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**SMALL-SCALE INDUSTRY DEVELOPMENT AT THE CROSS-ROADS:
STRATEGIES AND PROGRAMMES FOR THE 1990s AND BEYOND
WITH SPECIAL REFERENCE TO AFRICA***

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* The views expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.

INTRODUCTION

Changing scenario - short- and long-term factors

The first year of the decade of the 1990s has witnessed recessionary conditions and slower growth in industrialized countries. This world recession - together with other factors cumulated over the 1980s - has adversely affected the immediate prospects for developing countries in four ways:

1. Reduced demand for products of developing countries;
2. Lower prices for commodities exported by those countries;
3. Increased trade barriers in developed countries; and
4. Reduced flow of investment resources to the poorer countries.

Macro-policy measures in the developed countries affecting interest rates, trade and investment are expected to bring about an upturn perhaps after 1992. While the effects of the world recession on the developing countries may thus be of a short- to medium-term nature, the longer-term or cumulative effects of global developments in the 1980s on the competitive position and growth prospects of the developing countries - particularly the poorer or poorest among them - are more fundamental and crucial. Those global developments have necessitated a turn-around in industrialization strategies and programmes in the developing countries.

Thus, the euphoria of the 1960s and 1970s about the expanding role of the small-scale industry in developing countries in the process of growth has given place in the 1990s to caution and doubt. The earlier optimism was due to several factors. Planning for development in a closed national economy, protected from foreign competition, was perceived to provide opportunities for a leading role of the public sector in infrastructure and resource development and for encouraging and training new and emerging entrepreneurs to undertake small-scale activities as seed-bed for growth. The rising trend in commodity prices - which provided the export earnings of the newly independent developing countries -, the as yet benevolent and friendly aid-and-trade attitude of the erstwhile rulers, and the apparently successful experience of early starters such as India bolstered the euphoria of import-substituting, raw material processing, basic industry promoting industrialization strategies in which the foreign loan financed public sector took care of the large and heavy industry, leaving for the indigenous small-scale entrepreneurship light industries and services. This oversimplified caricature typifies the strategy although it did not apply to every country and situation.

The euphoria began to erode in the mid-1970s: export-oriented labour-intensive industrialization, lubricated liberally with private foreign direct investment, resulting in success for little dragons of East and South-East Asia and Latin America, as opposed to a lower growth scenario in India and South Asia. The falling trend in commodity prices, the accumulating losses of the public sector, the mounting balance of payments difficulties and consequently external debts, inflation and negative growth rates - all often combined with political or military strife - put paid to the industrial strategies of the 1960s and 1970s.

The 1980s have revealed a change in the outlook for growth and development in the majority of developing countries and have necessitated a radical shift in their strategies and programmes. The onset of the world recession (reducing demand from developed countries and availability of surplus transferable resources); advances in technology and the consequent change in international competitiveness in favour of developed countries; development of new materials accentuating the decline in demand (and prices) of natural commodities exported by developing countries; the globalization/internationalization of manufacturing; the growing importance of services vis-à-vis manufacturing in the global economy; and the restructuring of the economies of two thirds of African countries under World Bank/International Monetary fund (IMF) programmes have been the main factors which call for a reorientation of strategies and programmes.

A statistical picture

The growth of the real gross domestic product (GDP) per capita in the developing countries which was 3.9 per cent per annum during 1965-1973 decreased to 2.5 per cent during 1973-1980 and to 1.6 per cent during 1980-1989. During the same period, GDP in sub-Saharan Africa alone declined from 2.1 per cent to 0.4 and -1.2 per cent respectively.

Table 1
Growth of real GDP per capita, 1965-1989
(Average annual percentage change)

<u>Group</u>	<u>Population in 1989</u> <u>(millions)</u>	<u>1965-1973</u>	<u>1973-1980</u>	<u>1980-1989</u>
Industrialized countries	773	3.7	2.3	1.8-2.5
Developing countries	4,053	3.9	2.5	1.6
Sub-Saharan Africa	480	2.1	0.4	-1.2
East Asia	1,552	5.3	4.9	6.2
South Asia	1,131	1.2	1.7	3.0
Europe, Middle-East and North Africa	433	5.8	1.9	0.4
Latin America and the Caribbean	421	3.8	2.5	-0.4

Source: World Development Report 1991, World Bank.

The growth rates of value added in industry had declined faster than those of GDP in Africa between 1973-1980 and 1980-1985 as shown below:

Table 2

Annual growth rates

(Percentage)

	<u>1973-1980</u>	<u>1980-1985</u>
Africa		
GDP	5.75	2.19
Industry value added	3.25	1.22
Asia (excluding China)		
GDP	5.86	5.28
Industry value added	7.51	5.22
Latin America		
GDP	5.43	1.18
Industry value added	4.53	0.20
Organisation for Economic Co-operation and Development (OECD)		
GDP	2.46	2.46
Industry value added	1.50	2.24

Source: Industry and Development: Global Report 1991/92, UNIDO, ID/376.

As regards manufacturing, the growth rate of manufacturing value added (MVA) as well as shares in world MVA are shown below:

Table 3

MVA shares and growth rates

	Share of world MVA (Percentage)			Growth rate of MVA (Percentage)	
	<u>1970</u>	<u>1980</u>	<u>1988</u>	<u>1970-1980</u>	<u>1980-1988</u>
Africa	0.8	0.9	0.9	5.3	3.2
Latin America	6.2	7.1	5.8	5.3	1.7
South and East Asia	2.7	4.1	5.6	9.1	7.5
West Asia and Europe	1.2	1.6	1.8	7.0	4.7
Developed countries	89.1	86.3	85.9	3.1	3.4

Source: African industry in figures 1990, UNIDO, ID/377.

Statistical data on a global basis broken down into small- and large-scale industry are unavailable in general. However, the extent of employment provided by the manufacturing industry and the low share of developing countries (particularly African countries) may be seen below:

Table 4
Manufacturing employment and labour productivity

<u>Country or region</u>	<u>Manufacturing employment</u> (millions)			<u>Labour productivity</u>		
	<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>Index</u> (1970=100)		<u>Value</u> 1990 (1985 dollars)
				<u>1980</u>	<u>1990</u>	
World	129.0	148.1	145.8	122.3	156.6	26,180
Developed countries	107.4	112.7	106.7	129.3	167.6	31,212
Developing countries	21.7	35.4	39.1	121.8	169.8	12,427
Indian subcontinent	5.5	8.0	8.2	95.0	156.3	3,172
Latin America	7.5	11.2	10.1	127.1	176.9	20,651
North Africa	0.9	1.6	2.1	106.3	113.8	7,515
South-East Asia	4.7	9.3	12.1	148.1	240.0	12,089
Tropical Africa	0.8	1.5	1.6	99.7	89.7	6,264
West Asia	1.0	1.8	2.3	96.7	139.3	25,853

Source: Industry and Development: Global Report 1991/92, UNIDO, ID/376.

The development of the manufacturing industry in Africa has related mainly to agro-processing and utilization of other raw materials, e.g. animals (leather), forestry (wood), minerals. Although the data shown below may not fully include the small-scale industry sector - and particularly the informal manufacturing sector - they form a significant part in these manufacturing subsectors.

Table 5

Tropical Africa: manufacturing employment and MVA per worker

<u>Subsector</u>	<u>Employment</u> (thousands)		<u>MVA per</u> <u>worker, 1990</u> <u>(1985 dollars)</u>
	<u>1970</u>	<u>1990</u>	
Food	176	355	5,404
Beverages	38	94	15,123
Tobacco	24	33	14,767
Textiles	153	285	3,470
Apparel	42	126	3,001
Leather	6	18	5,153
Footwear	15	31	5,248
Wood and cork	70	67	3,933
Furniture	22	35	3,146
Paper	10	35	5,534
Printing	28	51	4,456
Industrial chemicals	13	30	8,427
Other chemicals	23	71	8,242
Petroleum refining	5	14	31,341
Petroleum and coal products	0.2	1.1	17,984
Rubber	18	20	9,001
Plastics	6	29	5,322
Pottery, china	1	2	7,976
Glass	4	8	4,980
Non-metallic minerals	31	55	6,882
Iron and steel	11	36	7,284
Non-ferrous metals	3	6	22,372
Metal products	52	93	5,599
Non-electrical machinery	8	16	7,721
Electrical machinery	13	31	6,886
Transport equipment	29	59	7,423
Professional and scientific goods	0.3	2.4	6,164
Other	<u>9</u>	<u>20</u>	<u>5,360</u>
Total	812	1,625	6,112

Source: Industry and Development: Global Report 1991/92, UNIDO, ID/376.

Scope of the paper

The following three chapters of this paper will review the effects on industrialization and small-scale industry development of the developing countries, of globalization of manufacturing and the growth of regional trading blocks (chapter I); structural reforms, market-orientation and private sector development (chapter II); and the technological revolution, especially flexible specialization (FS) (chapter III). Chapter IV will draw attention to the findings of recent evaluations as to the appropriateness of strategies, programmes and policies for small industry development. The final chapter of the paper will refer to the reorientation of UNIDO programmes and projects required in the 1990s.

I. GLOBALIZATION OF MANUFACTURING AND REGIONAL TRADING BLOCKS

The technological, management and information revolution of the 1980s has given overriding importance to knowledge- and information-based manufacturing, marketing, servicing over capital-, material- and labour-intensive operations. Typically the cost of manufacturing is only 25 per cent of the end-user price. Value is added not by labour alone but more by research and development (R and D), engineering, financing and marketing functions. "Such functions as distribution, warehousing, financing, retail marketing, systems integration and services are all legitimate parts of the business system and can create as many and often more jobs than simply manufacturing operations". 1/

Computerization and the spread of information technology have not only blurred the distinction between manufacturing and services sectors but also increased the share of the latter in GDP in developed economies. Over the last 20 years, manufacturing share in GDP has decreased from 36 per cent to 29 per cent in Japan, from 28 per cent to 20 per cent in the United Kingdom, and from 26 per cent to 19 per cent in the United States of America. "Manufacturing is important for employment, trade, and the creation of wealth. But it is not uniquely important nor necessarily the most important activity in a rich modern economy..... Understanding why manufacturing is no longer all-important begins with the fact that more and more of the output of wealth creators goes into intangible things: computer programmes, telecommunication systems, films etc." 2/

The globalization of the world economy has been going apace, megafirms interlinking each other in the United States of America, Japan, Europe, Latin American and the Asia-Pacific region. Interlinking and co-operation are particularly close among the United States of America, Japan and the European Economic Community (EEC). "The liberalization of finance has encouraged the growth of some 600 megafirms which used to be called multinationals and which now account for about one fifth of value added in agriculture and industrial production in the world..... Megafirms are essentially non-national". 3/ The globalization of the world economy has tended to reduce the sovereign power of Governments. "Real power is devolving on decentralized groups and subgroups of workers, entrepreneurs and managers linked around the world - the groups of problem-solvers, problem-identifiers and strategic brokers." 4/

Finally, among the global developments, the growth of regional trade blocks must be mentioned, whose members gain economies of scale by trading preferentially among each other in a larger market. The EEC and the evolving North American Free Trade Area (United States of America, Canada and Mexico),

and the Asia-Pacific Group (Japan, the Association of South-East Asian Nations (ASEAN), Republic of Korea and Taiwan) are prominent examples. Latin American and African countries also have their regional and subregional groups.

The effects of globalization and regionalization on industrialization and small industry development, particularly in Africa, are to be seen in the opening-up of the economies and measures to enhance the inherent competitive advantages of these countries based on their natural and human resources. In the short term, manufacturing output has declined, except in the small-scale and especially the informal sector. However, longer-term effects are expected to be beneficial, since financial and technology resources will be attracted to competitive industrial opportunities. Structural reforms and reorientation of policies towards marketization and privatization - discussed in the next chapter - are an essential requisite for success.

II. STRUCTURAL REFORMS, MARKET ORIENTATION AND PRIVATE SECTOR DEVELOPMENT

Some 35 African countries have been implementing (or are about to implement) structural adjustment programmes under arrangements with IMF. For some 24 countries credits and loans amounted to US\$7.5 billion. "The common feature of the programmes is their focus on laying the foundation for sustainable development; by their emphasis on reducing financial imbalances, removing structural impediments from private economic initiative, providing a supportive infrastructure, and creating efficient and effective institutions, while making every effort to shelter the poor and the vulnerable". 5/

Structural adjustment programmes in mostly African countries (but also a few other developing countries, including recently India) have been necessitated by a long-term trend (20 years in many African countries) of continuous deterioration of per capita income, growing external indebtedness, fiscal imbalances and decreasing outputs in agriculture and manufacturing. No doubt, in several cases natural calamities and civil/military disturbances have been the main reasons. Basically, past development policies of command economy-type - planning, controls, public sector dominance - have contributed significantly to the malaise in many cases.

Industrialization policies in many of the affected countries had relied on low agricultural prices and diversion of resources to grandiose public sector projects of import-substitution, raw material processing or basic industry development nature which made considerable losses and added to fiscal and balance of payments deficits of the countries. As regards small-scale industry, supply-side measures of assistance provided by centralized government institutions failed to catalyse entrepreneurship and to lead to the establishment of viable enterprises. Such measures in the form of accommodation in industrial estates, financing, raw material supply, import facilities for equipment and raw materials, training and common facilities were costly and benefitted only a select few. The majority of existing and potential small enterprises was discriminated against - compared to larger businesses, private and public - and had to pay more for imports, credit and other services, thus rendering their enterprises unviable and unprofitable.

Broadly speaking, structural reforms have consisted of external sector reforms (correcting the over-valuation of domestic currency/under-valuation of convertible currency); enhancing availability and liberalizing allocations of

foreign exchange: demand management (restructuring of demand within the economy away from consumption towards the productive sectors); liberalization of internal trade and agricultural marketing and processing; and public sector restructuring (removal of protection, adjustment of tariffs, reduction of subsidies, privatization, reform of civil service etc.).

A recent study ^{5/} categorizes the characteristics favoured or penalized by structural reforms in African countries as follows:

Table 6

Enterprise characteristics favoured or penalized by structural adjustment policies

<u>Characteristics favoured</u>	<u>Characteristics penalized</u>
Low import dependence	High import dependence
High linkages with growth sectors of the economy	Low linkages (local demand)
Significant technological enhancement	Low technological enhancement
High barriers to entry	Low barriers to entry
Innovation	Cut-throat competition
Serving an import-substituting function	

According to the author of the study, the findings suggest that structural reforms favour modern innovative small firms, especially the engineering subsector, and penalize traditional micro-enterprise activity. On the other hand, another study (United Republic of Tanzania) ^{7/} indicates that the beneficiaries of structural reforms have been mostly micro-enterprises using mainly domestic resources. Informal micro-enterprises in the United Republic of Tanzania grew rapidly during 1985-1990, in many cases doubling the employment of labour over the period. There has been a boom in forward-linkage industries, e.g. grain mills, oil presses, coffee/cashew-nut processing and saw mills. Developments in other countries, e.g. Zambia, Uganda, Senegal and Ghana also confirm the vitality of micro- and informal enterprises. One reason is that many of them compelled by the difficult circumstances of the mid-1970s to the mid-1980s learnt to be innovative and make use of domestic resources ("learning by doing"). The provision of incentives to these enterprises has had multiplier effects to some extent.

The effects of the reforms may be further elaborated on the basis of the studies already cited.

1. External sector reforms: Micro-enterprises which have failed to significantly increase the quality of the products, e.g. textiles, soap, footwear have lost markets to imported goods. Those which have upgraded technology and found product niches have benefitted from the availability of imported components and diversified their production.

2. Demand management: Small firms catering for the poorer sections of the population or the public sector have suffered. Small firms which have been able to develop linkages with growth sectors and improve technology and quality have benefitted, e.g. small engineering workshops, tool-makers, machine-tool manufacturers and repairers.

3. Internal trade/agriculture liberalization: Encouragement to forward-linkage industries, e.g. agro-processing.

4. Public sector restructuring: Opportunities for subcontracting open up; on the other hand, skilled workers, managers and entrepreneurs - retrenched from the public sector - crowd into the small-scale sector.

According to IMF, the growth rate of countries under structural reform programmes has been 4.2 per cent per annum in the three or four years following the reforms as against 2.6 per cent in the preceding three-year period. 8/ Moreover, export performance - particularly non-traditional exports - improved significantly.

One important lesson to be learnt from the experience of structural reforms is the relevance of selective targetting of assistance to small-scale enterprises based on needs and potentialities rather than generalized supply-side assistance.

III. THE TECHNOLOGICAL REVOLUTION, ESPECIALLY FLEXIBLE SPECIALIZATION

Scientific progress as well as economic efficiency has come to depend on the broad diffusion of micro-processors. This has brought about a technological revolution and affected manufacturing methods and enterprise organization in developed countries in a significant way which tends to favour small-scale production. This technological revolution - popularly known as FS or flexible manufacturing system - will perhaps be the most important development affecting industrialization and small-scale industry development in developing countries in the coming one or two decades. It provides both challenges and opportunities to developing countries which cannot afford not to adapt their production and management system to the FS paradigm.

The small industry development wave of the 1960s - led by India - was inspired by the lessons of the pre-World War II great depression and the remedies adopted in the western world, particularly the United Kingdom and the United States of America. The triad of industrial estates, financing and industrial extension services owe much to the industrial estates programme in the United Kingdom and the Small Business Administration programme (preferential government purchase, subcontracting and subsidized loans to small businesses) in the United States of America.

The second wave in small industry strategies and programmes which must now take place in developing countries - sooner rather than later - will hopefully be inspired by the FS paradigm resulting from recent experiences in Europe (mainly Italy and Germany) which has championed the viability of small-scale industrialization. It is not a little ironical that the essential elements of FS include inter-firm co-operation in agglomerations or clusters of related manufacturing in industrial districts, combining competition and co-operation, relationship between small and large enterprises, networking and "collective efficiency". Such ideas were a feature of "functional", "specialized" and "ancillary" industrial estates advocated and promoted in India in the late 1950s and 1960s, with only limited success (perhaps because of the closed stifling macro-policy environment). The employment of micro-computers (as a network) with centralized co-ordination and management and fast, flexible, high quality, diversified and low cost production resulting therefrom seems to have made all the difference to the success of flexible manufacturing programmes in Europe.

To cite the example of Italy 9/, geographic specialization in various productive sectors through small and medium enterprises has taken place in hundreds of small towns and villages, especially in the north-east and the centre. These enterprises are set up in industrial districts characterized by single-sector production. Examples are metal products machine tools, musical instruments, textiles and clothing, footwear, leather goods, furniture, jewellery, glassware, ceramic tiles. They are generally highly competitive and of high quality and precision, contributing to enhancing Italian exports. Prato produces 38 per cent of internationally-traded carded wool, representing a quarter of the earnings of the Italian textile industry. Sassuolo meets one third of the world market for ceramic tiles; Como is famous for high quality pure silk fabrics.

It should be noted that these examples are in traditional industries, till recently regarded as labour-intensive and where international comparative advantage lay with developing countries.

One could take other examples from the United States of America 10/ where almost complete automation has enabled production of certain products to be shifted back to the United States of America from the developing countries. (Clusters or agglomerations providing collective efficiency through interrelations of small-scale industries do not apply in the cases cited below, but automation and flexible manufacturing are critical.) Tandy shifted production of speaker enclosures from the Caribbean to Texas and exported them to Japan. Arrow shifted 20 per cent of shirt production back to the United States of America after fifteen years of out-sourcing. Computerization enables quick response to changing styles in smaller lots production (batch production) as against the earlier mass production (MP). Asian suppliers require three months to fulfil new orders. Benetton of Italy requires two to three months and Hagger Apparel in Dallas three days (as against 7 weeks it once needed) because of its electronic network.

Toffler outlines 12 elements of the new system of accelerative high technology wealth creation as follows:

1. The new accelerated system for wealth creation is increasingly dependent on the exchange of data, information and knowledge. It is "supersymbolic". No knowledge exchanged, no new wealth created.
2. The new system goes beyond MP to flexible, customized or "demassified" production. Because of the new information technologies, it is able to turn out short runs of highly varied, even customized products at costs approaching those of MP.
3. Conventional factors of production - land, labour, raw materials and capital - become less important as symbolic knowledge is substituted for them.
4. Instead of metal or paper money, electronic information becomes the true medium of exchange. Capital becomes extremely fluid so that huge pools of it can be assembled and dispersed overnight. Despite today's huge concentrations, the number of sources of capital multiply.
5. Goods and services are modularized and configured into systems which require multiplication and constant revision of standards. This leads to conflicts in the control of information on which standards are based.

6. Slow-moving bureaucracies are replaced by small (demassified) work units, temporary or "ad-hocratic" teams, increasingly complex business alliances and consortia. Hierarchy is flattened or eliminated to speed up decision-making. The bureaucratic organization of knowledge is replaced by free-flow information systems.

7. The number and variety of organizational units multiply. The more such units, the more transactions among them, and the more information is to be generated and communicated.

8. Workers become less and less interchangeable. Industrial workers owned few of the tools of production. Today the most powerful wealth-amplifying tools are the symbols inside workers' heads. Workers, therefore, own a critical, often irreplaceable share of the "means of production".

9. The new hero is no longer a blue-collar worker, a financier, or a manager, but the innovator (whether inside or outside a large organization) who combines imaginative knowledge with action.

10. Wealth creation is increasingly recognized to be a circular process with wastes recycled into inputs for the next cycle of production. This method presupposes computerized monitoring and even deeper levels of scientific and environmental knowledge.

11. Producer and consumer divorced by the industrial revolution are reunited in the cycle of wealth creation with the customer contributing not just money but market and design information vital for the production process. Buyer and supplier share data, information and knowledge. Some day, customers may also push buttons that activate remote production processes. Consumer and producer fuse into a "prosumer".

12. The new wealth creation system is both local and global. Powerful micro-technologies make it possible to do locally what previously could be done economically only on a national scale. Simultaneously, many functions spill over national boundaries integrating activities in many nations into a single productive effort.

The Italian industrial districts are somewhat different than individual firms in the United States of America in that they comprise of clusters of small firms. The similarity is in being able to respond quickly to changes in market demand and competition through flexibility in manufacturing products and processes.

Technology blending has also contributed to technology innovation. Prato, the textile centre, has a constellation of 15,000 small-scale firms in manufacturing, finishing, dyeing etc. as well as transport, insurance, banking and other services. 70,000 people are employed, traditional technologies co-exist with the most modern. It is a decentralized production system exhibiting a high degree of flexible integration, especially in the distribution of orders and marketing. The Italian National Agency for Nuclear and Alternative Energy (ENEA) assisted the Prato district in formulating and implementing an energy efficiency system, a computer-aided design (CAD) system for design, robotized system for spinning and carding, automatic looms, and other innovations, diffusing computer and telecommunication systems.

Institutional and organizational improvements were made through an association of all those involved (Sistema Prato Innovazione Tecnologica (SPRINT)) for providing leadership and financial backing. Over a period it has been possible to raise productivity and quality and enable fast response to changes in market demand.

The contrasting features of MP and FS have been described as follows:

Table 7

Mass production and flexible specialization: contrasting features

<u>Mode of production</u>	<u>Competition</u>	<u>Product strategy</u>	<u>Attitude to labour</u>	<u>Division of labour</u>	<u>Embodied technology</u>	<u>Factory layout</u>	<u>Inter-firm links</u>
MP	Price	Standardization	Seen as a cost	Single-tasking; single-skilling; hierarchal communication; quality control, specialized	Special purpose; fixed transfer line	Functional	Short-term
FS	Product characteristics	Variety; rapid response; innovation	Seen as a resource	Multi-tasking; multi-skilling; two-way communication; trust; involvement in technical change; quality at source; labour as a resource	General purpose; flexible transfer line	Cellular	Close co-operation; long-term

Source: Kaplinsky, R., From mass production to flexible specialization: A case study from a semi-industrialized economy, Institute of Development Studies, Sussex, November 1991.

Ajit Bhalla and Jeffrey James review the alternative economic and institutional mechanism implicit in the application of new technologies for small-scale industrialization through three possible routes:

1. Choice of technology:
2. FS; and
3. Decentralization.

Their analysis in tabular form is reproduced on the next page and is self-explanatory.

Table 3

New technologies and small-scale industrialization: alternative economic and institutional mechanisms

	<u>Choice of technology</u>	<u>Flexible specialization</u>	<u>Decentralization</u>
Technological focus	New technology as an expansion of the existing range of techniques	New technology as part of the new FS paradigm	New technology as an expansion of spatial technological possibilities
Unit of analysis	Individual firm	Individual firm as part of a well-defined cluster of firms	Individual firm/community
Organizational change	Not major area	Innovative complementarities	May involve changed relationships between central and dispersed units of production (distribution)
Geographical focus	None	Agglomerative clusters	Dispersion
Inter- and intra-firm linkages	Only in so far as differential rates adoption by small and large firms affect the competitive position of the former	Central issue, competitive and co-operative relationships between small-scale and large- and small-scale firms	Unimportant (with dispersed "stand-alones" adoption) or important (where dispersed units interact with centrally-located units)
Benefits	Increased profits by individual adopting firms	"Collective efficiency", dynamic gains in export markets, externalities	Regional decentralization, increased equality
Main constraints	Factor prices, skills, information	Problems of collective action, "government failures" to induce co-operative behaviour	Lack of infrastructure and effective demand in dispersed locations
Examples	CAD/computer-aided manufacturing (CAM) in newly industrializing countries (NICs); micro-computer technologies in Africa	Prato	Benetton, micro-hydro

Source: Bhalla, Ajit and James, Jeffrey, Micro-electronics, flexible specialization and small-scale industrialization in the Third World, World Employment Programme, International Labour Organisation (ILO), 1991.

There has as yet been insufficient research experience in the spread of new technologies or conditions under which FS could be beneficially promoted in developing countries. Computerization and CAD/CAM applications have fairly spread in NICs. There seem to be good prospects for the spread of micro-computer technologies in African countries. The complementary telecommunication facilities need to be more fully established. Indigenous R and D facilities also need to be strengthened and further developed in developing countries, especially in Africa.

In most African countries, small-scale manufacturing predominates in agro-processing, garments, footwear, furniture etc. In many African countries there has as yet been insufficient development of engineering industries which lend themselves to subcontracting relationships between large and small enterprises. New wave technologies in electronics, computer, telecommunications, biotechnologies etc. have yet to develop.

The new technologies emphasize external economies of scale and scope which is provided by networking of production. This is possible with small- and medium-sized enterprises and does not necessarily require very large size of individual operations.

The organization of production in clusters or agglomerations, technical and managerial co-ordination and networking through computers may be appropriate to the social and cultural milieu in Africa where group dynamics in socio-economic cultural activities (through families, extended families, clans, tribes etc.) is more significant than separate individual activities.

The new technologies of FS lend importance to meso-factors (as contrasted to macro- and micro-factors). The development of clusters and agglomerations of enterprises in regional towns to meet regional/local consumer demands are considered significant and provide potential for small industry growth. The development of town and village enterprises in small and medium towns in China during the 1980s led to considerable industrial growth. In regional development, small enterprises operate in niches, serve small specialized or local markets, exploit local/regional labour and resources and make often specialized and non-standardized products, thus offering opportunities for FS.

Hubert Schmitz 11/, one of the pioneers in the field of research on small firms and FS, has cited the example of Kumasi in Ghana where the small-firm economy has exhibited a remarkable ability to respond quickly to crisis situations as well as innovations and collective efficiency. Schmitz' conclusions from studies in several African, Asian and Latin American countries are:

1. Competitiveness requires the capacity to adapt to disruptive circumstances, in developing countries even more than in developed countries;
2. Sectoral agglomerations of small firms are conducive to development of such capacity due to their potential for collective efficiency and flexibility;
3. However, fast adaptation and innovation do not necessarily take place in clusters; and
4. How to foster collective efficiency through public policy is still an open question.

Further research, preferably action-oriented research, is required on clusters or agglomerations of small firms already existing in countries such as Ghana, Uganda, India, Indonesia, Pakistan, Philippines, Brazil, Peru etc. as to their collective efficiency, networking and possibilities of benefitting from FS programmes. Appropriate organizational and institutional mechanisms need to be evolved suited to local, social and cultural conditions. There would appear to be more opportunities for innovation and flexible responses from small-scale and medium-sized enterprises than from existing very large enterprises for meeting the challenges of new technologies. The role of central, regional and local governments as well as non-governmental organizations (NGOs), e.g. industry and trade associations, research institutes etc., is of prime importance in this connection.

IV. STRATEGIES, POLICIES AND PROGRAMMES FOR SMALL INDUSTRY DEVELOPMENT: EVALUATION OF EXPERIENCES

The perception of the role of the small-scale industry in development began to change in the 1980s. Studies and evaluations sponsored/carried out by the World Bank, UNIDO, ILO, bilateral donor agencies (particularly from the United States of America, the Netherlands and Sweden) et al. underlined the integrative, growth-stimulating entrepreneurial seed-bed and versatile flexible functions of small industry in industrialization. The development of entrepreneurship, technical and managerial skills, has widespread diffusion effects in the services sector and businesses in general and does not affect only or mostly the small-scale manufacturing sector. Comprehensive supply-side assistance to a narrowly-defined compartmentalized small-scale manufacturing sector undertaken in many countries in the 1960s and 1970s had by and large been ineffective and wasteful of resources. On the other hand, evaluation of case studies, projects and experiences pointed to relative success of demand-stimulating macro-policy measures, human resource development and encouragement of self-help institutions. Furthermore, analyses of micro-enterprise growth and of effects of new technologies (micro-computers, flexible manufacturing etc.) lead to emphasis on clusters, groups, agglomerations rather than the individual entrepreneur or enterprise.

The findings and recommendations of the United Nations Development Programme (UNDP)/Government of the Netherlands/ILO/UNIDO evaluation study on rural small industrial enterprises (1988) 12/ were path-breaking in this connection. Demand-stimulating measures (macro-policies) were recommended to precede supply-side assistance. Linkages, including subcontracting were considered effective. Decentralized extension and financial services were favoured, particularly on-location, branch-specific technical upgrading programmes and increasing use of NGOs and private voluntary organizations (PVOs) as agents of change.

Several recent UNDP/UNIDO project evaluation reports have drawn attention to the weaknesses and ineffectiveness of centralized government-operated extension and financing programmes. It has been stressed that the needs of different categories of small-scale enterprises should be identified and appropriate assistance targetted to different groups. Small and medium enterprises of a larger size (over 25 employees) needed linkages with management, scientific and technical institutions, flow of information, relationship with large enterprises/marketing organizations/banks etc. and seldom direct assistance from extension agencies. The really small and micro-enterprises should be helped to help themselves through upgrading

programmes, technology transfer, seed-money or venture capital etc. Such assistance should be targetted in decentralized locations and by trade groups and preferably channelled through associations formed by them, or through a voluntary agency, or a technical training centre, or local bank, or local technology service centre.

Another feature of recent evaluation studies has been the need for decentralized assistance to provincial/district/rural centres through regional or local agencies rather than a central agency. This is the case in African countries, e.g. United Republic of Tanzania, Uganda, Zambia, as well as in South Pacific countries, e.g. Papua New Guinea, Solomon Islands.

The need for the provision of venture capital or seed-money to be administered locally (e.g. through savings and loan associations or groups) has been felt in many countries. e.g. Guinea, Liberia, Solomon Islands.

V. REORIENTATION OF PROGRAMMES REQUIRED IN THE 1990s

UNIDO has responded positively to the changing needs of small-scale industry development. 13/ It is evolving a programme approach with the following elements:

1. Enterprise-to-enterprise co-operation between specific developed and developing countries;
2. Enterprise-to-enterprise co-operation between specific developing countries;
3. Subcontracting;
4. Rural development;
5. Entrepreneurship development;
6. Total quality concept (management, systems and improvement);
7. Privatization programme;
8. IMPACT programme (integrated computerized package to aid development of particularly electromechanical small enterprises).

The new country programming approach of UNDP under which the basic responsibility for management of technical co-operation projects will rest at the country level provides opportunities for strengthening the inter-country, inter-enterprise, intra-sector special programme focus of UNIDO' research and operational activities. A dimension which needs further development is co-operation in research and operations with bilateral and other multilateral agencies involved in similar activities. A new programme or programme element which could be usefully added may be described as "Flexible manufacturing system: Action-oriented research and applications".

Another area which deserves to be covered is the small-scale services sector related to manufacturing. The coverage will have to be carefully defined. There are several aspects: plant engineering, CAD, computer-integrated manufacturing (CIM), total quality (zero defects), information network in industrial districts/estates, other management and technology services.

The elements in a programme for the 1990s which should focus on selected countries for each item depending on needs and priorities and emphasize networking and inter-country sharing of experiences could be listed as follows:

1. Policies and government/public role;
2. Privatization and private sector development;
3. Entrepreneurship development;
4. Rural institutions and technologies;
5. Financing of small-scale and micro-industry;
6. New technologies and FS (studies, pilot projects);
7. Subcontracting;
8. Enterprise-to enterprise co-operation;
9. Site and facility development (including export processing zones (EPZs), not EPZs per se);
10. Services (CAD/CIM), information network, plant engineering, zero defects quality, informatics.

It is suggested that a three- to four-year programme be formulated (combining research and action/operations) for each programme element. Other interested bilateral/multilateral agencies should be involved on a selective basis - different for different programmes. For example, in the case of rural institutions and technologies, besides the Task Force on Rural Development of the Administrative Committee on Co-ordination (ACC), the Intermediate Technology Development Group Ltd., London, could be involved. In the case of new technologies and FS, the technology programme of UNIDO and the institutional infrastructure programme could co-operate with ENEA, Italy; the International Institute of Labour Studies, Geneva; and the Centre for Development Research, Copenhagen. In respect of financing small-scale and micro-industry, co-operation with the World Bank may be envisaged. In countries selected for each programme element, direct involvement of institutions at local or regional level will be more fruitful. These could be local government agencies, regional/local small enterprise associations, university research groups, R and D institutions of large enterprises, NGOs or PVOs. Funding of the programme should be shared amongst the agencies involved, both at the recipient level and the bilateral/international level (including, but not exclusively, UNDP country programme IPF resources).

Footnotes

- 1/ Kenichi, Ohmae, The borderless world, Fontana, 1991, p. 19.
- 2/ The Economist, London, 9 November 1991, p. 19.
- 3/ Toffler, Alvin, Power shift, Bantam, 1991, p. 454.
- 4/ Reich, Robert, The work of nations, 1991.
- 5/ Camdessus, M., Good news out of Africa, Finance and Development, IMF/World Bank, December 1991.
- 6/ Dawson, J., The impact of structural adjustment on the small-scale enterprise sector (paper for the Conference on Small-Scale and Micro-Enterprise Promotion in a Changing Policy Environment, The Hague, Netherlands, 30 September to 2 October 1991).
- 7/ Bagachwa, M.S.D., Impact of adjustment policies on small-scale enterprise sector in Tanzania (paper for the Conference on Small-Scale and Micro-Enterprise Promotion in a Changing Policy Environment, The Hague, Netherlands, 30 September to 2 October 1991).
- 8/ Camdessus, M., ibid., footnote 5/.
- 9/ Colombo, Umberto, Diffusing high technology in traditional sectors, experience of ENEA, International Centre for Science and High Technology, Venice, September 1991.
- 10/ Toffler, Alvin, ibid.
- 11/ Schmitz, Hubert, Small firms and flexible specialization in developing countries, Labour and Society, vol. 15, no. 3, 1990.
- 12/ Development of rural small industrial enterprise, UNDP/Government of the Netherlands/ILO/UNIDO evaluation study, Vienna, October 1988.
- 13/ Annual Reports of UNIDO, 1989 and 1990, IDB.6/10, pp. 46-50 and IDB.8/10, pp. 46-48.