away and Malaysia has no option but to enhance the skills in order to climb the ladder of higher value added. Lesotho's cost competitiveness hitherto remained in mass production of standardized products. This was achieved with a brief training of unskilled workforce for a few months, as the bulk-handling operations did not demand higher level of education and skills. Given the low levels of education and skills, can Lesotho make a dramatic shift from mass production of standardized products to short-run of differentiated products and thereby climb the ladder of higher value added? It is indeed a challenge for policy-makers.

In a number of African countries high costs of doing business impedes initiatives towards replicating best practice particularly in the processing of agricultural resources. While Thailand exports 90 per cent of its cassava production in the form of semi-processed products and earns huge foreign exchange, a number of African countries are unable to convert cassava into "white gold" as the cost structure does not permit commercial viability. A recent study undertaken by UNIDO shows that the commercial viability of processing cassava for export is at stake at the current world market prices.⁵ At the same world market prices, Thailand continues to export semi-processed cassava for further processing.

Edging into higher degree of processing of agricultural resources is also constrained by importers' attitudes. Importers of seaweed from Zanzibar seem to prefer to import seaweed in unprocessed form. For a long time, chocolate manufacturers in North Africa imported semi-processed cocoa from East Asia and not from the nearby West African countries. In recent years, the trend seems to have changed due largely to West African suppliers' compliance with technical regulations.

Tanzania's huge investment in capital-intensive factories turned out to be a dead investment in cashew processing for exports. With simple manual operations by unskilled workers India processes Tanzanian cashew nuts according to international standards and re-exports, earning a big margin.

3. Positioning for New Industrial Realities: Behaviour of Selected Firms

A nation as a whole may not integrate into the global value chain, but one always finds pockets of industrial dynamism successfully integrating into global value chains and the emergence of dynamic and innovative entrepreneurs who continue to thrive in a competitive environment. As the waves of globalization sweep across African countries, it is indeed not the question of survival of the biggest or the smallest, but the fastest. A few case studies of dynamic entrepreneurs and firms are furnished below with a view to highlighting their potential responses to face challenges and seize opportunities.

3.1 *Avian Specialties (Nig) Ltd: Best Practice Helps Compete Against Imports*⁶

Avian Specialties (Nig) Ltd. is a farm concern that produces and sells poultry products: eggs, broilers and frozen chicken meat. Set up in the Nigerian state of Oyo by a young graduate of Animal Science, Gbenga James, the company now has a staff strength of 150 permanent workers and 20 casual workers servicing nine different farm premises spread across Nigeria. And with a total annual turnover of about N350 million, it produces the largest number of day old chicks (DOC) in the country.

At its inception in 1989, Gbenga James, in order to reduce the financial burdens and the usual cash flow problems of rearing birds, took advantage of the many failed or abandoned farms in the area to go into property leasing agreements where he rented the poultry premises. Also, he started with broiler farming because it did not require much technical knowledge apart from getting the right feed mixture of which he was an expert. Then he took a 7-9 week credit facility in which he would buy DOCs from Zartech, the market leader in poultry farming, on credit and resell to them at their maturity, the cost being deducted from the selling price. This strategy worked so well that he broke off from this arrangement five years later to carry his products to the market himself. This involved heavy investments and expansion: a new cold room, hatchery, etc. But he did not foresee the harsh competition he would face from cheaper imported frozen chicken.

Not much later, Avian Specialties began to feel the pains of import competition and faced serious cash flow problems as competition began to erode market share and bite into profits. The leasing arrangements from which its farms operated reduced capital expenditure. But these farms had a lot of in-built inefficiencies that were also inherited by the company, which made it difficult to integrate them and exploit the synergies of greater size. This resulted in a production cost that was higher than the price at which imported frozen chicken was sold.

Gbenga did not believe in Government banning imports to protect local producers and would rather compete believing it pays off better in the longer term. But to compete effectively with imported products, Gbenga had to increase capacity - the demand for chicken had been steadily increasing and was in excess of domestic supply - as well as lower production costs. With this in mind, he visited some efficiently run farms in Malaysia, Brazil and the United States where he gained first-hand experience on the operations of the Tunnel Ventilation System (TVS), a technology that contributed to high productivity in farm management.

In a project proposal seeking financial assistance, he said:

*“The Tunnel Ventilation System automatically controls the temperature and humidity of the pen house. There is no way I can achieve control of the environment in my pen houses under the present system, which relies on natural ventilation. I have no alternative but to acquire technology similar to that used by the global players if I’m to compete globally. I am not afraid of the technology game. I have done it before in respect of my hatchery...I can do it again”.*⁷

The above project proposal fetched funding from a bank and the entrepreneur could translate his innovative thoughts into deeds.

With the introduction of new technology, he could dramatically increase productivity and reduce cost per unit and continue to face import competition. His innovative initiative enabled him to reduce the cost from N200 per kg. of frozen chicken and successfully compete against imports sold at N140 per Kg of frozen chicken.

3.2 *Nigerian Breweries Plc: Industrial Rejuvenation through Partnering and Networking*⁸

Nigerian Breweries Plc was incorporated in 1946. Its principal activities include the brewing and marketing of lager beer, stout, non-alcoholic malt drinks and the bottling of Schweppes range of soft drinks and crush orange. It operates from five brewery locations, namely: Lagos, Aba, Kaduna, Ibadan and Enugu.

Due to the general recession, dilapidated infrastructural facilities, political instability and the attendant policy inconsistency and high cost of production in Nigeria, the company suffered declining productivity and profit between 1985 and 1996.

However, with consistent, strong and innovative initiatives and marketing support for all its brands, along with the very enterprise driven customer service strategies, the overall performance of the company was dramatically improved by 1998. All the brands experienced significant growth in market share. The brands include Star, Gulder, Legend Extra Stout, Maltina and Amstel Malt drinks and a range of soft drinks – Schweppes, Crush Orange.

The company was able to rejuvenate through partnering and networking with international brewery companies (Heineken Technical Services B.V., Premium Beverages International B.V., Amstel Brouwerij B.V., Schweppes International Limited, CS Beverages Limited), which later acquired over 50 per cent of its shares⁹. It also invested in right selection, training and motivation of its staff as well as improving the quality of its brands and substantially launching itself into the new technological spheres in brewing industry.

The significant rise in profit after tax of the company from N1.7 billion to N4.2 billion between 1997 and 2000 is a reflection of the fact that global connectivity through partnering and networking injects dynamic sources of industrial rejuvenation. With the necessary re-engineering of operations, right management and networking, the firm emerged as success story in Nigeria.

3.3 *Dunlop Nigeria Ltd.: Survival through a Marketing Excellence Programme*¹⁰

Dunlop Nigeria has deep roots in Nigeria. Incorporated in 1961 as a manufacturer of tyres and rubber products, it has over the years diversified its product range to cover floor tiles, carpets, adhesives and industrial products. Nevertheless, tyres and allied products still constitute about 80 per cent of total sales. It had consistently over the years maintained a high capacity utilization – above 80 per cent - even when the national average capacity utilization was about 25 per cent. Everything produced was sold. In 1986, it began a plan to expand its production capacity by 400,000 tyres, a plan it realized in October 1990 when it commissioned its \$30m plant for car and van trucks. Also in an effort to maintain its premium quality brand, in 1991, it integrated backwards into rubber production to guarantee a steady supply of high quality rubber. By the end of 1997, it seemed that the only challenge was to sustain their good performance and impress the stock market.

But things started to change when Dunlop Nigeria began to see a large presence of imported used tyres in the market. Due to issues of safety and some lobbying from domestic manufacturers, the

Government placed a ban on these imports. Dunlop did not consider these products a major threat to their high quality brand and well-established position in the market. But by 1998 there began to be a shift from the importation of used tyres to that of new tyres from Europe and Asian countries. These products posed a very different kind of threat: they were new tyres and were selling at prices below Dunlop's tyres, thus making available a larger variety of tyres at a wider spectrum of prices. Now with two very strong brand names in the higher market segment – the Japanese Bridgestone and the French Michelin – and the East Asian tyres of China, Indonesia and Singapore invading from the lower market segment, locally manufactured tyres tended to dominate only the middle market segment. To avoid being squeezed out of the market, Dunlop had to change strategy from one based on growth to one of survival.

In 1999, Dunlop's management chose to defend their volume by lowering their price by 17 per cent to recapture market share and to grow at the same pace as the tyre industry growth rate of 11 per cent. Also to effectively accomplish their strategy, Dunlop adopted a series of initiatives to boost sales and reduce operational costs. One of these initiatives was the **Marketing Excellence Programme (MEP)** that aimed at enhancing the management of their distribution channels, improving service delivery and increasing their sales. It was also meant to help the Sales and Marketing Division to anticipate and respond to market changes as well as boost product and service awareness. Additionally, Dunlop also decided to introduce into the market a second brand of tyre called the **Crown tyre**, mainly to compete against the cheap tyres in the market and have better control over market price.

By following this strategy, Dunlop achieved its targets. At the end of 1999 it had increased the total number of units sold by 9.3 per cent. It is now, having perceived that demand for cross-ply tyres was on the decrease, gradually phasing out their production while seeking to invest in the manufacture of radial truck tyres. Demand for these tyres is fast rising but is met by importation from South Africa. Dunlop is also seeking to improve on the efficiency of its MEP by linking all players to the main office through a computer network.

3.4 *Foreign Equity Enhances Capacity Utilization: Evidence from three Firms¹¹*

Michelin Nigeria Limited based in Port-Harcourt recorded a capacity utilization of 88.9 per cent between January and June 2001, with sales turnover amounting to N3.235 billion.

Ideal Flour Mills Limited, Kaduna, achieved a 100 per cent capacity planned for the first half of 2001, with sales turnover of N2.414 billion.

Mouka Limited, manufacturing foam-based products, recorded an all time 100 per cent capacity utilization, with sales turnover of about N1.76 billion by mid 2001.

According to the Manufacturers Association of Nigeria, the common determinant among the three companies is ascribed to high level of foreign equity participation of over 60 per cent (Michelin 80 per cent, Ideal Flour 61 per cent and Mouka 100 per cent). Better performance of these firms is also due to a noticeable improvement in the business environment with consistency in policy pronouncements and implementation by the government.

According to the Manufacturers Association of Nigeria, better performance firms are those, which use local raw materials, and those which venture into product diversification.

The following inferences could be drawn from the above success stories:

- ⇒ Replicating best practice requires practical knowledge, vision and assistance.
- ⇒ Global connectivity helps industrial rejuvenation.

- ⇒ Product diversification and marketing excellence enhance performance and profitability.
- ⇒ Increased foreign equity coupled with an enabling policy environment enhances capacity utilization significantly.
- ⇒ The use of local raw materials and product diversification and improvements in marketing logistics also help firms survive competitive pressures.

The above are isolated cases of success stories, but a vast majority of firms struggle to thrive in an increasingly competitive environment. Intermediate institutional support systems and instruments have a crucial role to play.

4. An Ideal Set of Support Systems and Instruments

An attempt is made in this section to highlight the role of support systems and instruments, with a focus on the intermediate institutional context where firms, public agencies and private organizations utilize various devices in order to assist firms.

The role of institutions in fostering economically efficient, ecologically friendly and socially desirable patterns of industrial development will need to be examined in the light of new industrial realities that point to the fact that knowledge is a resource and innovation is a force. Enhanced capability to commercialise new knowledge is crucial for fostering the process of sustainable industrial development.

An ideal set of support systems and instruments would strengthen:

- A. linkages and networking;
- B. factor market (capital, technology, skills, etc.); and
- C. compliance with technical regulations.

A. Linkages and networking

A.1. External Linkages and Networking

It is being increasingly realized that the sources of dynamic industrial growth lie across borders and that foreign investment is an effective vehicle of resource leverage and technology linkage. Production networks have been the most obvious source of integration possibilities for firms in developing countries.

It is generally assumed that large firms will tend to acquire capabilities of technology linkage more readily. In Africa, where there is a preponderance of micro and small firms, an alternative vehicle of resource leverage is the institutional framework working in conjunction with those firms. These institutions could acquire the technology in the first place, build up expertise in the products and processes, improve and adapt the technologies and then diffuse the capabilities as rapidly as possible to those firms.

A crucial issue relates to the creation of an enabling institutional framework for reaping the spillover effects of foreign investment flows. Investment promotion agencies often create an array of incentives to attract foreign investment. The determinants of foreign investment flows have changed dramatically over the years. Given the right institutions, infrastructural base and enhanced capabilities, investments automatically flow. Setting institutions right is thus more important than an array of fiscal incentives.

The nature of international production networks and international integration in Eastern Europe should also tell us about the dynamic potential of FDI flows as new sources of linkage and networking in a region which suffered economic isolation for decades and revealed its potential for high growth recently, triggered by the combined effects of foreign investment flows and the region's hidden potential in terms of level of education, skills and institutions.

Given the low level of technological capability in Africa, a flexible and pragmatic attitude will need to be followed in order to encourage foreign investment suitable to local firms' capabilities, instead of focusing solely on high-technology acquisition. The accumulation of technological capability and capital in labor-intensive industries could open up opportunities for shifting into high-technology activities later.

A.2. Internal Linkages and Networking

Interaction and interdependence among firms is one of the fundamental determinants of collective efficiency to withstand competitive pressures. When pursuing innovations, firms interact more or less closely and interactive learning occurs in the context of established institutional framework.

Institutional links and inter-firm networking are critical specifically for clusters and industrial districts since interactions are very much associated with collective learning e.g. within user-producer networks. Significant market links are also equally important at each stage of production. The Silicon Valley phenomena are beginning to diffuse to pockets of regional industrial dynamism across countries, and inter-firm networking for learning and innovation is becoming increasingly important.

In this context Regional Development Agencies (RDAs) play a crucial role. Best practices can be traced from the role being played by RDAs in dynamic industrial locations. For example, the Welsh Development Agency in Wales offers a comprehensive programme designed to meet the needs of small and medium enterprises in the region, assisting technology transfer between companies, creating links between academia and manufacturing companies committed to improvements in efficiency and learning from others about the changing facets of competitiveness in general and skill development in particular. Yet another example is Scottish Enterprise. It plays a crucial role in bringing together local authorities, chambers of commerce and relevant organizations to support new business in the region.

One can cite a number of similar examples of RDAs playing a crucial role in constantly injecting sources of industrial dynamism into the respective regions in developed and industrially more advanced countries. The experiences of those regions raise a number of issues for African countries which endeavour to replicate the best-practices of successful RDAs in rendering an array of support services ranging from knowledge built-up in inter-firm collaboration leading to advanced product and process development through global linkages, to training, advice, technical services, consultancy, testing facilities, design and quality standards, knowledge of legal stipulations, and marketing assistance.

B. Factor Market

B.1. Technology Support Services and Diffusion Management

The institutions of technology support and diffusion management are concerned with accelerating the uptake of technologies by firms, disseminating new techniques, and hastening the enhancement of organizational capabilities (organizational learning) through such devices as engineering research associations.

Technology support institutions also provide vital knowledge, information and services to private firms. The newly industrializing countries have invested heavily in setting up and improving such institutions.

B.2. *Manufacturing Extension Services and Business Incubators*

Manufacturing extension services and business incubators are playing an increasingly important role both in developed and developing countries. In the United States, where the degree of industrial efficiency is left largely to the free play of market forces, manufacturing extension services and business incubators play an increasingly important role in support of small and medium enterprises.

Technology business incubators focus on promoting start-up companies seeking to develop and commercialize activities into marketable products and services. Typical technology business startups are willing to take risks, with no product and market position in the beginning. Business incubators assist these firms by providing an array of services.

B.3. *Venture Capital/Private Equity*

Traditionally a large portion of the capital came from banks and other providers of risk money. In recent years, individual venture capitalists, known as business angels, have been breaking through by funding innovative ideas leading to new business ventures. A good venture capitalist takes on a few carefully selected, highly promising businesses, not willing to spend time on businesses that are not going to grow big very quickly. As the new industrial realities are fast changing, venture capitalists are also emerging as portfolio managers, dealmakers and financial engineers.

One of the most fascinating examples of venture capital initiative is in Nigeria.

African Capital Alliance (ACA)¹² was formed by six founding partners, four of whom had worked together in the establishment and activities of influential private sector think-tanks and institutions such as the Nigerian Economic Summit Group, Harvard Business School Alumni and Lagos Business School as well as a private-public sector initiative designed to provide a platform for dialogue between participants across the socio-economic landscape and to develop joint policies and programmes to transform the Nigerian economy. The other two founding partners had worked together as private equity managers, in the United States and South Africa.

In 1997, the six founding partners agreed to implement jointly the private equity model as a tested global model that had been successfully applied in developed and developing countries to encourage investment flows into Nigeria and, within Nigeria, to channel investment into sectors and companies that would lead the transformation of the Nigerian economy into a modern economy within the global economic framework. ACA has therefore focused on acting as an enabler and mobilizes capital and know-how to tap emerging private equity investment opportunities in Nigerian and West Africa.

Box 1. Capital Alliance Private Equity (CAPE)

ACA's first initiative was to form CAPE, in 1998, to make equity and equity-related investments in Nigeria and the rest of West Africa. CAPE is a closed commitment fund with over \$35 million. Of this amount, some \$20.4 million was raised locally in Nigeria from leading institutional investors and selected reputable high-net worth individuals before multilateral agencies most active in Nigeria (International Finance Corporation, Commonwealth Development Corporation and Netherlands Finance Corporation) invested \$15 million in May 1999 following Nigeria's change to a democratic style of government.

CAPE is set up to be a value-adding equity partner and only invests in businesses where it can add demonstrable value through a combination of:

- business and operating strategy formulation, development and execution
- institution building
- active corporate governance on boards and executive committees
- identifying and executing joint venture partnerships
- market interface and access
- executive team development and recruitment
- corporate and financial advisory services including M & A, IPO execution
- re-capitalization and exit events.

CAPE's target investments of the US\$ 1-5 million range in high-potential companies in which it expects a plus 30 per cent internal rate of return. CAPE typically looks to take a significant; but typically minority block (25 per cent – 50 per cent), with strong governance rights. It only invests in companies run by committed and driven management typically holding strong equity investment positions relative to their personal net-worth.

To date, CAPE has committed about half of its funds in 8 companies in information technology, telecommunications, outsourcing and media sectors. With its existing pipeline of investments, it is expected that CAPE will be fully deployed by mid 2002.

SME Fund

The Nigerian banking industry, recognizing the key role that small and medium industries play in economic growth and development, has developed a programme, Small and Medium Industries Equity Investment Scheme (SMIEIS), to promote small and medium industries by investing 10 per cent of their pre-tax profits in those industries by way of equity or equity-related investments. SMIEIS commenced on 19 June 2001. The Federal Government of Nigeria is supporting this initiative through tax incentives for banks and participating SMEs as well as working to provide an enabling environment for investment and business.

ACA was approached by several leading banks to manage their funds under the SMIEIS because of ACA's performance to date with CAPE and successful experience of applying the private equity model in Nigeria. In response, SME Manager has been formed by ACA to manage the SME funds for a maximum of 10 leading and reputable banks and it is estimated that the total committed funds to be managed by SME Manager, over 5 years, will be about N5 billion. The investment strategy and criteria for the SME Manager will be somewhat similar to CAPE's in its focus on investing in priority sectors.

In contrast to the typical CAPE investee company with more sophisticated management and management information systems, it is recognized that the above initiatives will require significant support if the SMIEIS is to succeed. Such support includes:

- access to information
- awareness of best business practices
- access to training
- access to markets, technology and technical partners
- availability of human resources (including consultancy)

ACA has been working with United Nations Industrial Development Organisation (UNIDO) in an innovative and pioneering partnership initiative to establishing an SME support fund (working closely with SME entrepreneurs, and SME fund managers, such as ACA-owned SME Manager, Central Bank of Nigeria and other Nigerian banks, business schools, chambers of commerce and key ministries) to provide much of this identified needed support to SMEs. At the heart of this arrangement is the provision of services, such as market research, sector studies, consultancy, by identified reputable suppliers and intermediate support systems to qualifying SMEs, which would be mainly paid for by the SME support fund.

B.4. Institutions and Instruments for R&D and Innovative Efforts

In general the capability to disseminate scientific information with commercial potential, and to generate commissioned research projects in Africa is scarce. A new and strong acknowledgement of the necessity of developing appropriate linkages between basic research, applied research, industrial activities and national objectives should be encouraged among the scientists and the technical personnel, as well as among policy-makers. Such change is necessarily related to the creation and diffusion of awareness of their

importance for sustaining a healthy pace of industrial expansion.

B.5. Information, Knowledge Dissemination and Industry University/Institution Linkages

Information is an important intangible resource input, and knowledge is a factor of production in modern industrial production systems. Information poverty makes entrepreneurs isolated. The lack of high quality, reliable and valid information makes entrepreneurs fail to learn right things, leading to waste of money, time, energy, income and very often go out of business.

The 1998 UK Competitiveness White Paper said: "the most dynamic economies have strong universities, which have creative partnerships with business". While all universities cannot emerge as vanguards of translating research findings into commercial orientation, insight into university research will need to come from intermediate support systems, instruments and institutions in order for university research to see the commercial marketplace.

There is increasing evidence of universities across countries following the example of United States universities such as MIT, Stanford and Berkeley which have become central to local and regional industrial dynamism by virtue of the fact that they produce people with knowledge and skills and generate new knowledge, serving as the seed bed for new industries, products, and services. They also constitute the nerve centre of effective business networks and dynamic industrial clusters.

B.6. Entrepreneurial Skills Development

Notwithstanding cultural factors playing a predominantly important role in entrepreneurial skills a set of effective support systems and instruments can rekindle entrepreneurial aspirations. One striking example of government initiative to create the apt climate for entrepreneurial development through the provision of seed money to potential investment aspirants willing to replicate best practices in processing, designing and marketing. This could serve as an effective support system to rekindle entrepreneurial aspirations and skills in Africa.

C. Compliance with technical regulations

Standards are a set of technical specifications used as rules or guidelines to describe the characteristics of a product, a service, a process, or a material. In the emerging international world trade environment, traded products and services are increasingly required to conform to standards and regulations. The application of standards and the certification of products necessarily imply testing and quality control services, which could be effectively ensured only through an appropriate institutional framework.

Such support systems help firms to overcome technical barriers to trade. For example, the International Standards Organisation (ISO 9000) certification is becoming an absolute must for potential exporters, signaling quality and reliability to foreign buyers, retailers, as well as transnational corporations seeking local partners and subcontractors. A high-ranking priority for African countries lies in having a local institution entitled to grant ISO 9000 certification to domestic firms.

5. Selected UNIDO Support Systems and Instruments¹³

In 2000, UNIDO laid the foundations for a number of new integrated programmes covering all regions, with a priority focus on sub-Saharan Africa. UNIDO integrated programmes are based on the premise that it is preferable to tackle a single development objective at a time, albeit in a way that addresses its various dimensions. UNIDO's concept calls for integration and coordination of efforts at three levels:

with the strategies and actions of the partner country; with the initiatives of other agencies and donors; and within the Organization itself.

The package of services offered to countries encompasses the following profile of support systems and instruments:

- Investment and technology promotion
- Small business development
- Quality and productivity
- Environmental management
- Industrial energy efficiency
- Industrial governance and interactive policy formulation

Befitting the theme of this paper, information on the above support systems and instruments is presented under three defined subheadings:

- i) issues addressed;
- ii) institutes involved; and
- iii) examples of UNIDO response.

5.1. Investment and Technology Promotion

Issues addressed

Innovation and rapid technological changes in the global economy could negatively impact many African countries, increasing the risk of their further marginalization and causing a technology divide and an investment gap. In order to sustain economic growth and eradicate poverty, these countries urgently need to devise means to attract foreign direct investment and the acquisition of technology. The role and organization of Investment Promotion Agencies in fostering the process of innovation and technological upgrading and learning need to be strengthened in order to enhance the process of upgrading the local value chain, clusters and systems of firms and their interactions into the worldwide production systems and thereby enabling them to compete successfully both in domestic and international markets.

Institutions involved

Public agencies and private organizations utilize various linkages and networking devices in order to plug into the international sources of dynamic industrial growth. An enabling institutional framework for reaping the spillover effects of foreign investment flows is crucial. Investment promotion agencies often create an array of incentives to attract foreign investment. As mentioned earlier, the determinants of foreign investment flows have changed dramatically over the years. Institutions will need to play a much more dynamic role in facilitating investment flows and the process of global integration. As capability building activity by enterprises benefits from institutional support, the extent of the benefit depends on the activity, context and linkages.

Examples of UNIDO response

Assistance to Tanzania Investment Centre

In keeping with new Investment Regulations drawn up by UNIDO, the United Republic of Tanzania established an inter-ministerial Steering Committee to review and resolve contradictory issues and complaints of both domestic and foreign investors. Moreover, the Government has underlined its strong

commitment to private sector development and investment promotion by raising the status of the Tanzania Investment Centre (TIC), doubling its budget allocation and enforcing the stationing of officers from revenue, immigration, lands and other authorities at the TIC to expedite approvals, etc., thus making it the driver of the Government's investment promotion effort.

With assistance from UNIDO, the TIC's promotion capabilities have been strengthened through the recruitment of additional staff who have received training in promotion methods, project identification and appraisal, and a strategy has been devised to facilitate services which have resulted in making the investment process easier and quicker.

Linkage between TIC and the private sector has also been strengthened and become more effective. UNIDO experts and TIC staff built up an information bank on existing companies to formulate company and project profiles to promote as joint venture opportunities with foreign potential partners. Over 200 enterprises were visited, and 24 companies selected for promoting their investment plans.

This linkage was further extended beyond the confines of the country using the UNIDO international network of investment promotion offices located in the United Kingdom, India, Japan, France, the Netherlands, Malaysia and China. TIC staff was sent to UNIDO in Tokyo, Paris and Kuala Lumpur to promote investments into the United Republic of Tanzania. UNIDO also provided assistance in updating their web presence and the Investment Guide as well as in preparing sub-sector profiles for leather and textiles.

The results of such assistance rendered by UNIDO can be seen by the interest shown by four UK firms, two Dutch, one Japanese, one Malaysian, eight French and twelve Indian companies. TIC will continue to enjoy UNIDO's support in organizing meetings between prospective partners and providing pre-investment assistance like technology transfer and joint venture agreement formulation, negotiation mediation, feasibility studies, accessing financing, etc.

UNIDO Exchange

To support and reinforce the international efforts towards overcoming the challenges of the Digital Divide, especially in Least Developed Countries (LDCs), UNIDO has incepted a new network, called UNIDO Exchange, to initiate and foster fruitful partnerships between selected businesses, knowledge-based institutions and relevant actors of the international industrial community. Accordingly, and through the promotion of concrete interactions within the network, UNIDO Exchange seeks to maximize the benefits for participating LDCs, especially in Africa, to ultimately ripe concrete "digital dividends".

To this end, the Organization's new initiative has enabled an appropriate electronic networking structure towards the preliminary matchmaking of supply offers and demand requests from both developed and developing countries as well as among developing countries themselves. Concurrently, the UNIDO Exchange website also serves as a dissemination instrument for knowledge, specialized information, investment and technology projects as well as technology databases. As such, this "client-approved" concept was translated into a virtual *Marketplace*, supported and complemented by three sections called *News Exchange*, *Resource Sharing* and *Forums* (which are accessible through the global UNIDO Exchange website at: <http://www.unido.org/exchange>).

By creating a qualitative environment that encompasses reliable partners and relevant content, UNIDO Exchange enlarges the traditional outreach of the Organization - at national and global level - and strengthen the interlinkages between all members of the network. Thus, UNIDO Exchange brings about a new mindset that allows both public and private sector to utilize their time and resources wisely, while enhancing productive capacity and promoting the adoption of new appropriate technologies online. Already, just a few months after the launch of the network, over 800 members decided to participate

actively in UNIDO Exchange's operation, on the basis of an initial portfolio of over 400 investment projects, 200 technology offers and over 300 cooperation offers/requests.

5.2. *Small Business Development*¹⁴

Issues addressed

The size and relative isolation of SMEs have inhibited their ability to achieve economies of scale, and they face tremendous difficulties in entering both national and global value chains driven by large transnational corporations. These difficulties coupled with other constraints, such as limited technical and managerial skills, insufficient knowledge with regard to laws and regulations and, more importantly, obtaining financing, need to be urgently dealt with. To ensure a healthy SME sector that works efficiently and effectively, existing institutions providing support services should be better designed to increase their coverage, capacity and capabilities for linkage, learning and leverage.

Institutions involved

The institutions of business and technology support and diffusion management are concerned with accelerating the uptake of technologies by firms, spreading the dissemination of new techniques, hastening the processes of enhancement of organizational capabilities (organizational learning) through such devices as engineering research associations and supporting developmental consortia. As a specific example of technology diffusion management, developmental resource leverage and national system of economic learning, in action, one can consider the case of R&D consortia, which hardly exists in Africa.

Examples of UNIDO response

Subcontracting Partnership Exchanges in Africa

As a result of their size and isolation, small enterprises lack the capacity to identify opportunities for subcontracting work from larger firms, and to identify joint venture partners from whom they could obtain financing, technology, and marketing benefits. What is lacking is a mechanism to broker such relationships efficiently that would work to the advantage of both parties. One solution to this problem is the Subcontracting and Partnership Exchange (SPX), which maintains information on manufacturing capabilities and capacities of SMEs and on potential partners, and actively markets partnership opportunities. Two examples of successful SPXs are in operation in Morocco and in Côte d'Ivoire, and several others are planned in Africa.

During the fiscal year 1997/98, the Moroccan SPX brokered 131 subcontracting agreements and 176 partnerships that reached the negotiation stage. This is a significant percentage of the 600 members it serves, and explains why the SPX is essentially self-sustaining from membership fees and support from private sector associations.

In Côte d'Ivoire, a SPX was established in March 1997 and became fully operational in May 1998. Providing similar services as the SPX in Morocco, it has, in its short existence, already achieved remarkable results. By March 1999, it had audited some 100 companies for potential participation in the scheme as sub-contractors or suppliers, registered 75 companies in the international UNIDO Subcontracting System (UNIDOSS) database, attracted 30 affiliated companies paying annual fees, and made 50 match-making interventions. As in Morocco, this SPX is fully supported by the private sector, with no public funds being used.

Apart from its success in the national context, the SPX in Côte d'Ivoire is playing an important

pilot role for the establishment of similar institutions elsewhere in the West African region. One new exchange has been proposed for Guinea and Ghana. At a workshop held in Abidjan in March 1999, which was attended by representatives of Benin, Burkina Faso, Cameroon, Congo, Gabon, Guinea, Liberia, Mali, Senegal and the Secretariat of the West African Economic and Monetary Union (UEMOA), it was also agreed to establish a subregional network of SPX in West Africa.

Madagascar: Industrial Clusters and Networks

At the end of 1994, a project was launched to bring together some 250 SMEs scattered around the country into several different sector-based networks, with subgroups of each clusters being organized in each of the country's main cities. With support from UNIDO, networks were formed for essential oil producers, fruit and vegetable growers, furniture makers, garment makers, brick and tile makers, and small engineering firms. Technical assistance was provided to encourage the formation of the networks and to help them determine the joint activities that would be mutually beneficial. The members of each network not only determined their own activities, but also decided how best to obtain and pay for the services they decided on, with partial costs paid by the firms themselves, and the rest from governments and donors. As a result, each of the networks has experienced a definite improvement in the efficiency of their firms and the volume of exports to Europe, and permanent networks are now in place to allow for continued joint activities that will work to the benefit of all the firms in the sector.

The experience of the essential oils network provides a good example of networking in Madagascar. The network comprises 74 firms producing extracts for perfumes from flowers, spices and herbs, which together account for 90 per cent of Madagascar's exports of essential oils. The major problems these firms identified were the low quality of their products, a lack of international recognition, and inadequate equipment. To address these problems, the network undertook joint marketing initiatives including the development of a common label for exports, joint presentations at fairs, and the publication of a "Bourse de produits" on the supply and demand for their products. In addition, joint research and development activities for distillation equipment and staff training are underway to improve their production process and the quality of the products.

Lesotho: SME Development and Informal Sector Promotion

A UNIDO project, implemented in June 1995, was aimed at increasing employment in indigenous small-scale enterprises throughout Lesotho, particularly in the highland districts, focusing on the following areas:

- ⇒ Improving the policy environment for SMEs by assisting the Ministry of Industry, Trade and Marketing (MITM) in preparing an SME White Paper, improving the policy implementation capabilities of MITM staff through training, and establishing an enterprise statistics system based on UNIDO's National Industrial Statistics Programme (NISP);
- ⇒ Providing improved access to credit through the establishment of a NGO Credit Centre in cooperation with the Lesotho Chamber of Commerce, the Lesotho Association of NGOs and Lesotho Women in Business. MITM provided land and premises, while the United Nations Capital Development Fund and the African Development Foundation contributed capital, and Irish Aid provided start-up funds for the centre's operation. More than 100 loans, averaging US\$500 each, were disbursed in the first six months of its operations, with a repayment rate of more than 80 per cent.
- ⇒ Upgrading technical skills of SME entrepreneurs and workers by strengthening the capability of seven training institutions, with Irish Aid sharing the costs.

A sample survey of the beneficiaries who received training, advisory services, and loans showed that 21 per cent had hired new employees, 92 per cent had reported increased business income and 60 per cent had increased the salaries of their workers.

Training

Training is an important component of each integrated programme and one of the first activities to get under way. More than 600 people received training in 2000 as part of Uganda's integrated programme in areas such as fisheries (fish inspection, good manufacturing practices and hazard analysis critical control points, fishing boat building, fish handling etc.), leather products, textiles and micro-, small- and medium-sized enterprises. A mobile training unit provided training for over 200 artisans (leather goods and footwear), enabling them to increase their respective incomes by 30 per cent. In Ghana, a garment-training laboratory is being set up under the integrated programme to upgrade the skills of operators at all levels. Women entrepreneurs in Rwanda's food-processing industry benefited from training that covered business management, entrepreneurship development and the technical processing of selected food products. In the United Republic of Tanzania, 100 women entrepreneurs received training in textile products, while 400 artisans were trained in the manufacture of leather products. In Burkina Faso over 100 people were trained in leather product making, weaving, drying of fruits and vegetables, cereals extrusion and good manufacturing practices.

In Burkina Faso, UNIDO helped draw up a textile development strategy and provided training in cotton grading, processing and quality issues. A number of pilot enterprises, including a processing unit for horns and bones, a hybrid drying unit for fruits and vegetables and a cereal extrusion unit, were installed and began to show promising results. Textile artisans in Guinea had been unable to weave fabric broader than 20 cm on their traditional looms. With the help of UNIDO, new tools were provided to artisans that allowed them to produce fabric in commercially acceptable widths. At the textile centre of Sanoyah, Guinean artisans were shown how to increase the value added of their produce. Morocco has long been famous for its leather and leather products, but even an industry as old and established as the Moroccan leather industry can benefit from exposure to modern techniques. As part of the integrated programme for Morocco, UNIDO targeted clusters in the tanning town of Fez. A study tour was arranged for five Moroccan tanners to leather industry centres in Italy where they had a chance to learn new tanning and finishing techniques. An Italian shoe designer was brought to Fez to teach Moroccan artisans new designs that could enhance exports. UNIDO sent experts to help the ceramics clusters in Safi. A training manual was prepared and a plan of action drawn up to improve quality, technology and access to international markets.

The integrated programme for Burkina Faso includes the creation of a standards institute, a food quality control system and the introduction of international standards. In 2000, nearly 200 people have received training in quality management. The integrated programme for Rwanda saw the establishment of the National Bureau of Standards and a focal point was set up for quality, standardization and metrology. Under the programme, national consultants received training in quality control and standards. Similarly, support was given to Guinea's National Institute for Standardization and Metrology to upgrade its technical capacity.

Business Services

UNIDO endeavours to address problems facing an already active business sector, including business advisory services, subcontracting and partnership exchange, metrology, standardization and accreditation and cleaner production techniques. Entrepreneurs tend to have limited knowledge of the administrative, regulatory and financial aspects of business management. Properly targeted business advisory services can overcome those problems, as can easy access to helpful publications, referral services,

loan packages, training, counselling and help with business planning. Business centres are an efficient way of providing such services. Business incubators offer good quality, managed workspace for entrepreneurs, with on-the-spot access to support services, as well as regular, intensive business counselling. UNIDO also provides services to fledgling entrepreneurs at the grass-roots level in several of its programmes for the least developed countries.

5.3. *Quality and Productivity*

Issues addressed

The main constraints to quality and productivity are the lack of infrastructure services and related skills thus preventing enterprises access to global markets and making it difficult to be integrated into international production and supply chains. African countries would therefore need to take necessary measures to be able to offer competitive, safe, reliable and cost-effective products, but increasing their productivity and competitiveness, as well as increase the export and domestic market shares without affecting the environment. Assistance to industries is also of crucial importance to eliminate unnecessary technical barriers to trade caused mainly by disparities in standards, metrology and related practices. Thus, mutually developed and recognised systems of metrology, standardisation, testing and quality are urgently needed to enhance market transparency for manufacturers and purchasers.

Institutions involved

The International Standards Organisation (ISO) introduced the best-known standard being used today: the ISO 9000 series, that applies to quality management systems rather than products. ISO 9000 certification is becoming an absolute must for potential exporters, signaling quality and reliability to foreign buyers, retailers, as well as transnational corporations seeking local partners and subcontractors. A high-ranking priority for a developing country lies in having a local institution entitled to grant ISO 9000 certification to domestic firms. Exports now need to bear test certificates confirming the product features and in the case of food products that the products are free from bacteriological and chemical contamination. Moreover, the laboratory issuing the test certificate itself must be accepted internationally as a laboratory conforming to the ISO 17025, that defines the criteria for the international accreditation of laboratories.

Examples of UNIDO response

UNIDO projects in the United Republic of Tanzania and Uganda were aimed at assisting fish entrepreneurs to document, install and implement the Hazard Analysis Critical Control Points (HACCP) and quality management systems. Through these projects, the Competent Authority received the requisite training for validating and auditing enterprises. UNIDO also provided laboratory equipment to the National certification body for testing fish samples for compliance with safety and quality requirements. In addition, while preparing for international accreditation, UNIDO rendered assistance to the certification laboratories of the Competent Authority and the National Bureau of Standards to ensure that the major tests conformed to the International Standard for laboratories, ISO 17025.

Similarly, in Uganda, the country's suspicions of fish poisoning in Lake Victoria and the ensuing EU field inspection mission which declared the unreliability of Uganda's fish safety system prompted UNIDO's initiative to assist the country in capacity building in fish safety/quality to facilitate trade.

Activities involving actors at all levels focused on improving the organizational and regulatory frameworks as well as on strengthening the capacity of the fish inspection services. Specific importance was given to the establishment of working tools, guidelines and methodologies and to establishing working relationships at the operational level with partners, such as FAO and DFID, to bring synergies and

combine efforts to create a higher impact.

The importance of international recognition of test certificates that confirm that a product is free from chemical and bacteriological contamination became very apparent when it was found that pesticides had been used to catch fish in Lake Victoria. In April 1999, Uganda placed a self-ban on the export of fish to the European Union; the EU subsequently confirmed the ban. The country was fortunate that a US\$3.5 million UNDP - UNIDO Quality, standards and metrology related project was ongoing at the time. The project was able to respond quickly to the fish ban by strengthening the laboratory in terms of equipment and human capacities and preparing for ISO 17025 international accreditation. In July 2000, the EU ban was lifted, exports resumed and new markets opened in the United States.

As a result of successful UNIDO technical assistance, now the test certificates issued by the Uganda National Bureau of Standards (UNBS) Micro-biology Laboratory have the status to be recognized internationally, following the accreditation of the Laboratory by the South African National Accreditation Service (SANAS). SANAS is one of the few accreditation agencies in the developing world whose certificates are recognized by the International Laboratory Accreditation Committee (ILAC). This accreditation permits the UNBS testing certificate to be recognised internationally as a certificate issued by a competent laboratory, conforming to the ISO 17025 standard. Now Ugandan exporters need not send samples overseas for testing and a significant cost saving has also accrued to the country as a result. The accreditation comes within 12 months of the official commissioning of the UNBS national metrology, microbiology, electrical and flow laboratories in June 2000.

The accreditation of the microbiology laboratory (specifically for testing food products, fish products and water) places the UNBS at the forefront of Standards Organizations in sub-Saharan Africa, being one of the few (outside South Africa) to have an internationally accredited laboratory.

5.4. Environmental Management

Issues addressed

One of the biggest challenges facing modern industrial societies is the continuing degradation of the natural environment caused by global warming, loss of biodiversity, water and air pollution, persistent organic pollutants and toxic substances and soil erosion. Institutions and industries of African economies are in urgent need of assistance to combat the loss of natural environmental resources and to deal with emerging environmental issues.

Institutions involved

National Cleaner Production Centres (NCPCs) have become national centres of excellence for cleaner production in developing countries and economies in transition. Today, NCPCs in ten countries around the globe service their national industry. These centres draw on a pool of institutions in Europe and the United States that specialize in cleaner production. Many of these organizations have played a leading role in the introduction of cleaner production in their own country. Acting as focal points for cleaner production, NCPCs extend the global network to partners in their countries, such as productivity councils, certified engineers associations, chambers of industry, universities, etc.

An example of UNIDO response

An assessment of the environmental problem in Madagascar revealed that much of the problem stemmed from a lack of a suitable policy framework to provide direction to private industry in sustainable industrial production. The assessment revealed that new laws, regulations, and standards needed to be developed to provide incentives, positive and negative, for industry to avoid pollution, and that there was a need for information collection and monitoring capacity to obtain information needed for policy formulation.

Madagascar addressed the problem by, first, creating new environmental standards, laws, and regulations that made it clear to the private sector that the principle of “polluter pays” would lead the compliance effort. Then, mechanisms for collecting information that could be used for compliance and future policy development were instituted. A special governmental unit was established and charged with responsibility for monitoring and advising on environmental issues, and two laboratories were set up to measure and analyze industrial pollution. To ensure that the policies were properly implemented and enforced, an extensive training programme was instituted: some officials toured Europe to review environmental standards and more than 150 officials received training on industrial pollution prevention and reduction, monitoring and control.

An important feature of the policy framework was the emphasis on support to the private sector. While penalties are in force for pollution, the policies provide positive support to the private sector for compliance. Waste minimization is emphasized, as a way of increasing profits for businesses as well as reducing pollution, and environmental audits were provided to firms. Businesses in Madagascar also received support in identifying information sources on environmental technologies and transfer of technology.

As a result, and with UNIDO providing support to the entire process, Madagascar now has in place a policy framework, including legislation and the monitoring and compliance infrastructure, that provides the proper guidance and incentives to enable the private sector to develop in a sustainable manner.

5.5. *Industrial Energy Efficiency*

Issues addressed

Global pollution and waste, carbon dioxide emissions and greenhouse emissions caused by fossil combustion are affecting the global climate system. There is therefore an urgent need to provide adequate, reliable and affordable energy services, especially electricity to rural areas. African countries, especially LDCs, need external assistance devised to meet both national-development and global-climate-change goals.

Institutions involved

National Cleaner Production Centres, Energy Commissions and Institutions affiliated to the Ministry of Energy in respective countries play an important role. UNIDO’s capacity building services strengthen national institutions that are expected to contribute simultaneously to the goals of economic growth, protection of the environment and energy efficiency. This can be achieved by building institutional capacity to keep abreast of technological advances for using energy more efficiently and through better linkages with industrial enterprises, managers and designers of commercial and public buildings.

Examples of UNIDO response

While the Organisation's technical cooperation programmes in the field of energy have mainly addressed industrial energy efficiency, two new service modules now complement this approach:

Rural Energy Development with a strong focus on renewable sources of energy

Climate Convention and Kyoto Protocol through which UNIDO provides capacity and policies for industrial development while supporting strategies for climate change mitigation. UNIDO fosters the spread of more cost-effective and environmentally sound energy systems.

In order to assess the need for improvement of energy use in industry, UNIDO's first step is to conduct a review and analysis for each energy intensive industrial sub-sector. This identifies barriers that obstruct the implementation of energy efficiency projects and programmes and suggests an appropriate mix of economic and regulatory policy instruments that can be used to overcome such obstacles.

UNIDO's decision support tool, IDENTIFY, could be instrumental in providing access to benchmark information as well as in preparing the above assessments.

In the United Republic of Tanzania, UNIDO assisted a soap manufacturer, Shivji and Sons Ltd. ,in the production of soap. Based on the assessment, conducted by the UNIDO team, leakages of steam from valves and inefficient use of such steam, as well as high amounts – 3,000 kgs annually - of spillage of fat delivered to the factory, which is absorbed by the soil, were revealed.

In order to curb and control the above problems, UNIDO was able to assist in ensuring cleaner production by initiating a carefully devised programme. The aims of the programme were to replace leakage steam valves and traps with certified products, reduce drastically the time involved for heating the fat storage tank, monitor the amount of water needed during saponification, thus minimising steam consumption during the cooling stage, and recover the spilled solid fat at the material handling section by treatment with steam, followed by separation.

The results of UNIDO's assistance showed a reduction in the consumption of industrial diesel oil saving of some 415,800 litres per year, thus reducing emissions. By recovering spilled fat from the soil, with virtually no energy inputs, there was not only a significant improvement to the direct environment of the factory, but also a saving of US\$2,400 was realized. The installation of steam valves, involving a meagre investment of US\$830, savings of as much as US\$185,700 were incurred by the factory.

5.6. *Industrial Governance and Interactive Policy Formulation*

Issues addressed

While assisting domestic enterprises to compete in the international arena by formulating appropriate industrial strategies, policies and programmes should ensure that institutions and industries possess the knowledge, skills and organizational capacities to foster the process of sustainable industrial development. The lack of high quality, reliable and valid information makes entrepreneurs fail to learn right things, leading to waste of money, time, energy, income and very often go out of business. Knowledge dissemination is an effective means of promoting public and corporate governance for the cause of economically efficient, ecologically friendly and socially desirable pattern of industrial development.

Institutions involved

Industry Associations, Business Councils, and industry-university linkages have brought unprecedented change to the business world. Public-private platforms are at the heart of interactive policy

formulation, implementation and monitoring. Public and private institutions could play a major role in facilitating effective business networks and in devising cohesive use of all support mechanisms and schemes for industrial governance.

Examples of UNIDO response

UNIDO public-private partnership programmes are initiated with the prime objectives of facilitating interactive policy formulation through public-private partnership programmes and improving the performance of domestic enterprises by transforming them into globally competitive suppliers, with an accent on three Es, Competitive Economy, Productive Employment and Sound Environment.

Under the joint auspices of UNIDO, the Senegalese Industrial Partnership Council, and United Nations African Institute for Development and Economic Planning, a regional workshop was organized in October 1999 with a view to making public and private actors better understand and activate interactive policy formulation through the establishment of Industrial Partnership Councils or through similar consultative mechanisms.¹⁵ UNIDO assisted the United Republic of Tanzania, Ghana, Mozambique, Nigeria and Ethiopia in the process of setting up the respective country's national consultative platforms. A recent UNIDO publication on public-private partnerships¹⁶ presents a menu for assessing public-private partnerships for economic development and competitiveness. The menu is written in a form that can be used as a scorecard to evaluate the degree of partnership at a point of time. The idea is to measure the progress on a continuous basis, allowing corrective steps to improve the process of public-private partnerships.

To sum up, UNIDO acknowledges that industrial development needs to be rethought and reconceptualized to accommodate the divide between global competition, on the one hand, and local development for survival, on the other.¹⁷ In the advanced countries themselves, such realities are beginning to be met through fundamental changes in public policy. A range of social support initiatives is currently targeted on small- and medium-sized enterprises to encourage them to engage more effectively with deprived communities and excluded social groups. In short, local economic development is beginning to be reconstructed as a domain of social policy, while economic policy per se is focused on international competitiveness.

Thinking globally and acting locally necessarily imply a global mind-set capturing the facets of new industrial realities that undoubtedly offer abundant opportunities for wealth creation as an effective means of alleviating poverty. Wealth creation stems from productivity growth and competitiveness enhancement, which in turn emanates from determined efforts, scholarly inputs, effective support systems and policy instruments to bridge the gap between the knows and know-nots and thereby unlock the industrial development potential of sub-Saharan Africa

Endnotes

- 1 Information on dynamic firms covers a few firms in Nigeria alone, due to availability of authentic information and in view of the relative importance of the country.
- 2 For an in-depth analysis of the structure and performance of the manufacturing sector in Africa, see UNIDO, *African Industry 2000: The Challenge of Going Global*, Vienna, 1999.
- 3 UNIDO.
- 4 See UNIDO, *Finding the Right Track for Industry in Africa: Some Policy Issues and Options*, Discussion paper, Vienna, 2001.
- 5 See UNIDO, *Analyses of Agro-Industrial Success Stories and Viable Avenues of Replication in Selected African Countries*, 1998.
- 6 Compiled by UNIDO Regional Industrial Development Centre, Lagos, Nigeria, based on information provided by Lagos Business School.
- 7 Statement made by the entrepreneur in his project proposal to a Bank, seeking financial assistance. See Lagos Business School, *Avian Specialties: Positioning for Global Competitiveness*, Feb 8, 2001.
- 8 Compiled by UNIDO Regional Industrial Development Centre, Lagos, Nigeria, based on information provided by the Manufacturers Association of Nigeria, Kaduna Office.
- 9 The information was obtained from Registration Certificates issued by the National Office for Technology Acquisition & Promotion. According to the company's register of members, foreign partners hold 54.15 per cent of the issued share capital to date. The remaining 45.85 per cent shares are held by Nigerian citizens and Associations.
- 10 Compiled by UNIDO Regional Industrial Development Centre, Lagos, Nigeria, based on information provided by the Lagos Business School, Lagos, Nigeria.
- 11 Compiled by UNIDO Regional Industrial Development Centre, Lagos, Nigeria, based on information provided by the Manufacturers Association of Nigeria, Lagos Office.
- 12 For further details, contact UNIDO Regional Industrial Development Centre, Lagos, Nigeria.
- 13 For details pertaining to UNIDO programmes and policies, see UNIDO, *Annual Report*, 2000.
- 14 This section draws on a series of working papers published by the Private Sector Development Branch, UNIDO. See UNIDO, Investment Promotion and Institutional Capacity Building Division, *Capacity building for Private Sector Development in Africa*, Working Paper No. 3, 1999; *Financing of Private Enterprise Development in Africa*, Working Paper No. 4., 1999; and *Women Entrepreneurship Development in Selected African Countries*, 2001.
- 15 See UNIDO, *Regional Workshop on the Dynamics and Implications of Establishing Public-Private Sector Consultative Mechanisms in Africa, Final Report*, Dakar, Senegal, 18-22 October 1999.
- 16 UNIDO, *Public-Private Partnerships for Economic Development and Competitiveness, with Special Reference to the African Experience*, 2000.
- 17 For an in-depth analysis of related issues, see UNIDO, *Industry and Trade in a Global Economy*, Vienna 2000.