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**PROGRAMME ELEMENTS FOR INDUSTRY-RELATED  
TECHNICAL ASSISTANCE IN PAKISTAN**

**Report of a UNIDO Mission  
1-13 October 1991**

V.92-50868

This report was prepared by the Regional and Country Studies Branch,  
Industrial Policy and Perspectives Division.

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION . . . . .	1
II. INDUSTRIAL DEVELOPMENT IN PAKISTAN: RECENT PERFORMANCE . . . . .	2
1. Main Trends . . . . .	2
2. Policy Framework . . . . .	6
III. PRIORITY AREAS FOR FUTURE TECHNICAL ASSISTANCE TO INDUSTRY . . . . .	9
1. Overall External Assistance to Industry . . . . .	9
2. UNIDO's Programme . . . . .	10
3. Functional Issues . . . . .	11
a. Assistance to the economic reform process . . . . .	11
b. Policy advice and operational assistance on industry-related environmental issues . . . . .	14
c. Technology and skill development for industry . . . . .	17
4. Sub-sector Focus . . . . .	19
a. Textiles industries . . . . .	19
b. Leather industry . . . . .	24
c. Engineering industry . . . . .	27
5. Private Sector Involvement . . . . .	32
IV. OUTLOOK ON FOLLOW-UP ACTIVITIES . . . . .	34
ANNEX I PUBLIC MANUFACTURING ENTERPRISES IDENTIFIED FOR PRIVATIZATION . . . . .	35
ANNEX II LIST OF PERSONS MET . . . . .	38
LIST OF REFERENCES . . . . .	40

## I. INTRODUCTION

In the context of preparatory work for the Fifth Country Programme, UNIDO has prepared the present industrial sector report which provides (a) a brief overview of Pakistan's state of industrial development and major prospects and constraints in a medium-term perspective as well as (b) recommendations for priority programme areas to be addressed in the Country Programme within the field of industry.

The present report reflects both work undertaken at UNIDO headquarters based on available data and studies as well as the findings of a Mission which visited Pakistan from 1-13 October 1991 to consult with relevant public and private sector institutions involved in industrial development (see Annex I for the list of persons met). The Mission team consisted of Wilfried Lütkenhorst, Regional and Country Studies Branch, whose work was supported by Jon Holten, UNIDO Country Director and Thomas Wetzels, Junior Professional Officer.

From the outset it was clear that this report would have to be limited in scope. First, the very nature of the task is not to present a comprehensive study of Pakistan's industry but to highlight salient features of current trends and main issues emerging for the 1990s as a basis for identifying target areas for possible external assistance. Second, it must be stressed that the identification of external assistance requirements and the elaboration of suitable approaches is necessarily an iterative process through which initially conceived broad areas of possible co-operation are narrowed down, further substantiated and finally translated into project concepts. The present report intends to provide a first basis for this process by suggesting main programme areas for future industry-related technical assistance. It is highly selective in pointing out a limited number of themes which should attract priority attention and around which UNIDO could build its future assistance efforts in an integrated and focussed manner.

Specifically, it was agreed with UNDP to exclude 'project identification' from the objectives of the present exercise. The elaboration of individual projects and activities responding to the suggested programme areas will have to be undertaken in a subsequent stage.

The UNIDO Mission wishes to express its thanks to UNDP Islamabad and the Government of Pakistan for organizing and co-ordinating the work programme. Without their co-operation and support the tasks foreseen could not have been accomplished in such short time.

This report was prepared in November 1991.

## II. INDUSTRIAL DEVELOPMENT IN PAKISTAN: RECENT PERFORMANCE<sup>1</sup>

In this chapter, a broad overview is given of the basic structure and major trends of industrial development in Pakistan. Those sub-sectors selected as priority programme areas for future technical assistance are dealt with in greater detail in chapter III.

### 1. Main Trends

During the 1980s, the manufacturing sector recorded above-average growth rates resulting in an increasing share of manufacturing in the country's GDP: from 15.1 per cent in 1980/81 this share went up to 17.6 per cent in 1990/91 (Table 1). While the share of services in GDP also increased to reach almost 53 per cent, the relative importance of agriculture has declined to slightly more than one quarter of GDP. This downward trend notwithstanding, agriculture continues to remain the mainstay of the economy, particularly in terms of sectoral employment contributions: it is estimated that agriculture at present absorbs 51.2 per cent of the labour force while manufacturing employment (including mining) accounts for 12.8 per cent of the total, down from 14.1 per cent in 1980/81. Accordingly, the promotion of labour-intensive industries deserves special attention if this trend is to be reversed and if manufacturing is to make a stronger contribution to absorbing new entrants into the labour force.

Table 1. Distribution of GDP by sector of origin and sectoral growth rates, 1980/81 and 1990/91  
(at constant factor cost of 1980/81)

Sector	<u>Percentage share of GDP</u>		<u>Average annual growth rate</u>
	1980/81	1990/91	1980/81-1990/91
Agriculture	30.8	25.6	5.4
Mining & quarrying	0.4	0.6	8.9
Manufacturing	15.1	17.6	7.7
Large-scale	11.1	12.6	7.4
Small-scale	4.0	5.0	8.4
Construction	4.7	3.4	4.7
Services	49.0	52.8	6.7
GDP	100	100	5.5

Source: Economic Survey 1990-91.

The share of manufacturing in total gross fixed capital formation slightly increased during the 1980s accounting for 21.4 per cent in 1990/91

<sup>1</sup> For a more detailed analysis, cf. UNIDO 1990, ADB 1991 and World Bank 1991.

(Table 2). At the same time, a major structural shift took place with respect to the sources of manufacturing investment: the private sector now overwhelmingly dominates manufacturing capital formation with a percentage share of 92.5 in 1990/91 leaving only a marginal complementary role to public manufacturing investment. The latter is concentrated in a relatively small number of key large-scale industries in steel, fertilizer and cement production.

Table 2. Share of manufacturing in total gross fixed capital formation (GFCF), 1980/81 and 1990/91  
(at current market prices)

Share of Manufacturing in Total GFCF	1980/81	1990/91
All manufacturing	19.7	21.4
- Private sector	48.5	92.5
- Public sector (incl. general government)	51.5	7.5

Source: Economic Survey 1990-91.

A look at the branch composition of manufacturing value added (MVA) reveals a limited degree of structural change between 1980/81 and 1986/87, the latest year for which such data are available (Table 3.). The declining relative importance of food industries (down from 20.1 to 13.9 per cent) is the most significant trend which has turned the textiles branch into the first-ranking industry in terms of MVA generation. Overall, the degree of industrial branch concentration, as measured by the share of the top three branches in total MVA, decreased from 52.0 to 45.3 per cent. This reflects the above-mentioned decline in food industries and the growing importance of both chemical industries and iron and steel products - the latter a result of Karachi Steel Mill and related downstream industries. The engineering sub-sector (defined as encompassing ISIC 38) has however remained relative weak accounting for only 7.7 per cent of total MVA in 1990/91 (down from 9.1 per cent in 1980/81). As a consequence, the manufacturing sector in Pakistan continues to rely heavily on imports of intermediate and capital goods. This high import-intensity is one of the structural determinants of the country's balance-of-payments crisis.

It can be noted that during the 1980s significant productivity improvements were achieved in Pakistan's industry. According to the 1991 ADB Industrial Sector Study, total factor productivity in the large-scale manufacturing sector increased at an average rate of 3.6 per cent during the eighties. As a result, an increasing number of industrial branches have become internationally efficient producers in terms of a domestic resource cost (DRC) analysis. From a comparison of DRC ratios calculated for 1980/81 and for 1985/86<sup>2</sup> it emerges that out of 19 industries for which a comparison

<sup>2</sup> Based on Naqvi and Kemal 1983 and IMG Study 1988. For the methodological problems involved, cf. ADB 1991, pp.94.

Table 3. Branch composition of manufacturing value added.  
1980/81 and 1986/87  
 (at current prices)

Industrial branch	(ISIC)	Share in total MVA	
		1980/81	1986/87
Food products	(311)	20.1	13.9
Beverages	(313)	1.8	1.5
Tobacco	(314)	13.3	14.4
Textiles	(321)	18.6	17.0
Wearing apparel, except footwear	(322)	0.9	0.9
Leather products	(323)	1.1	0.6
Footwear, except rubber of plastic	(324)	0.8	0.5
Wood products, except furniture	(331)	0.3	0.2
Furniture, except metal	(332)	0.2	0.1
Paper and products	(341)	1.5	0.9
Printing and publishing	(342)	0.8	1.1
Industrial chemicals	(351)	5.5	6.4
Other chemicals	(352)	6.8	8.0
Petroleum refineries	(353)	6.9	8.2
Miscellaneous petroleum and coals products	(354)	0.5	0.5
Rubber products	(355)	1.0	1.0
Plastic products	(356)	0.3	0.6
Pottery, china, earthenware	(361)	0.2	0.3
Glass and products	(362)	0.3	0.6
Other non-metallic mineral products	(369)	5.9	7.7
Iron and steel	(371)	4.0	7.5
Non-ferrous metals	(372)	0.0	0.0
Fabricated metal products	(381)	1.1	0.8
Machinery except electrical	(382)	1.7	1.9
Machinery electric	(383)	3.5	2.5
Transport equipment	(384)	2.5	2.4
Professional and scientific equip.	(385)	0.3	0.1
Other manufactured products	(390)	0.4	0.3
<b>TOTAL MANUFACTURING</b>		<b>100</b>	<b>100</b>

Source: Calculated from Economic Survey 1990/91.

of efficiency levels was possible, in 13 industries (accounting for 80 per cent of the MVA in the examined industries) the efficiency level had improved. Quite a number of these industries showed DRC ratios below 1. This applies to surgical instruments, fans, and domestic electric appliances in the engineering sub-sector; to fertilizers, and paints and varnishes in the chemicals sub-sectors; and to tyres and tubes and other rubber products. These efficiency gains can be attributed to a number of factors among which the following appear to be of foremost importance:



- the rapidly rising share of private sector manufacturing investment in total manufacturing investment (see Table 2 above):
- improvements in the management and performance of public manufacturing enterprises; and
- higher capacity utilization rates brought about by easier access to intermediate inputs as a result of import liberalization measures.

The ADB study quoted above also provides estimates for the sources of manufacturing growth during the eighties. A decomposition of total production growth into increases induced by export expansion, import substitution and domestic demand expansion shows that the former two components accounted for 10 per cent each while four fifths of growth was attributable to rising domestic demand. This may be taken as indicative of a continued anti-export bias in the overall incentives structure.

Table 4. Structure of exports of manufactured goods, 1980/81 and 1988/89

Product Group	1980/81		1988/89		Annual Growth Rate 1980/81- 1988/89
	US \$ in mn	Percentage Share in Exports of Manufactured Goods	US \$ in mn	Percentage Share in Exports of Manufactured Goods	
Fish preparations	7	0.4	18	0.6	12.5
Cotton yarn	217	13.1	605	19.3	13.6
Cotton cloth	214	14.5	462	14.8	8.5
Made-ups	182	11.0	400	12.8	10.3
Garments	118	7.1	427	13.6	17.4
Hosiery	68	4.1	33	1.1	-8.9
Synthetic textile	129	7.8	116	3.7	-1.3
Carpets and Rugs	227	13.6	229	7.3	0.0
Leather	90	5.4	243	7.8	13.2
Footwear	10	0.6	19	0.6	8.4
Petroleum Products	126	7.6	34	1.1	-15.1
Chemicals and Drugs	23	1.5	21	0.7	-1.1
Sports Goods	32	1.9	71	2.3	10.5
Surgical instruments	27	1.6	63	2.0	11.2
Engineering goods	51	3.1	34	1.1	-4.9
Other exports	114	6.8	358	11.4	15.4
<b>Total Exports of Manufactured Goods</b>	<b>1,662</b>	<b>100.0</b>	<b>3,133</b>	<b>100.0</b>	<b>8.2</b>

Source: Economic Survey 1990-91.

This leads over to a brief analysis of manufactured exports performance. Despite recent successes in promoting non-traditional manufactured exports, Pakistan has basically remained an exporter of labour-intensive and agricultural raw material-based manufactures. Manufactured exports in 1988/89 accounted for 56 per cent of total exports and were characterized by an extremely high concentration on cotton-based products (Table 4). The latter generated 60 per cent of total manufactured export earnings. Adding synthetic textiles and carpets and rugs, the share accounted for by the textiles sub-sector is close to three quarters of the total. Leather has become another significant earner of foreign exchange (7.8 per cent of the total) which leaves only marginal export shares to petroleum, chemical and engineering industries. It is noteworthy, however, that a number of non-traditional export items such as fruit juices and preserved fruits and vegetables (classified under 'other exports') have recorded especially high growth rates.

In terms of market destination, Pakistan's exports to the OECD countries accounted for about 60 per cent of total manufactured export earnings in the mid-1980s, comprising mainly products of the textile industry. The country's exports of manufactures to developing countries include products of the chemical, textile and a few capital goods industries. Several developing countries - Saudi Arabia, Kuwait, United Arab Emirates, Bangladesh, China Republic of Korea and Malaysia in particular - have recently emerged as important market destinations. The main markets for Pakistan's non-traditional exports remain in the Middle Eastern and the South-East Asian regions.

## 2. Policy Framework

The overall situation of Pakistan's manufacturing industries can be summarized as follows. The sector exhibited high growth rates during most of the eighties which only slowed down at the end of the decade. A small number of key, largely resource-processing branches continue to dominate the sector - reflecting a limited degree of structural change in the past. Industrial efficiency, though increasing, has remained low in most branches by international standards. Manufactured exports have increased significantly yet without much progress in terms of product diversification and high value-added processing. As a result of the high protection granted in the past and the tying of fiscal incentives to physical investment (including machinery imports), most industries are biased in favour of a domestic market orientation and in favour of capital-intensive production technologies with low employment-generating effects. Finally, public manufacturing enterprises (PMEs) continue to play an important role in crucial branches such as steel, chemicals (including petroleum refining), engineering and cement. In total, they account for some 10 per cent of manufacturing value added and more than 20 per cent of the sector's fixed assets.

In a number of key areas - import liberalization, export promotion, deregulation and privatization - important policy changes were introduced during the eighties with a view to making the industrial sector more competitive, freeing production and investment from excessive regulation and control and assigning a clear lead role to private industries. Such policy initiatives were reinforced and intensified by the present Government. A summary account of the most important elements of the now prevailing industrial policy framework is given below. In general, the most significant

policy measures have been taken with regard to industrial deregulation while the trade policy reform has not yet been fully carried through.

During the eighties, a sequence of investment sanctioning deregulation measures were implemented. The specified list of 1987 (comprising 31 industries with sanctioning requirements) was reduced to 7 industries in 1988. Apart from these industries, sanctions were only required if project costs exceeded Rs 1.0 billion or where major policy decisions were involved. In December 1990, all sanctioning requirements were abolished by the Government, irrespective of cost, size and location of projects, except for four industries because of safety, security and religious reasons. Furthermore, foreign direct investment now receives equal treatment and is permitted in any industry except those listed in the so-called reserved list which does not include manufacturing industries.<sup>3</sup> At the same time, approval is no longer required for the expansion of production capacity unless it involves import of capital equipment. In this context, development finance institutions assume an increasingly important role as de-facto investment licensing authority through foreign exchange allocations for machinery imports. A further 'entry barrier' exists in most engineering industries in the form of ambitious deletion programmes. These demand that new industrial units must start from the level of deletion already achieved by other firms in the same industrial branch.

In the field of import restrictions, non-tariff barriers have traditionally been the major constraints in Pakistan. Quantitative restrictions were widespread until 1983 when they were substantially reduced. Further progress in dismantling non-tariff barriers was made in the wake of the 1988 trade policy reform. The "Negative List" of imports has been reduced to 62 categories with a commitment to abolish the entire list until mid-1993. As a result, the manufactured value added protected through bans and other quantitative restrictions was reduced from 41 per cent and 22 per cent, respectively, in 1981 to 22 per cent and 3 per cent, respectively, in 1991 (ADB 1991). A further step towards import liberalization was taken in February 1991 when import licensing requirements were lifted for all items on the "Free List".

The potential impact of these measures was counteracted, however, by the continued incidence of high import taxes. While there was a decline in the average rates of import tariffs, for many products groups now freely importable the tariff rates have remained prohibitively high. Furthermore, the benefits from reforming the tariff system and lowering average tariffs were offset by increases in other import levies, such as the introduction of import and iqra surcharges and increased import license fees. It has been calculated that the combined effect of all these measures has been an increase of total import taxes from 27 per cent in 1980/81 to 49 per cent in 1990/91. On the other hand, both the level and the dispersion of effective protection appear to have decreased as a result of the rationalization of nominal duty rates.

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<sup>3</sup> This applies to: agricultural land, forestry, irrigation, real estate, radio-active minerals, insurance and health.

Despite a number of recently introduced export incentives which are aimed at neutralizing the adverse impact of import duties on exporters, the overall trade policy regime continues to have an anti-export bias. In some product groups (petroleum and petroleum products, coke, rock salt, caustic soda, cement and fertilizers) exports are restricted to public sector agencies, in others (carpets, onyx, surgical instruments and cotton) minimum export prices are applied and in some cases export duties are levied. Various schemes introduced to provide exporters with duty-free access to imported inputs are suffering from implementation shortcomings. This applies specifically to the bonded warehouse system and the duty drawback schemes which involve long administrative delays and do not provide rebates for the recently introduced import surcharges.

With respect to public manufacturing enterprises (PMEs), significant reform initiatives have been launched. This applies both to measures aimed at increasing their efficiency and to far-reaching privatization programmes. In connection with related technical assistance requirements, these are discussed in chapter III of this report.

### III. PRIORITY AREAS FOR FUTURE TECHNICAL ASSISTANCE TO INDUSTRY

#### 1. Overall External Assistance to Industry

Pakistan continues to rely heavily on external financial and technical assistance for its development initiatives. The economy's aid-dependence is evidenced from the fact that in the second half of the eighties Pakistan received on an average aid commitments of \$2.4 billion annually from multilateral agencies (53.4 per cent) and bilateral donors (46.6 per cent). Total aid committed to Pakistan stood at \$3.0 billion in 1990, compared with \$3.2 billion in 1989. Grants and credits account for around 70 per cent of all external contributions; most of the latter are granted on concessional terms at 1 per cent interest rate and between 40 to 50 years maturity. Multilateral assistance outweighs bilateral contributions, a fact explained mainly by the large-scale operations of the World Bank and the Asian Development Bank. In 1988, Pakistan was the sixth largest recipient of multilateral aid after India, China, Indonesia, Bangladesh and Egypt.

The majority of World Bank/International Development Association (IDA) funds is directed to energy, irrigation, agriculture and industry. At the beginning of FY 1990, World Bank loans and IDA credits to the industrial sector of Pakistan amounted to approximately \$770 million, representing 20 per cent of the World Bank's cumulative financial assistance to Pakistan.

The final disbursement of the third fertilizer industry rehabilitation loan totalling \$25.4 million was made in April 1988 by the World Bank. The loan was meant for the rehabilitation and rationalization of the fertilizer production facilities of two companies of the National Fertilizer Corporation (NFC), and enhancement of the capacity of the NFC group of companies through an operational, management and training improvement programme.

At present, no structural adjustment loan in the field of industry is being implemented.

The third industrial investment credit of the World Bank amounts to \$150 million (negotiated in 1989). It is aimed at: financing private industrial projects through an expanded term-lending system; assisting the government in developing a more efficient stock market to increase the resources of equity finance for industry; stimulating competition among participating financial institutions as a means of improving the services to the private sector; and achieving a more market-determined interest rate structure. Technical assistance programmes include training, provision of necessary office equipment and sector studies as well as advisory services required to improve the efficiency of the credit delivery system for industrial finance.

Small-scale industry development continues to be a priority of the government. The World Bank has supported the strategy by providing credit, technical and marketing assistance to small-scale industries and micro-enterprises and by improving the institutional arrangements.

With a \$634 million loan from the Asian Development Bank (ADB), Pakistan became the largest recipient of ADB loans in 1988. The primary commitment of the ADB in Pakistan remains with agriculture, energy and industry. The Bank's conditionalities are largely similar to those of other multilateral agencies, namely, de-regulation, promotion of private enterprises, privatization, liberal trade policies and reforms in the taxation system.

Loan implementation figures have remained at a relatively low level, partly due to frequent management and policy changes in the involved development finance institutions (DFI) as a result of changes in government. In view of the over-exposure of many DFIs' project portfolio to the textiles sector, ADB has recently imposed diversification requirements: for each new textiles project, another project of equal size is to be financed in another industrial branch.

The ADB is now in the process of finalizing the Second Industrial Sector Programme Loan which at the end of 1992 is to provide \$200 million as balance-of-payments support to cover the costs associated with economic reforms.

UNDP is currently assisting the Government of Pakistan within the framework of its Fourth Country Programme which was extended to cover the period until mid-1993 with a view to synchronizing the UNDP programme cycle with the Five-Year-Plan cycle. The overall objective of UNDP technical co-operation during the Fourth Country Programme is to improve the effectiveness of the utilization of development resources for the country's investment programmes and to increase the absorptive capacity of the national development infrastructure through technical assistance projects. Emphasis is placed on projects that are aimed at pre-investment activities, such as the preparation of master plans, investment programmes for various sub-sectors, preparation of feasibility studies, technical support for the implementation of specific investment programmes that include external financing, strengthening institutions and at human resource development. A majority of UNDP projects is directed towards institution building. Around 14 per cent of the projects are related to the industrial sector.

## 2. UNIDO's Programme

In mid-1991, UNIDO was implementing a total of 23 individual projects with a total value (including government cost sharing) of approximately \$21 million. These projects cover a wide range of industrial branches both in terms of direct assistance and institution-building efforts. The most significant large-scale projects, inter alia, provide assistance to the modernization of Central Testing Laboratories; the Hyderabad Leather Footwear Center; the production of heat treatable steel for automobile industry and agricultural components; a development center for silicon technology; establishment of a multipurpose ore beneficiation pilot plant; Pakistan machine tool factory; plastics technology center; synthetic fibre development center; and petroleum refining and petrochemical applied research and development institute.

Without casting a doubt on the benefits of individual projects, it would appear that UNIDO's past technical assistance programme to a certain degree was lacking in focus and coherence. A strategy of dispersing the limited resources available to UNIDO over the entire range of industrial activities obviously runs the risk of 'spreading too thin'. It fails to achieve the critical mass required to generate a catalytic impact and to make a sustainable contribution to crucial industrial development issues.

It is therefore recommended - in line with the programme approach adopted by UNDP - to build UNIDO's technical assistance inputs for the Fifth Country Programme around a limited number of key thematic areas and, within these, to design large-scale projects covering all relevant assistance

dimensions and components in a targeted, integrated manner. In the following sections, an attempt is made to single out a selected number of priority programme areas along these lines. It must be pointed out that in arriving at these no consistent set of criteria nor any formalized methodology has been applied. Rather, the choice was made to some extent on the basis of qualitative considerations as well as views and perceptions obtained by the Mission during consultations with UNDP and various Government agencies.

The programme areas emphasized in this report are not meant to be exclusive in nature. It is likely that, as the programming exercise goes along, viable project concepts will emerge which fall outside the suggested priority areas. Needless to say that they should not be excluded from implementation.

In the following sections, first a number of functional issues are discussed which cut across the entire industrial sector. This relates specifically to assistance to the economic reform process; policy advice and operational assistance on environmental issues of industrial development; and technology and skill development for industry. Second technical assistance requirements in selected industrial branches are outlined. Here, special attention is given to the textiles industry and the leather industry in view of their proven capacity to generate high export earnings. The Pakistani Government is now assigning top priority to enhancing the economy's export competitiveness and to reversing the previously prevailing bias in favour of import substitution. 'Competing for the Global Market' has been chosen as overall theme for the industrial development chapter in the Eight Five-Year Plan (1993-1998) Approach Paper.

### 3. Functional Issues

#### a. Assistance to the economic reform process

As mentioned above, the Pakistani Government is in the process of implementing far-reaching economic policy reforms encompassing trade liberalization, deregulation of industrial production and investment, and privatization of public enterprises in general and public manufacturing enterprises (PMEs) in particular.

Excluding PME's in the Ghee Corporation and under other ministries, the Ministry of Production is responsible for 74 PME's which in 1987/88 accounted for 14 per cent of MVA and 18 per cent of investment in large-scale manufacturing, respectively. Being concentrated in a few industrial branches such as petroleum products, basic steel products, automobiles, chemicals, cement and fertilizers (Table 5), they assume strategic importance for overall industrial development as supplier of crucial inputs to a wide range of industries.

Efforts aimed at increasing the operational efficiency of PME's on the one hand and at divesting some of them to the private sector on the other hand have been undertaken since many years. In 1980, the Experts Advisory Cell (EAC) was established to monitor the performance of public enterprises and recommend organizational and managerial measures to improve their efficiency. In 1983, the so-called Signalling System was introduced which provided a set of quantifiable performance evaluation criteria for this purpose. As many PME's continued, however, to incur losses or achieve returns on equity far

below the prevailing interest rate, it was decided in 1986 to divest 14 PMEs with total assets worth Rs 1.5 billion. Five of these enterprises were from chemical industries, three from textiles, two from steel, two from non-metallic mineral products, one from automobile and one from the sugar industry. A National Disinvestment Authority was set up in 1988 to implement the planned divestiture. None of these units was actually privatized, however. This failure was due to a number of reasons, including disinterest on the part of private investors to acquire loss-making enterprises; problems expected with regard to laying off excess workers and the settlement of company debts; the fixation of share prices above replacement value; and the thinness of the country's stock market which could not have absorbed the additional shares without drastic share price reductions (Kemal 1991).

Table 5. Public manufacturing enterprises production, 1988/89

Product/Units	Total Production	Produced by PMEs	% Share of PMEs Total Production
A. <u>Fertilizer</u> (000 tons)			
urea	2,007	783	39
others	930	930	100
B. <u>Cement</u> (000 tons)	7,194	5,441	76
C. <u>Chemicals</u> (000 tons)			
caustic soda	71	49	70
soda ash	148	38	25
D. <u>Bicycles</u> (000 nos.)	560	117	21
E. <u>Automobiles</u> (000 nos.)			
tractors	23	22	95
buses/trucks	3	3	76
car/jeeps	36	36	100
motorcycles, scooters, rickshaws	76	23	30
F. <u>Basic Steel Products</u> (000 tons)			
coke	672	672	100
pig iron	945	945	100
billets	236	236	100
HR sheets/strips/plates/coils	483	483	100
CR strips/sheets/plates	143	143	100
sheets galvanized	39	39	100
HR channels	4	4	100
blooms	250	250	100
slabs	552	552	100
G. <u>Petroleum</u> (m. litres)	7,000	6,500	93

Source: Annual Report 1988-89 of the Experts Advisory Cell.

The present Government has launched a new privatization initiative which is much more ambitious than the previous approach. A Privatization Commission was created in January 1991 which is determined to fully or partially privatize a total of 115 PMEs over the next two years in three phases (for a list of these companies see Annex I). Without any doubt, there is now a strong political will and commitment to move ahead with the privatization process at a rapid pace. Yet it appears that again, like in the late



eighties. response from private investors does not meet expectations. While valuations have been prepared and bids invited for most PME's on offer, private investors have so far been reluctant to come forward with concrete take-over plans. Therefore, at the time the Mission took place, the deadline for submission of bids was extended by the Privatization Commission.

While there may be a number of special technical reasons for this slow response - such as insufficient information provided about the companies concerned or difficulties in obtaining bank guarantees in connection with company debts - the underlying cause appears to be a lack of preparatory company-level economic analyses which could provide a solid basis for private investors to take decisions and associated risks. Indeed, it is estimated that a significant number of PME's offered for privatization are not viable economically and should rather be considered as candidates for liquidation. For another portion of these PME's, sustained availability is doubtful in view of expected downward adjustments in the protection level - as foreseen under World Bank and IMF conditionality - which would expose them to greater competition.

The basic point thus is that pre-privatization company audits and the elaboration of rehabilitation concepts would be a critical input for any rational decision-making on the side of interested private parties. Through carrying out company-specific rehabilitation studies by neutral analysts it could be established which specific action would be required and at what cost to secure the long-term viability of individual enterprises. This is not to say that company rehabilitation should actually precede their privatization. Which sequence is more desirable, depends on the specific case. However, it is of paramount importance to demonstrate that there is a proven possibility to 'turn around' a loss-making PME by implementing a carefully designed rehabilitation programme.

The Mission thus is of the opinion that undertaking rehabilitation studies would be an essential ingredient and indeed a precondition for accelerating the government's privatization programme. UNIDO can offer a rich expertise in carrying out such studies which in the past have concentrated primarily on African countries and, in terms of industrial branches, on agro-processing industries. In these rehabilitation studies, UNIDO's approach has been to assess a company's actual and potential performance in the context of overall commercial, institutional and policy conditions prevailing in the concerned industrial branch. Within this broader framework - which, as pointed out above, is required to assess the degree and determinants of competition - company-level diagnostic rehabilitation surveys are undertaken and remedial action programme proposed which cover the entire range of financial, managerial, technological and marketing issues at the plant level.

The Mission discussed this proposal with the Ministry of Production as well as with the World Bank and received a very favourable response. The World Bank itself envisages to provide financial and technical assistance linked to the privatization programme and expressed great interest to cooperate with UNIDO in this context. In line with the general UNIDO rehabilitation approach outlined above, it is suggested in a first stage to focus on PME's belonging to the same industrial branch. A specific branch could be selected in consultation with the Ministry of Production and the Planning Commission.

The Mission also discussed the issue of industrial rehabilitation with the Industrial Development Bank of Pakistan (IDBP). IDBP, being the oldest development finance institution in the country, has a total loan portfolio of approximately Rs 9 billion. The Bank's loan operations have a strong focus on financing small- and medium-scale enterprises. In response to a government directive, it has recently launched a major promotional initiative for supporting rural industrialization. IDBP has just established a new Project Rehabilitation Department (PRD) and is in the process of elaborating a coherent project rehabilitation strategy. In an internal problem portfolio assessment, the Bank considers the share of 'irretrievable' cases as relatively small and argues that a proactive and well designed rehabilitation policy could achieve a significant turn around in the vast majority of cases. At the same time, IDBP sees the need to complement its own limited project rehabilitation capabilities with international expertise and would welcome assistance from UNIDO in this context.

b. Policy advice and operational assistance on industry-related environmental issues<sup>4</sup>

As a consequence of Pakistan's rapid, environmentally largely uncontrolled economic growth, the natural environment has deteriorated both in terms of a rapid exploitation of natural resources and various forms of pollution and waste-generation, above all in urban-industrial agglomerations such as Karachi. Pollution control equipment has been installed only in a small minority of industrial plants. Typically, plants are poorly operated and maintained leading to excessively high levels of effluents per unit of production. Surveys recently undertaken by the PCSIR found that virtually the entire industry in Pakistan is lacking any proper waste disposal system and that, accordingly, waste material is indiscriminately put into the soil and water without any prior treatment. Consequently, the levels of soil and water contamination have become very high in many areas resulting in health hazards both of a direct nature and related to agricultural production on polluted soils.

Among politicians and concerned industrialists alike a consciousness and awareness is gradually emerging of the environmental threats the country is facing and of the need to take preventive action rather than react by more costly ex-post damage control. It is increasingly recognized that industrial growth needs to be ecologically sustainable in the long run unless it is to undermine its very foundation. External assistance in various related fields is therefore actively sought. This was pointed out to the UNIDO Mission in many meetings so that strong counterpart motivation and commitment can be assumed to exist for corresponding technical assistance projects.

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<sup>4</sup> This section does not go beyond outlining the main issues and possible action to be taken. For details on the legislative and institutional framework and concerning technical questions of various types of environmental hazards, cf. International Union for the Conservation of Nature and Government of Pakistan, National Conservation Strategy, Karachi 1991, upon which this section draws to some extent. See also UNDP, Proceedings of the National Seminar on Environmental Protection and Industrial Pollution in Pakistan, (held at Karachi, 10-12 October 1989).

A basic framework of analyses and recommendations for such efforts is now available through the National Conservation Strategy (NCS) which, after three years work, was completed and published in 1991 jointly by the Government of Pakistan and the International Union for the Conservation of Nature (IUCN). From the findings of the NCS it is clear that at present in Pakistan there is a lack of environmental legislation in general and of industry-specific regulations in particular. With the exception of the Environmental Protection Ordinance of 1983, environmental legislation is "incidental", i.e. laws aimed at other purposes may have an "ancillary" environmental context.<sup>5</sup> With respect to industry, there is above all a lack of quantified pollution limits and standards. This in itself makes monitoring and enforcement of existing regulations virtually impossible. The situation is aggravated by the fact that due to both financial and technical constraints the equipment required for enforcing environmental protection regulations is generally not available.

In the NCS document it is pointed out that "the ability to choose policy paths that are sustainable requires that the ecological dimensions of policy be considered at the same time as the economic, trade, energy, agricultural, industrial and other dimensions - on the same agendas and in the same national institutions. That is the chief institutional challenge of the 1990s." (chapter 11, p.1). At present, however, the institutional preconditions for elaborating, implementing and monitoring environmental policies are very weak. The Environmental and Urban Affairs Division (EUAD) is understaffed and lacking special expertise in many fields; the same is true for the Environmental Protection Agencies at the provincial level. Furthermore, the key industry-related institutions such as the Planning Commission, the Ministry of Industry and also industrial development finance institutions do not command the expertise required to undertake environmental impact assessments of industrial projects.

From the preceding it is evident that technical assistance is urgently needed at all levels ranging from analytical inputs for the decision-making process to company-level operational assistance and finally to institutional strengthening and policy advice. More specifically, UNIDO assistance could be provided in the following areas.

First, there is a glaring lack of data concerning the pollution intensities of different branches of manufacturing. Such data would need to be collected and processed through an industry-wide survey with a view to identifying the critical polluting industries, the main types of industrial pollutants as well as areas of concentration both branch-wise and location-wise. The need to carry out such an industry-wide survey was specifically pointed out to the UNIDO Mission by EUAD.

Second, based on such data, priority areas for operational assistance should be designated. It is suggested, in a first phase, to select one or two major polluting branches of industry for this purpose and elaborate an integrated technical assistance package. This should, *inter alia*, comprise

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<sup>5</sup> The NCS document refers to the example of the existing forest laws which are aimed at regulating timber trading rather than ensuring forest conservation.

the following elements: establishment of waste treatment facilities;<sup>6</sup> studies on the technical and economic feasibility of retrofitting existing equipment to reduce pollution levels; identification of waste utilization and recycling potentials; and company energy audits with proposals for increasing the efficiency of energy utilization.

In elaborating such assistance programmes, it would be essential to closely co-operate from the outset with the industrial associations concerned with a view to ascertaining their full support. As proposed at the 1989 UNDP Environmental Protection Seminar, a special project could be launched for example with the Federation of Pakistan Chambers of Commerce and Industry (FPCCI) to promote industrial waste utilization. FPCCI, with assistance from UNIDO, could become a center of information and advice in this field. An Industrial Waste Exchange Newsletter could be regularly published and consultancy services could be offered to industries considering the utilization of industrial waste as input for their production process. Such consultancy services could be carried out by PCSIR which has already considerable expertise in this area, complemented by international experts as required. Furthermore, in the industrial branches selected by UNIDO for special assistance measures, government-private sector consultations could be initiated for emission standard setting.

Third, there is a great need for strengthening the capabilities of the specialized institutions in charge of environmental policies and regulation:

- Vast training requirements exist for staff of all agencies involved in environmental policies, planning and operations. This applies particularly to methodologies for environmental impact assessment of industrial projects; sourcing of information about low waste and clean industrial technologies; and, in view of the country's energy deficit, knowledge about effective energy conservation and recycling at the plant level;
- Expertise is needed on zoning approaches in regional planning with a view to arriving at rational land use patterns by demarcating zones for residential, agricultural and industrial use. Specifically, the potential design, location and operation of industrial estates with common waste treatment facilities for high pollution industries should be further investigated. At present, there is no environmental management of industrial estates in Pakistan.
- Policy advice would be required - drawing on other countries' experience - on the optimal use of economic incentives, such as pollution fees and tax/tariff privileges for clean technologies, as an alternative to directly regulatory measures.

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<sup>6</sup> Reference can be made in this connection to UNIDO's ongoing project on the treatment of tannery wastes in Kasur, DP/PAK/89/025. Experience gained with this project should be drawn upon in conceptualizing similar projects for other industrial branches.

Programmes and projects in the above areas should be designed and implemented in close co-operation with IUCN with the aim to complement their more general activities with industry-specific assistance packages.

c. Technology and skill development for industry

As outlined in chapter II of this report, Pakistan has embarked upon a process of deregulating its economy and exposing the industrial sector to more competition from abroad. Research and development efforts aimed at developing, promoting and disseminating efficient industrial technologies will have to play a critical role in this process. The Government is fully aware of the need to strengthen the basis for technological innovation through allocating more resources to R&D and providing appropriate incentives to private industry. The Ministry of Science and Technology, with assistance from the World Bank, has just finalized the draft document on a National Technology Policy which outlines the objectives to be pursued and instruments to be applied in the future to this effect. The document focusses attention on the relationship between technology and industry "because it is ultimately industrial firms that generate products and processes which in turn increase productivity in other sectors of the economy." The following issues to be addressed in the country's science and technology system are identified:

- orientation towards formal and unproductive - rather than commercial - research and development;
- negligible private sector role in R&D;
- high administrative overheads in government R&D institutes;
- absence of linkages between different components of the R&D system;

In general, the promotion of R&D and of efficient acquisition and diffusion of new technology is an area requiring strong government involvement. On the one hand, experience shows that competitive pressure in open markets is among the most powerful mechanisms to induce changes in products and processes and respond to opportunities offered by new, more efficient technologies. On the other hand, in many developing countries only insufficient information is available on the nature and range of new technologies on offer as well as on the terms and prices of acquisition. Furthermore, the developmental role of new technologies typically implies disparities in the perceived private and social returns of their introduction. Government policy and public institutions are thus needed to complement and reinforce the market mechanism. Indeed, it is hard to overestimate the role played by an efficient institutional network in promoting the development and diffusion of technologies in developing countries.

At present, Pakistan's institutional infrastructure for science and technology is not geared to providing a major stimulus to the country's industrial development. A variety of agencies exists which are supposed to provide science and technology inputs for industry. These include the Pakistan Council of Scientific and Industrial Research (PCSIR), the Pakistan Council of Appropriate Technology, the National Institute of Electronics, the National Institute of Silicon Technology, the National Centre for Technology Transfer (NCTT) and the recently established Scientific and Technological

Development Corporation.<sup>7</sup> These institutions under the Ministry of Science and Technology are supplemented by further industry-specific institutions such as the Textile Industry Research and Development Centre (TIRDC), the Metal Industry Research and Development Centre (MIRDC) and others under the Ministry of Industries.

Obviously, the problem is not a lack of specialized institutions. Yet the existing ones are beset with grave difficulties, detracting from their potential effectiveness. These difficulties include staffing problems, partly caused by the higher attractiveness of private sector jobs; weak co-operation links between the various institutions, in particular those under MOST and other line ministries, as well as partly overlapping mandates; low capabilities in industry-related research and commercialization of research results; and lack of client-oriented regular diffusion of information about research undertaken and services available for industrial companies.

Remedial action on the last two issues is of immediate importance for attempts at strengthening interaction between R&D institutions and industry. Industrial companies are to be encouraged to demand research services; universities and other research institutions in turn should pursue more industry-related research. The lack of such co-operation appears to be a result partly of traditional attitudes and partly of weak communications links between the actors concerned. Transfer agencies, i.e. agencies concerned with the commercialization of research results and the design of industry-relevant research programmes, could play a key role in overcoming some of these barriers.

The Government has now launched an initiative to streamline and rationalize the existing set of R&D institutions with a view to making optimal use of the country's scarce technology development capabilities. This, inter alia, involves an evaluation of existing institutions and their work programmes against commercial criteria. Assistance from UNIDO is being sought in this context. Apart from the ongoing MIRDC restructuring project,<sup>8</sup> the Mission has been requested by MOST to consider the provision of technical assistance in the following fields:

- Advisory services are required for MOST's Technology Policy Cell which has been created as unit responsible for the formulation and implementation of policies related to science and technology. Specifically, a diagnostic study would be needed of the activities and performance of PCSIR as they relate to industrial development. There is a widely shared opinion now in the country that the costly work programmes of PCSIR are to a large extent

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<sup>7</sup> This new corporation has been set up with Rs 20 million as seed money to commercialize processes and products developed by R&D institutions within the country.

<sup>8</sup> Under this project (PAK/90/020/A/01/37), MIRDC's performance is critically reviewed and recommendations are developed to enhance the commercial orientation of MIRDC and strengthen its industrial advisory and training capabilities.

carried out totally separated from the application needs and potentials of industrial clients and thus can no longer be economically justified. Therefore, a restructuring and reorientation of PCSIR would be called for with a view to strengthening its applied research and its overall commercial relevance and impact. Similarly, advice is sought on how to strengthen the role of NCTT in promoting the transfer of technology to private industries.'

- MOST is planning to establish a number of incubation centres in existing and forthcoming industrial estates to provide technological, managerial and financial assistance packages to new industrial companies, particularly in the electronics industry. In this context, assistance from UNIDO in designing and operating such centers - based on experience gained in other countries - has been requested.
- Finally, an in-depth study was proposed to be undertaken on future industrial training requirements in response to emerging new technologies, particularly with respect to industrial automation. This would also involve recommendations concerning a more efficient country-wide vocational training system. The latter is a critical element in applying new technologies. Even countries with a strong scientific elite will have difficulties in diffusing new technologies unless they develop a high level of general technical training.

#### 4. Sub-sector Focus

##### a. Textiles industry

The textiles and clothing industry is among Pakistan's most important branches of manufacturing regardless of the specific indicators considered. At the end of the 1980s, it accounted for almost 30 per cent of total manufacturing employment, close to 20 per cent of total manufacturing value added and almost 60 per cent of total export receipts. Within the overall textiles and clothing industry, cotton based products predominate and generate about 60 per cent of all textiles industry export earnings if leather goods and carpets are excluded (Table 6). It is significant that during the early 1970s and again in the boom period of the late 1980s Pakistan ranked first in the world as exporter of cotton textiles. More specifically, the country is the world's largest cotton yarn exporter (with a share of 22 per cent of world exports in 1987) and the third largest exporter of raw cotton. The industry, however, has remained globally insignificant as exporter of garments, indicating that most of the country's textile industry is concentrated in early stages of the whole processing chain.

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\* UNIDO has already prepared terms of reference for a corresponding project formulation mission.

Table 6. Textiles industry export earnings, 1989/90-1990/91  
(in million US \$)

Product group	Export value	
	1989/90	1990/91
Cotton yarn	833.7	1,183.0
Cotton cloth	559.0	675.8
Ready-made garments	393.7	497.0
Made-ups	78.2	108.9
Towels	129.8	129.4
Bed wear	190.8	246.2
Knitwear	273.7	333.6
Other cotton products	158.9	73.0
<b>Total cotton products</b>	<b>2,617.8</b>	<b>3,246.9</b>
Art silk and synthetic textiles	212.0	347.2
Share of cotton products in total exports	52.8	52.9
Share of textiles products in total exports	57.1	58.6

Source: Export Promotion Bureau.

In overall terms, Pakistan's textiles and clothing industry has a dualistic structure with a large-scale organized sector concentrated in spinning activities and a highly fragmented cottage/small-scale sector predominant in downstream activities ranging from weaving to garment making. The number of fully integrated production units has remained very limited. Cotton spinning which is by far the largest activity has experienced significant expansion and modernization in the wake of the 1985-87 deregulation measures and in response to increasing international demand for cotton yarn. Revitalization and investment efforts have brought the total installed capacity of existing 230 textiles mills to 4.5 million spindles and 52,000 rotors of which 86 per cent and 90 per cent, respectively, were operational in December 1988.

While the recent introduction of new advanced technology in spinning has raised the international competitiveness of this sub-sector, it has also accentuated the lagging position of the weaving sub-sector. In the weaving of cotton cloth, the formerly dominant position of the large-scale mill sector has been significantly eroded. From a production peak of 685.3 million square metres in 1970/71, its output has declined to less than 40 per cent of that figure in recent years. The number of looms was almost halved during the period. The small-scale power loom sector, which now provides 88 per cent of the cotton cloth output, owes its strong growth to incentives made available in 1968, such as excise tax exemption for units with up to 4 power looms. Under these circumstances, there has been very little investment in the large-scale mill sector, and most equipment is now obsolete resulting in product quality suffering. The number of shuttleless looms (which in many other developing countries now account for the majority of installed loom



capacity) is only slowly increasing. They are estimated to account for approximately 2 per cent of the total number of power looms in 1988/89.

Overall, a situation has thus emerged in which unorganized small-scale units generate the bulk of the country's cotton cloth production. They produce mostly low value-added grey cloth of inferior quality, often face a scarcity of good quality yarn and lack institutional finance for modernization efforts.

Of total cotton cloth production, about 45 per cent is consumed locally and 55 per cent exported. About two thirds of these exports is in the form of fabrics while the remaining one third is exported after further processing into finished products, viz. ready-made garments, towels, hosiery and others. Export earnings from finished products have increased at a high rate (33 per cent per annum between 1977/78 - 1987/88) yet have remained almost insignificant when compared with other South and Southeast Asian countries. Above all, they are concentrated in the low quality, low price market segment: The export value earned per unit of cotton shirts by India - which in turn is lagging behind most Southeast Asian countries - is almost six times as high as for Pakistan (US \$4.0 as compared to US \$0.6 in 1985).

Given that textiles and clothing exports are subject to MFA quota regulations in Pakistan's key export markets, the low unit export value is a major impediment to achieving higher export earnings. Assuming the continued application of import quotas, there are only two ways to increase the export value of textiles products: the first is to diversify exports geographically towards a higher reliance on non-quota markets; the second is to diversify product-wise towards better quality and thus higher value added items. At present, however, Pakistani exporters are unable to fully utilize the quotas allocated to them which is as good an indicator as any of the lack of competitiveness, particularly of large segments of the clothing production. "Primarily because of the inadequate in-house designing capabilities and the lack of availability of the appropriate fabrics and trimmings, exports of girls' jackets, suits, dresses and skirts have been limited and Pakistan is able to utilize only a fraction of its quotas in these products ... Also the garments exported by Pakistan are one of the lowest priced in the trade because of uneven quality of cloth, poor stitching and designing, lack of standardization, absence of quality controls and poor marketing. Thus there is considerable potential for increasing export earnings by improving quality and price." (ADB 1991, pp. 133-134).

To sum up, the textiles and clothing industry in Pakistan is characterized by an excellent cotton resource base, a strong spinning sector and an impressive export performance in cotton yarns and, to a lesser degree, cotton cloth. At the same time, the industry's structure is unbalanced in various ways:

- The modernized, large-scale spinning capacities are not matched by the traditional, largely cottage-based weaving sub-sector which is in dire need of technological upgrading.
- The capacity expansion in primary processing activities has not been accompanied by a sufficient expansion of dyeing and finishing facilities largely confining the country to exporting low value-added grey cloth.

- Despite the existing resource base and comparative cost advantages, Pakistan has not emerged as a significant competitor in international garments markets. This holds true specifically in comparison with other South and Southeast Asian developing countries which - without a favourable natural resource base - have been far more successful.

Policy-makers and industrialists alike are aware of the fact that the country's textiles and clothing industry has fallen behind in international competition as its existing assets and its great development potential have not been translated into actual competitiveness. The problem has now essentially become to catch up with more advanced competitors. This challenge is facing the country's industry at a time of sweeping changes in international textiles/clothing markets which redefine the context, nature, forms and intensity of competition in virtually all market segments. The most significant of these changes can be summarized as follows:

- technological changes: In the last 10-15 years, all stages of the textiles/clothing production chain have been subject to dramatic innovation. While this applies more to the textiles sub-sector (e.g. automatic opening room equipment; open-ended and jet spinning; shuttleless looms; computer-controlled dyeing), it is also true for garments manufacturing. In the latter sub-sector, innovation has so far concentrated on the pre-assembly stages (e.g. CNC cutting systems and CAD systems) yet is also expected to have a major impact in the future in sewing equipment;
- market changes: There has been a clear tendency for standardized, mass-produced items to decline and for products based on rapidly changing fashions and designs to increase in importance. Markets have become highly segmented, product cycles have shortened, and non-price competition has grown - all calling for more flexibility and higher adjustment speed on the part of producing companies;
- organizational changes: First, organizational structures and management styles have changed within many leading companies, in particular in the developed countries (e.g. total quality control, just-in-time inventory systems, group technology). Secondly, along with these changes, inter-company relationships have also been modified with buyer-supplier transactions now often being of a more long-term, comprehensive nature introducing an element of trust and stability.

The changes and innovations outlined above - though emanating primarily from developed country producers and markets - are having a great impact on the global textiles and clothing industry. They have spread already to many of Pakistan's immediate competitors in Southeast Asia and will require a strategic response also from the Pakistani industry if it is to regain its competitiveness.

In accordance with the preceding analysis, it is suggested for future technical assistance efforts in the textile sub-sector to concentrate

primarily on downstream processing activities and related human resource development requirements.<sup>10</sup>

- The finishing segment is among the weakest links in Pakistan's textiles production chain. Special attention needs to be given to building up modern dyeing and printing facilities, possibly through promoting joint ventures with foreign participation. It has been estimated<sup>11</sup> that finishers in Pakistan are about 5 to 8 years behind their Asian competitors in installed technology and about 8 to 12 years behind in technical skills and know-how. Most firms are unaware of major new trends and there is a need to upgrade both process controls and installed technology. An efficient finishing segment would indeed be of critical importance in increasing the value added and international competitiveness of textiles products in the country. It represents a link between the more technical parts of the production process and the marketing and fashion demands of the market. An upgrading of the technologically outdated finishing capacities would also reduce cotton import requirements within growing sub-contracting arrangements through a better utilization of domestic cotton.

- As regards textiles-related human resource development, an in-depth assessment of existing training facilities would need to be undertaken to identify the most essential requirements. There is a general consensus between all parties involved that the few existing institutions are in a dismal state. Specifically, this applies to TIDRC in Karachi, the National College of Textiles Engineering in Faisalabad and the Shahdara Institute of Textiles, all of which are suffering from completely outdated equipment and lack of confidence and support from the private textiles industry. As a consequence, the All Pakistan Textile Mills Association (APTMA) is planning to set up their own Textiles College. At the same time, discussions are ongoing between the Government and APTMA concerning the latter's possible take-over of the Faisalabad College.

Apart from this overall assessment, there is an urgent need to establish a Garments Design and Marketing Institute especially with a view to enhancing the export competitiveness of Pakistani garments producers.<sup>12</sup> Inter alia, this institute could offer CAD

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<sup>10</sup> This recommendation is in line with the findings of the 1988 IMG Textile Subsector Study.

<sup>11</sup> Ibid.

<sup>12</sup> This is also one of the recommendations given in ADB 1991.

system services to small- and medium-scale enterprises to enable them to optimize pattern making and cloth utilization.

- The Mission's proposal to organize a Textiles Strategy Roundtable was strongly supported by the Ministry of Industries. This roundtable meeting would primarily be aimed at undertaking a comparative assessment of the industry's strengths and weaknesses as perceived against the performance of competing countries in South and Southeast Asia. The meeting would be attended by government representatives, private industrialists, representatives from textiles industry-related support institutions and regional textiles industry experts. It could be held around mid-1992 so as to utilize its findings and recommendations as input for designing a large-scale technical assistance project.

The Mission was informed that a textiles industry study is being prepared by the Japan International Cooperation Agency (JICA). The report which is expected to be available in early 1992 should be taken into account as further source of information for identifying future technical assistance needs.

b. Leather industry

The leather and leather products industry is one of the most important industrial branches in Pakistan making significant contributions to a number of key development objectives. The industry is particularly labour-intensive (directly employing more than 200,000 workers), adds value to domestically available raw materials, is regionally highly dispersed and has become a substantial foreign exchange earner. Indeed, with a share of 11 per cent in total export earnings (Table 7), the leather and leather products industry is second only to cotton textiles in this respect. The industry generated export earnings of Rs. 11.5 billion in 1989/90 of which almost one half (48 per cent) was accounted for by various leather products with leather garments taking the lion's share (30 per cent).

The Pakistani leather and leather products industry has, during the last decade, made great progress. The industry basically used to be an exporter of raw hides and skins and semi-processed leathers but has successfully converted its operations towards higher value-added finished leathers and leather products such as leather garments, gloves, sport goods and other leather goods. This transformation has required deep structural changes as well as large investments from the private sector.

Pakistan is in the favourable position of having a large domestic animal population of cows, buffalos, sheep and goat and a well developed tanning industry capable of producing good quality finished leathers which could be utilized to a larger part for the production of various export quality leather products, including footwear. The Government, through LIDO, is providing suitable incentives to encourage the leather and leather products industry sector, including customs duty-free import of raw hides and skins and incentives for the development of livestock through cattle and sheep breeding farms. This is expected ultimately to increase the hides and skins availability in the coming years.

Table 7. Leather industry export earnings, 1975/76 and 1989/90

Industry	Export value			
	1975/76		1989/90	
	Rs. mill.	%	Rs. mill.	%
Leather	626.67	78.9	6,006.05	52.2
Leather footwear	21.78	2.7	94.88	0.8
Leather gloves	39.60	5.0	779.21	6.8
Leather garments	15.84	2.0	3,411.17	29.6
Leather sport goods	82.70	10.4	1,123.52	9.8
Other leather products	7.92	1.0	90.75	0.8
<b>SUB-TOTAL</b>	<b>794.54</b>	<b>100</b>	<b>11,505.57</b>	<b>100</b>
Sub-total as share of total export value		7.1		10.8

Source: Economic Survey 1990-91; Leather Industry Development Organization, Profile on Leather Industry in Pakistan 1991.

The tanning industry represents the largest activity in the sector and provides the basic material for the domestic leather products manufacture and finished leather for export. The tanning industry is already capable of producing good quality finished leathers for the various leather products groups and is the largest export earner within the lather sector. Over the last decade, the Government has provided various incentives which encouraged the tanning sector to invest on a large scale in applying the most advanced technology for producing high quality exportable finished leather.

The footwear sub-sector is the main consumer of leather material channeled to the domestic market. Export figures reflect a minimal share of leather footwear despite its wide base of production facilities. Footwear manufacturing at large-scale level is undertaken by three major companies and their situation does not encounter serious problems as far as production, marketing or material are concerned. Some 20 factories are operating on a medium-scale level with production mainly oriented towards cheap grades of footwear using locally made components of modes quality. Managerial capability as well as shortage of trained production supervisors and formen are the main factors affecting the performance of this segment of the sector.

Approximately 80 per cent of the leather footwear are made by small-scale and cottage type units which are widely scattered all over the country and oriented towards manufacturing fashion-like shoes applying hand-making techniques. Their performance is seriously affected by usage of unsuitable material and components, lack of standardization and design, pattern making and pattern grading deficiencies. The industry is mainly concentrated around Lahore where the Gujranwala Institute is located; in Hyderabad where a new centre assisted by UNIDO is coming up; and around Karachi. The Karachi area is producing ladies footwear and with some assistance could be ready to enter export markets.

Leather sports goods, such as soccer balls, footballs, volley balls, handballs, etc., are manufactured in the Sialkot area, involving about 200 small- and medium-scale production units totally oriented towards export markets. The sub-sector operates by applying manual techniques within successful sub-contracting arrangements. Its main problem lies in the manufacture of specific types of leather suitable for the very specific needs of manufacturing sports goods. More than 50 per cent of leather supply for sports goods is manufactured with the absence of technology and testing facilities needed for the specific quality requirements in tanning and finishing. Organization of the production and lack of production planning as well as simple quality control are other areas of constraint in the sub-sector's activity. As a result, the industry tends to manufacture and export low priced products mainly because of raw material constraints and lack of process control while workmanship skills are available.

Leather gloves are manufactured mainly for export and consist of industrial gloves and sports gloves where the production is concentrated in Sialkot, which accounts for 70-80 per cent of the country's output. Production of fashion or dress gloves as well as high quality golf gloves is not yet developed in Pakistan despite attractive marketing prospects and available local material. Greater skills are also needed for this particular line which is not available in the country where the sub-sector involves 250 factories only in Sialkot.

Leather garments are manufactured on a small- or medium-scale and all production is oriented towards export and is concentrated mainly in Karachi. There are some 40 factories manufacturing leather jackets, coats and other fashion articles and some of the units are annexed to large skin tanneries. Due to extensive promotional activities and the market increase in the demand for leather garments, the sub-sector has shown remarkable growth in production facilities and exports over the last five years when the export value has increased by 600 per cent and the number of factories has shown a tenfold increase. The manufacturing pattern has switched from a tailor type operation with absence of division of labour to a process line. This new situation generates an urgent need for intensified technical assistance in management, production planning and production control aspects.

For more than a decade, UNIDO has provided significant technical assistance to the Pakistani leather and leather products industry. Past UNIDO projects have to a large extent been instrumental in providing the training and technology transfer which have induced the industry's restructuring and upgradation. This applies above all to the leather garments production where UNIDO assistance has been the key to the successful transfer of know-how. UNIDO assistance was started by upgrading the Gujranwala Institute of Leather Technology and establishing a Leather Garment Training Center in Karachi. The latter was then transformed into a Leather Products Development Center with a sub-center in Sialkot specializing on leather gloves and sports goods.

At present, three UNIDO projects are under implementation in the leather industry. They include the setting up of the Hyderabad Leather Footwear Center which is primarily aimed at assisting small-scale shoemakers through a common facility and training center; the establishment of a leather finishing facility in Kasur; and, as a supplementary effort, a common effluent treatment plant in Kasur.

It was emphasized by UNDP that - based on technical assistance successfully provided in the past - further UNIDO activities benefitting the country's leather and leather products industry would be called for in the next country programme. At the same time, there was a need to assess the performance of the entire branch and prepare a solid analytical basis for elaborating an integrated assistance project. Therefore, a study was proposed to be undertaken of the development prospects and constraints and the resulting technical assistance requirements of the industry. Specifically, such a study would be aimed at:

- reviewing the performance of the Pakistani leather and leather products industry in the light of international technology and marketing trends, particularly in terms of output (domestic market/export markets), production process (employment, technology, efficiency, support industries), inputs (domestic raw materials/imports), competitiveness (prices, quality) and profitability;
- collecting information on and assessing Government policies (priorities, incentives, locational policies, support measures such as training assistance) and the related institutional framework;
- evaluating past external assistance (multilateral/bilateral); and
- elaborating a comprehensive technical assistance programme with a view to removing crucial constraints in various stages of the production process to strengthen export competitiveness.

This study should be undertaken in the first half of 1992 and could possibly be financed under TSS-1 resources.<sup>13</sup>

#### c. Engineering industry

The engineering industry in Pakistan encompasses 1,900 registered enterprises, with an annual production of around Rs 17.5 billion worth of engineering goods. The industry employs around 205,000 persons. The local production of engineering goods grew sharply over the years since 1970. There has been a steady upward trend in the production of almost all categories of engineering products (see Table 8). A striking increase of output was recorded by the electronics and transport equipment industries in 1987/88.

The range of engineering goods now being produced includes diesel engines, cars, agricultural machinery, machine tools, textile machinery, household and industrial sewing machines, radios, household appliances, road rollers, concrete mixers, bulldozers, sugar-cane crushing machinery, overhead

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<sup>13</sup> It is noted that ESCAP is also planning to undertake a brief leather industry survey in the context of a regional trade promotion project. This does not involve, however, an in-depth assessment of the industry. The findings of the ESCAP survey will of course be taken into consideration where applicable.

travelling cranes, pumps, printing and book-binding machinery, office machines, needles, oil expellers and other edible oil extraction plants, flour/rice mills, fish trawlers, food processing machinery, cement plants, ice plants and cotton ginning plants.

Table 8. Local production of engineering goods, 1970/71-1987/88, selected years  
(Millions of rupees)

Product group	1970/71	1981/82	1985/86	1986/87	1987/88
Metal products	254	992	1,768	2,033	2,338
Non-electrical machinery	133	2,048	2,040	2,244	2,468
Electrical machinery	365	3,118	2,860	3,289	3,782
Electronics	200	785	1,090	1,199	2,380
Transport equipment	352	2,623	4,625	5,180	6,600
<b>TOTAL</b>	<b>1,314</b>	<b>9,566</b>	<b>12,383</b>	<b>13,945</b>	<b>17,568</b>

Source: UNIDO 1990.

An important role in the development of engineering industries has been played by the Pakistan Industrial Development Corporation (PIDC), established in the 1950s, and the State Engineering Corporation (SEC), established in 1974. These public-sector corporations were responsible for the establishment of several large enterprises, such as the Pakistan Machine Tool Factory. Apart from the public sector industrial enterprises, there are a number of large foreign-owned enterprises (in automobiles and electrical equipment, especially) and a large number of relatively small- and medium-sized engineering concerns in Pakistan. More than half of the small- and medium-sized engineering establishments covered by the 1984/85 Census of Manufacturing had asset values below Rs 1 million (\$50,000). In the fabricated metal and non-electrical machinery industries, where capital investments are not necessarily high, the majority of firms had asset values below Rs 250,000. Many informal sector enterprises can also be classified under engineering. The 1984/85 Census of Manufacturing reports only 1,136 registered enterprises, whereas it may be conservatively estimated that the number of engineering workshops throughout the country would approach 100,000. The overwhelming majority of these are engaged exclusively in the provision of repair and maintenance services.

Concurrent with the rising production trend in engineering goods, imports also rose significantly in the late 1980s. Imports stood at Rs 23,355 million in 1987/88, compared with Rs 19,225 million in 1985/86, representing an average annual increase of 7 per cent. Currently, imports account for 60 per cent of the total supply. The conspicuous growth in textile machinery imports in 1987/88 was an indication of the modernization efforts in the branch (such as the introduction of shuttleless looms).

The major industrial financing corporations sanctioned investment projects worth Rs 9.6 billion for the engineering sectors (including basic metals) during the period 1982-1987 which was broadly in line with the Sixth



Plan estimates. Much of this investment represents money borrowed from the Development Finance Institutions and banks. New investment of privately owned funds within the engineering sector remains small. The self-financing ratio of engineering firms registered at the Karachi Stock Exchange averaged only 10.7 per cent annually over the 1980-1986 period against, for example, 47.8 per cent for chemicals. Presently the establishment of a small engineering firm requires a minimum capital expenditure of between Rs 200,000 and Rs 300,000. Therefore, entry into the engineering industry is beyond the means of most small entrepreneurs.

In the future, the share of private enterprise is to expand in stages. Investment requirements for the 1988/89-1992/93 period have been estimated at Rs 23.1 billion, of which Rs 22.0 billion is to be in the private sector. It is not, however, clear whether these estimates take account of the large amount of excess capacity in the domestic engineering industry: average capacity utilization is only 40 per cent. This is partly a result of the low competitiveness of many Pakistan engineering products, which lack an edge over imports. In such cases, investment may be required to improve quality. The problem is partly a shortage of intermediates, and in this case the expanding volume of production and range of products of Pakistan Steel could go some way to solving capacity utilization problems.

In general, the levels of production efficiency and product quality in Pakistan's engineering industry are rather low. Manufacturing technologies currently in use are mostly suited only for the production of simple components and shapes and of low-precision products. More complex and sophisticated products are confined to assembly operations depending heavily on imported parts and components. Subcontracting is not carried out to a significant degree. Most companies instead rely on in-house jobbing operations with consequent low levels of specialization and non-realization of economies of scale.<sup>14</sup>

The weak performance of the country's engineering industry is reflected in its low and generally stagnant export performance. The only notable exception are surgical instruments. In this product group, Pakistani companies have traditionally been very strong in penetrating foreign markets and managed to achieve significant export increases in the 1980s (Table 9). Other exported engineering goods include, *inter alia*, sewing machines, agricultural machinery, power looms and some simple general purpose machine tools. The value of these export items has remained marginal, however.

The above-mentioned widespread lack of sub-contracting and specialization can be seen as one of the major structural weaknesses of the country's engineering industries. In other words, there is a lack of backward linkages of large prime manufacturers with domestic supplying firms, the so-called 'supporting industries'.

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<sup>14</sup> Cf. IMG 1988, Volume 3., chapter 6.

Table 9. Export value of engineering products, 1980/81 and 1988/89  
(in \$ million)

Product group	Export value	
	1980/81	1988/89
Surgical instruments	27	67
Cutlery	7	7
Non-electrical machinery	6	8
Electrical machinery	4	2
Transport equipment	16	3
Others	18	17
<b>TOTAL</b>	<b>78</b>	<b>104</b>

Source: ADB 1991.

The concept of supporting industries has recently received much attention, especially in the Southeast Asian countries where the building up of strong supporting industries is among the priority industrial policy issues. The term 'supporting industry' is not clearly defined yet typically refers to the following categories of industries:

- At the core of the support industry concept are those industries producing parts and components. They tend to belong to the private sector and are the domain of small- to medium-sized enterprises. Often they are linked to prime manufacturers by sub-contracting arrangements as is predominantly the case in the automotive sector.
- A less obvious albeit essential segment of supporting industries are the producers of machinery and equipment, be it moulds and dies for plastic or rubber processing industries; woodworking machinery; industrial pumps etc. By definition they are part of the engineering sector although they serve, of course, other industrial branches as well.
- Finally, industrial services, can be included as a third support category. Such services can either be provided by other enterprises (e.g. packaging or design) or by specialized institutions (e.g. training or quality control) which can be operated by private associations or public sector entities. Further, engineering services would be included among industrial support services.

The strategic role of strong supporting industries for efficient industrial development can hardly be overemphasized. They contribute to reducing the import dependency of industrial production (which, given Pakistan's high current account deficit would be very welcome), create additional employment, link large- and medium-sized companies through sub-contracting arrangements, broaden the basis of domestic entrepreneurship and often lead to a higher utilization of domestically available natural

resources. Without due attention to supporting industries, there is a danger of overemphasizing the promotion of assembly operations and neglecting capability generation in small and medium companies supplying the required production inputs.

This is not to say that a policy of maximizing local content would be called for. Quite obviously, in a competitive world economic environment based on comparative advantages and specialization there should be reasonable limits to a strategy of import substitution and the raising of domestic content. After all, 'support' should not be regarded as a physical concept. Whether a supplying industry effectively 'supports' or rather 'weakens' a user industry, is a question of the former's production costs and product quality as compared to a potential sourcing from the world market.

The Pakistani Government has launched a number of schemes aimed at increasing the local content of engineering industries. These so-called deletion programmes, e.g. with respect to automotive industries, specify items which have to be manufactured locally and prescribe target local content ratios to be reached in the course of time. In general, this approach has led to only little progress, however, in indigenizing production. For example, Pak Suzuki Motor Company - a joint venture between Pakistan Automobile Corporation and Suzuki Motor Company of Japan producing 800 cc vehicles - has achieved a local content ratio of only approximately 30 per cent while the target had been set at 80 per cent. One specific shortcoming can be seen in the fact that the deletion programmes have been formulated in physical terms rather than in value-added terms, i.e. they specify individual components to be produced locally rather than domestic value added ratios to be achieved. Value-oriented local content targets would be preferable, however, as they leave the detailed localization decisions to the sourcing companies themselves and thus would tend to favour those parts/components which the manufacturers judge to be most competitive as compared to imports. They would also provide the flexibility to allow for product design changes which are essential to stay competitive.

The present report cannot provide a detailed review of various types of supporting industries and their performance in Pakistan. In general, the country's supporting industries have been found to suffer from the following shortcomings:

- shortage of trained skilled labour;
- outdated production technology and, as a consequence, lacking capabilities to produce goods of high and even quality;
- inadequate standardization and quality control facilities;
- limited knowledge in selecting and using appropriate materials and in responding to changing materials composition of products (such as the substitution of plastic parts for metal parts);
- limited design and innovation skills to develop new products or adapt foreign designed products to the requirements of the domestic market.

In the light of the above analysis it is strongly recommended to focus future technical assistance in the engineering sub-sector on the development

of selected supporting industries.<sup>15</sup> In this context, moulds and dies manufacturing should be an area of special attention. Metal moulds and dies are essential to downstream industries producing a wide range of plastic, metal, rubber and glass products. The moulds and dies industry, therefore, is a key supporting industry on which many domestic industrial costumers, presently sourcing from abroad, could rely. Moreover, with the expected progress of the country's engineering and chemical industries, demand can be assumed to grow significantly in the future.<sup>16</sup>

While it is beyond the scope of this report to suggest specific project modalities, it may be suitable - in view of the diverse and specialized assistance requirements of moulds and dies manufacturers - to launch an 'umbrella project' in this field. Under such a project, assistance in designing and producing moulds and dies could be provided to individual companies upon request. The branch-specific industry association could act as immediate counterpart involved in screening and processing of individual requests for assistance.

#### 5. Private Sector Involvement

As outlined in chapter II of this report, private industries have assumed a dominant role in Pakistan's industrial sector and account for the bulk of manufacturing production, employment and investment. Their significance is to be further enhanced in the years to come through deregulation and privatization policies pursued by the Government. Considering the growing role of the private sector and the massive demands on restructuring and reorganizing of private enterprises, it appears crucial in the years to come to increasingly conceive technical and other co-operation programmes not solely directed at the various authorities and public sector institutions within the government machinery. Rather, the multilateral and bilateral agencies dealing with industry should strengthen their work directly with and for private industry in Pakistan including specifically industry associations, industrial consultancy associations, industry-related technological and other research institutes, etc. Although co-operation would still be conceived within the framework of the general Government policy and co-ordinated co-operation programme, assistance should attempt to reach the end user of its services in the manufacturing industry directly. This would no doubt result in greater efficiency of deliveries of the services and enhance their operational nature. It will certainly also increase the

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<sup>15</sup> In the automotive industry, UNIDO is already providing assistance to PACO vendor companies, *inter alia*, through establishing quality control facilities for automotive parts (DP/PAK/83/014).

<sup>16</sup> Similarly, the 1988 IMG study (Vol. 3, p.95) concludes that "there are certain basic design skills that the subsector must develop. The priorities here are the die designs for all sorts of pressing and forming operations, and the mould designs for the foundry industry ... The development of these basic design skills having extensive downstream applications will stimulate progress towards the development of complementary skills to design components and parts."

counterpart commitment of the recipient involved. At the same time, it will require significant adjustments of procedures, and implementation practices.

Increased direct co-operation with private industry will have implications for future patterns of project financing. So far, UNIDO's activities in Pakistan have been predominantly financed through the UNDP country programme and associated UNDP sources. In the future, also other financial sources would need to be utilized for UNIDO's expanding work in the country. Special trust funds and special purpose contributions by various governments, banks and industrial companies, both in Pakistan and abroad, should be seen as additional options.

Indeed, Pakistani private industry should be able to increasingly contribute to finance technical assistance which is directly beneficial to industrial enterprises, e.g. in the framework of UNIDO's programme of self-financed trust funds. Obviously, it will take some time to fully develop such innovative forms of co-operation. They would need to be designed in such a way as to ensure the co-ordination and monitoring through relevant Government authorities and UNDP. Such new programmes would also offer opportunities for the involvement of other bilateral and multilateral donors as witnessed by UNIDO's past co-operation, in the context of trust fund agreements, with the Danish International Development Agency, the World Bank and the International Development Association. Both the Industrial Development Bank of Pakistan and the Federation of Pakistan Chambers of Commerce and Industry have expressed to the UNIDO mission high interest in drawing upon such schemes in the future.

#### IV. OUTLOOK ON FOLLOW-UP ACTIVITIES

As a consequence of the declining degree of direct Government intervention, industrial development in Pakistan will be increasingly driven by market forces and competitive pressures which in turn requires a high degree of flexibility from all actors involved in this process. The Mission is of the opinion that this need for flexibility as well as the level of industrial development achieved in the country ought to be reflected in the nature of external assistance, both in terms of the forms of delivery and the end users:

- First, technical assistance thus needs to be formulated and delivered as flexible response to rapidly changing trends and constraints in the key branches of industry so as to enable timely support to arising critical needs;
- second, technical assistance may have to be increasingly directed to the private sector entities such as industrial enterprises, chambers of industry and commerce and regional and sectoral industry associations as well as to the banking sector in its capacity as provider of industrial finance (see also section III.5 of this report);
- third, increasing emphasis needs to be placed on the instrumental role of industrial development for the society's overall welfare. For example, the objectives of poverty alleviation and environmentally sound and sustainable development are intimately linked to the pattern of industrial development and will require more attention in the future;
- fourth, a wide range of bilateral and multilateral co-operation programmes are currently supporting the industrial development process in Pakistan. It is obviously an essential part of the subsequent detailed programming exercise to synchronize and use the synergic effect of the entire assistance efforts.

At this stage of the programming exercise, the Mission was asked to refrain from elaborating specific project concepts in order to first enable UNDP and the authorities concerned to review the report in its entirety and respond to the identified priority areas. Subsequently, UNIDO will certainly be pleased to provide its services for detailed technical project formulation work in the designated areas.

It is envisaged that a UNIDO programming mission be fielded to Pakistan in the first quarter of 1992. The composition of the UNIDO team will reflect the priority areas identified in the present report with a view to translating them into concrete projects. In addition, this programming mission will review assistance requirements in Pakistan's agro-processing industries, including food-, wood- and fish processing industries. Special emphasis will be placed in this context on the promotion of related small-scale industries, also in support activities such as village-level packaging facilities and fruit preservation. This programme element will have to be developed in close consultation with FAO and will take into consideration the recommendations of the July 1991 FAO programming mission report.

A N N E X I

PUBLIC MANUFACTURING ENTERPRISES  
IDENTIFIED FOR PRIVATIZATION

1. Nowshera Chemicals, Nowshera.
2. Pak Dyes & Chemicals Ltd., Daudkhel.
3. Swat Ceramics Company Ltd., Shaidu, Nowshera.
4. Antibiotics (Pvt) Ltd., Iskanderabad.
5. Kurram Chemicals Ltd., Islamabad.
6. Swat Elutriation Plant, Mingora.
7. Sind Alkalis Ltd., Karachi.
8. Ittehad Pesticides, Kala Shah Kaku.
9. Ittehad Chemicals, Kala Sha Kaku.
10. Nowshera PVC Company Ltd., Nowshera.
11. Pakistan PVC Ltd., Gharo.
12. National Fibres Ltd., Karachi.
13. Balochistan Wheels Ltd., Lasbela.
14. Bela Engineering Ltd., Lasbela.
15. Al-Ghazi Tractors Ltd., Dera Ghazi Khan.
16. Trailer Development Corporation Ltd., Karachi.
17. Republic Motors Ltd., Karachi.
18. Suzuki Motorcycle Ltd., Karachi.
19. Bolan Castings Ltd., Karachi.
20. National Motors Ltd., Karachi.
21. Naya Daur Motors, Karachi.
22. Sind Engineering, Karachi.
23. Pak Suzuki Motors, Karachi.
24. Millat Tractors, Lahore.
25. Domestic Appliances, Karachi.
26. Cotton Ginning and Pressing Factory, Piranwala, Distt. Khanewal.
27. Harnai Woolen Mills Ltd., Harnai.
28. Indus Steel Pipes Ltd., Hyderabad.
29. Larkana Sugar Mills, Larkana.
30. Shahdadt Textile Mills Ltd., Larkana.
31. Quaidabad Woollen Mills Ltd., Quaidabad, Distt. Khushab.
32. Dir. Forest, Dir (NWFP).
33. Pak-Iran Textile Mills, Uthal.
34. Pak-Iran Textile Mills, Baleli.
35. Associated Cement Company, Rohri.
36. Dandot Cement Company Ltd., Dandot.
37. General Refractories Ltd., Karachi.
38. Javedan Cement Ltd., Karachi.
39. National Cement Ltd., Karachi.
40. Thatta Cement Company Ltd., Makli Distt. Thatta (Sind).
41. Kohat Cement Company Ltd., Kohat.
42. Wah Associated Cement, Wah.
43. Zeal Pak Cement, Hyderabad.
44. D.G. Khan Cement, Dera Ghazi Khan.
45. Gharibwal Cement, Gharibwal Distt. Jhelum.
46. Maple Leaf Cement, Iskanderabad.
47. Mustehkam Cement, Hattar.
48. Pak Cement, Iskanderabad.
49. White Cement, Daud Khel.
50. Karachi Pipe Mills Ltd., Karachi.
51. Pioneer Steel Mills Ltd., Muridke.

52. Quality Steel Works Ltd., Karachi.
53. Spinning Machinery Company of Pakistan Ltd., Lahore.
54. Textile Machinery Company, Korangi, Karachi.
55. Metropolitan Steel, Karachi.
56. Pakistan Engineering Company, Lahore.
57. Hevy Foundry & Forge, Taxila.
58. Heavy Mechanical Complex, Taxila.
59. Pak Machine Tool Factory, Karachi.
60. Pak Switchgear, Lahore.
61. National Petrocarbon Ltd., Karachi.
62. Enar Petrotech Services (Pvt) Ltd., Karachi.
63. National Refinery Ltd., Karachi.
64. Pakistan Steel Fabricating Company, Karachi.
65. Pak-China Fertilizer Ltd., Haripur.
66. Hazara Phosphate Fertilizer (Pvt) Ltd., Haripur.
67. Lyallpur Chemical & Fertilizer (Pvt) Ltd., Jaranwala & Faisalabad.
68. National Fertilizer Marketing Ltd., Lahore.
69. Pak-American Fertilizer Ltd., Daudkhel.
70. Pak-Arab Fertilizer Ltd., Multan.
71. Pak-Saudi Fertilizer Ltd., Mirpur Mathelo.

#### Ghee Mills

72. Crescent Factories Ltd., Chichawatni.
73. United Industries Ltd., Faisalabad.
74. Fazal Vegetable Ghee Mills Ltd., Islamabad.
75. Kohinoor Oil Mills Ltd., Kala Shah Kaku.
76. A&B Industries, Multan.
77. A&B Oil Industries, Karachi.
78. Burma Oil Mills, Karachi.
79. Chiltan Ghee Mills, Quetta.
80. Hydary Industries Ltd., Hyderabad.
81. Bara Vegetable Ghee Mills, Bara.
82. Dargai Vegetable Oil Processing Industries, Dargai.
83. Asif Industries Ltd., Shikarpur.
84. Kakakhel Industries, Faisalabad.
85. Morafco Industries, Faisalabad.
86. Sh. Fazal Rehman & Sons, Multan.
87. Suraj Ghee Industries, Sheikhpura.
88. Universal Vegetable Ghee and Oil Mills, Sheikhpura.
89. Sargroh Vegetable Ghee & Oil Mills, Faisalabad.
90. Bengal Industries Ltd., Karachi.
91. Maqbool Company Ltd., Karachi.
92. Wazir Ali Industries, Hyderabad.
93. Associated Industries, Nowshera.
94. Haripur Vegetable Oil Processing Industries, Haripur.
95. E&M Oil Mills Ltd., Karachi.
96. Khyber Vegetable Ghee Mills, Lahore.
97. Punjab Vegetable Ghee Mills, Lahore.

#### Roti Plants

98. SITE Roti Plant, Karachi.
99. Gulshan-e-Iqbal Roti Plant, Karachi.
100. Taimuria Roti Plant, Karachi.
101. Korangi Roti Plant, Karachi.
102. Gulberg Roti Plant, Lahore.
103. Baghbanpura Roti Plant, Lahore.



104. Roti Plant, Multan Road, Lahore.
105. Roti Plant, Ravi Road, Lahore.
106. Hyderabad Roti Plant, Hyderabad.
107. Roti Plant, Multan.
108. Roti Plant, Bahawalpur.
109. Roti Plant, Faisalabad (1).
110. Roti Plant, Faisalabad (2).
111. Roti Plant, Islamabad.
112. Roti Plant, Peshawar.
113. Roti Plant, Quetta.

List of Persons MetUNDP/UNIDO

Mr. Hans C. von Sponneck, Resident Representative  
Mr. Cornelius Klein, Deputy Resident Representative  
Mr. Mazahir Hussain, UNDP Adviser on Agri-Business  
Mr. Farhan Sabih, UNDP Programme Officer  
Mr. Jon Holten, UNIDO Country Director  
Mr. Thomas Wetzel, UNIDO Junior Professional Officer

Ministry of Industry

Mr. T.Z. Farooqi, Secretary  
Mr. Zafar Ali Naqvi, Joint Secretary

Ministry of Production

Dr. Muttawakal Kazi, Joint Secretary

Ministry of Planning

Mr. Tajamul Hussain, Chief (Industries)  
Mr. Mohammad Khan Achakzai, Joint Chief Economist

Ministry of Science and Technology

Mr. Abdul Rashid, Deputy Technological Adviser

Environment and Urban Affairs Division

Mr. Asghar Ali Awan, Deputy Secretary  
Mr. A.R. Khan, Joint Secretary

Manpower Division

Mr. Khaleque Ahmad Khan, Joint Secretary

Leather Industry Development Organization

Mr. Shujauddin Siddiqui, Director-General

Economic Affairs Division

Sheikh Mohammad Saleem, Joint Secretary

Export Promotion Bureau

Mr. A.A. Qazi, Director-General

Industrial Development Bank of Pakistan

Dr. Javed A. Ansari, Chief Economist

Federation of Pakistan Chambers of Commerce and Industry

Mr. Syed Nazar Hassan Shah, Vice-President  
Mr. J. Arshad, Secretary-General  
Mr. Yusuf Zia

International Union of Conservation of Nature

Mr. Nasir Dogar, Programme Administrator

Pakistan Institute of Development Economics

Dr. A.R. Kemal, Joint Director

World Bank

Mr. Abdullah El Maaroufi, Chief of Mission

Asian Development Bank

Mr. Jahed-ur-Rehman, Senior Project Implementation Officer

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