Chapter 2

Industrial Growth

2.1. Introduction

Uttar Pradesh's large size relative to other Indian states and the professed goals of its leaders and policy makers make it imperative for industries in the state to develop fast. However, the objective of faster industrialisation needs to be addressed by a strategically-oriented industrial policy. Often an important element of this task is determining which industries should receive favourable governmental treatment. Instances of Japan's Ministry of International Trade and Industry (MITI), promoting capital-intensive industries such as steel and automobiles during the 1960s, semiconductors, aerospace, biotechnology and ceramics during the 1970s and 1980s are successful examples cited by the advocates of this approach. The Taiwanese, Korean and Singapore governments have patterned their economic development after the successful Japanese model. They adopted an industrial policy that identified key domestic industries critical to their country's future economic growth and then formulated programmes to promote their competitiveness. Competition for private investment is not only strong among countries, but also among sub-national units. India is a union of 29 states of which the 17 largest states have a population of 20 to 100 million people and these compete for private investment.

During the last two decades (1980-2000), developing countries have undertaken widespread reforms to improve economic performance. While the reforms differ from country to country in their timing and breadth, the common changes fall into two groups. Stabilisation reforms refer to policy changes that aim to achieve macroeconomic stability through reduction of excess government spending and reducing excessive money growth. The other component of reform, structural reform or structural adjustment, refers to changes in the basic structure of the economy. The most important element in this involves reducing the extent of government involvement in the economy and increasing the role of the markets.

One of the other important tasks of reforms is to identify and remove all the bottlenecks to competition arising from past government policies, colonial era laws, outdated rules and bureaucratic regulations and procedures. Though in parts of the economy this should be sufficient to generate competition, there are other sectors such as physical infrastructure, where some parts are characterised by natural monopoly, which require regulatory structures to foster and mimic competition.

This chapter analyses the major issues related to industrial growth and physical infrastructure. Accordingly the discussion and analysis is organised as follows: Section 2.2 discusses the industrial policy environment in Uttar Pradesh which is followed by an in-depth analysis of the state's industrial economy in Section 2.3. Section 2.3 also presents an analysis of production, growth and competitiveness in the state, the unorganised industry sector analysis, factors affecting industrial growth and policy recommendations. Small-scale industries are discussed in Section 2.4. Finally Section 2.5 gives the concluding remarks.

2.2. Industrial Policy in Uttar Pradesh: An Overview

If Uttar Pradesh were a country, it would be the world's seventh largest. It is the most populous state of India and is host to one-sixth of the country's population. The large size of Uttar Pradesh is indicative of the large contribution that its manufacturing sector can make to the country's economic growth. However,

at present, the value added to the state's manufacturing sector is $ 4 billion (Rs. 143 billion at 1996-97 prices), roughly 40 per cent of that of India's most industrialised state, Maharashtra. This indicates that much of the potential is untapped. Further, there has not been any improvement in harnessing that potential. In the 1980s, the economy of the state grew at a rate of 4.8 per cent while industrial growth was 7.7 per cent, higher than the all-India rate of 6.9 per cent. In the 1990s, the rates of economic and industrial growth declined significantly to 3.2 per cent and 3.6 per cent respectively. The latter figure was much lower than the national average (6.6 per cent) for the decade.

TABLE 2.1

Sector-wise Growth of Real GSDP* in Uttar Pradesh and All-India (1980-81 to 1998-99) (For Uttar Pradesh till 1997-98)

(Per Cent)

	Industry		*Services*		*Agricultural and Allied Services*		*NSDP*	
	1980s	*1990s*	*1980s*	*1990s*	*1980s*	*1990s*	*1980s*	*1990s*
Rate of Growth								
Uttar Pradesh	7.7	3.6	6.4	4.2	2.5	2.1	4.8	3.2
All-India	6.9	6.6	6.4	7.5	3.1	3.4	5.4	6.1
Share in GSDP								
Uttar Pradesh	17	19	36	41	46	40	100	100
All-India	25	27	39	43	36	30	100	100

Source: NCAER database; growth rates estimated by fitting semilog-regression function.

Note: * Gross State Domestic Product.

The liberalisation of the Indian economy in the 1990s saw Uttar Pradesh lose the economic edge it formerly enjoyed over other Indian states. In the 1950s, the per capita income in Uttar Pradesh was at par with that in other states. Today it is around two-thirds of the national average with a per-capita economic growth rate of less than one per cent. Through the late-1970s and the 1980s, large doses of public investment (both Central and State) stimulated private sector participation in the state's industrial growth and kept Uttar Pradesh ahead of the national average. A World Bank study for the Uttar Pradesh attribute the subsequent slowdown to increased policy competition for direct investment from other states. The 1990s saw states competing with each other for direct investment by formulating exclusive industrial policies based on their individual needs and competitiveness.

It is clear that the industrial policies for the current decade for Uttar Pradesh need to:

- Identify key domestic industries, critical to the state's future economic growth and then formulate programmes to promote their competitiveness.
- Identify strategies to survive, taking into account the strategic behaviour of competing states.
- Ensure that the industrialisation process is not held up by weak infrastructure. The strategy should conceive corridors for rapid industrialisation, if provision of uniform investments across the state to upgrade infrastructure is not feasible
- Assure that the bureaucracy of the state is not seen as slow in responding to the inquiries made by investors (systems improvement) and that transaction costs are kept low.
- Sustain the growth that was experienced in the manufacturing sectors pertaining to agriculture-related activities such as sugar processing, *vanaspati* production, manufacture of agricultural implements and engines for tube wells. These agro-based industries need to grow to utilise the state's huge agricultural base.
- Ensure that the formerly robust industries of Uttar Pradesh like textiles, paper and cement, are set on the growth path again (Table 2.3). This chapter tries to address these issues and concerns.

2.2.1 Uttar Pradesh Industrialisation: Mission Statement

The need for achieving rapid progress in the industrial sector was stressed by the former Chief Minister of Uttar Pradesh, Mr. Rajnath Singh in his Mission Statement on May 22, 2001:

"We are clear that if we want to achieve a sustained annual growth rate of 7-8 per cent, then industrial growth must be in the region of 12-15 per cent. We are aware of the fact that with our high density of population, there are limits to which agricultural sector can contribute to the growth of the economy."

Mr. Rajnath Singh's statement is justified by the experience of other Indian states. In the following table (Table 2.2), an analysis of the performance of Uttar Pradesh's competing states is shown. It can be seen that only Gujarat and Maharashtra have surpassed the

7-8 per cent growth rate threshold in the 1990s. Both states had achieved this by putting industry on the high growth track. They even left behind Punjab and Haryana, states which had experienced better growth in the preceding decade.

TABLE 2.2

Competing States' Growth Performance and Sectoral Shares in the Decades of 1980s and 1990s of Five Competing States

(Per Cent)

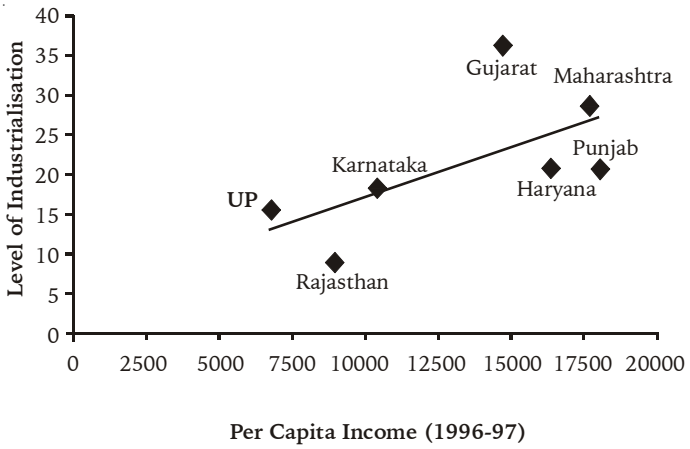
	Agriculture		*Industry*		*Services*		*GSDP*	
	1980s	*1990s*	*1980s*	*1990s*	*1980s*	*1990s*	*1980s*	*1990s*
Rate of Growth								
Gujarat	-1	4	7.80	12	7.70	8.60	5.11	9.60
Karnataka	2.80	3.80	6.60	6.20	7.40	7	5.30	5.30
Maharashtra	3.10	3.50	5.90	8.20	6.90	9.10	6	8
Haryana	3.80	2.20	9.70	5.60	7.80	6.70	6.40	5.00
Punjab	5.00	2.90	7	8	5.30	5.20	5.30	4.70
Share in GSDP								
Gujarat	30	21	32	38	38	41	100	100
Karnataka	39	33	21	23	40	44	100	100
Maharashtra	23	18	34	33	43	49	100	100
Haryana	48	42	21	23	31	35	100	100
Punjab	49	46	19	22	32	32	100	100

Source: Uttar Pradesh State Government statistics.

However, Uttar Pradesh is by no means under-industrialised at the current per capita income level. An X-Y plot of the level of industrialisation (share of manufacturing to GDP) against per capita income (Figure 2.1) clearly brings this out.

FIGURE 2.1

X-Y Plot of Level of Industrialisation and Per Capita Income, 1996-97



Nevertheless, if the state wishes to go on a higher growth trajectory, the sectoral share of industry (manufacturing, electricity and mining) has got to rise to the 25 per cent level (from the present level of around 20 per cent), slightly higher than the level of industrialisation in Karnataka (Table 2.2). This target has been indicated as a strategic goal in its Plan Document.

Another goal, which has been stated by the state's policy makers, is to raise the share of labour force in the organised sector to 15 per cent from the present level of 8 per cent. This is an immense task, given that the labour force of Uttar Pradesh numbers 50 million.

Given the importance of Uttar Pradesh in the national economy, its untapped potential and the economic goals of its policy makers (all of which have been discussed above) and the declining production share of important industrial commodities (Table 2.3), it is necessary to review the structure and sources of growth of the state's industrial sector and the important factors affecting the industrialisation of the state. Policy recommendations on the basis of this review should then be made. This is what this chapter attempts to do.

TABLE 2.3

Production of Some Industrial Commodities 1984-85 to 1997-98

Items	*Uttar Pradesh*			*All-India*		
	1984-85	*1996-97*	*1997-98**	*1984-85*	*1996-97*	*1997-98**
Cement ('000 Tonnes)	1085 (3.6%)	933 (1.3%)	303 (0.4%)	30160	73261	82873
Cotton Cloth @(Blended Mix) (Lakh Metres)	2092 (8.0%)	237** (1.9%)	398 (3.2%)	26190	12220	12380
Cotton Yarn ('000 Tonnes)	130 (11.0%)	126** (6.0%)	118 (5.7%)	1183	2115	2088
Sugar# ('000 Tonnes)	1477 (24%)	4083 (27%)	3922 (30%)	6152	15310	13250
Vanaspati Oil ('000 Tonnes)	140 (15.3%)	225 (20.4%)	238 (23.7%)	918	1101	1006

Source: *Statistical Diary*-Uttar Pradesh and RBI *Handbook of Statistics*.

Note: (% Share of All-India); * Provisional; ** Corrected; @ Only for Mill sector; # October of previous year to September of current year.

2.3. Description of State Industrial Economy

2.3.1. Survey Summary

Data on output at the three-digit classification level was collected and grouped under major heads, based on inputs: agro-based, chemicals-based, etc. The results are

summarised in Table 2.4. From the table it is clear that Uttar Pradesh's industries are predominantly based on agriculture. Though the share of chemical input-based industries has risen somewhat in the 1990s, the corresponding decline of engineering units in the same decade is disheartening.

TABLE 2.4

Tracing Changes in the Uttar Pradesh Manufacturing Sector—Input-based Classification Analysis (Per Cent)

	Value of Output		
Classification	*1997-98*	*1994-95*	*1985-86*
Agro-based	22.91	24.91	27.43
Textile-based	8.44	7.19	10.86
Livestock-based	3.27	3.96	3.56
Forest-based	0.29	0.14	0.13
Mineral-based	1.85	2.53	4.13
Chemical-based	30.28	23.44	18.97
Engineering-based	17.74	21.35	30.10
Misc.-based	15.23	16.48	4.81

Source: *ASI* - various issues.

A use-based classification analysis (Table 2.5) indicates a decline in the share of capital and consumer goods sectors during the latter part of 1990s. The new policy needs to address this problem.

TABLE 2.5

Tracing Changes in the Uttar Pradesh Manufacturing Sector—Use-based Classification (Per Cent)

	Value of Output		
Classification	*1997-98*	*1994-95*	*1985-86*
Basic Goods	28.63	26.99	23.51
Capital Goods	11.18	13.04	15.52
Intermediate Goods	8.76	9.37	6.48
Consumer Durable Goods	8.64	10.43	9.30
Consumer Non-durable Goods	42.78	40.18	45.19

Source: *ASI*-various issues.

If one were to lay down the contours of the present industrial economy of Uttar Pradesh at the three-digit industrial classification level within the above broad groups, the following key observations emerge:

- The state's industrial economy is predominantly agro-processing based with significant strengths in the chemicals and engineering sectors.
- Up to the 1980s, Uttar Pradesh had a significant presence in textile processing and mineral-based industrial sectors of India, but this declined in the 1990s.
- Uttar Pradesh's presence increased significantly in basic goods, declined marginally in consumer goods and declined in intermediate goods.
- The state's agro-processing strengths lie in refined sugar, *vanaspati*, indigenous sugar and grain milling.
- In textiles, Uttar Pradesh continues to have strengths in composite mills weaving cotton, handlooms weaving cotton and silk, production of blankets, shawls, carpets and made-ups but marginal edge in weaving and man-made fibres.
- The dairy sector of Uttar Pradesh retained its competitiveness in the 1990s as did the tanneries and their footwear downstream.
- The state's cement and other mineral-based industries declined.
- There was an increase in the production of petroleum-based products, fertilisers and pesticides
- Capacities in steel rerolling, industrial machinery (both electrical and non-electrical) and in transport equipment and spare parts increased.
- The state's vantage position in aluminium manufacturing was eroded.
- Manufacture of two-wheelers, consumer electronics, household electrical appliances and other consumer durables increased considerably.
- Uttar Pradesh continues to be an important manufacturing base for fast moving consumer non-durables like perfumes, cosmetics and toothpaste.

2.3.2. *Analysis of Production Shares, Growth and Competitiveness for Signalling Medium-term/Long-term Policy Responses*

Although some academics debate the relevance of labelling a state/national economy as competitive (for an industry segment/sector) in the context of the neo-classical trade paradigm and regard the pursuit for competitiveness as an excuse for picking winners, yet this has become a preoccupation of policy planners the world over. The concern of policy is that the competitiveness of firms depends not only on their own

competitive strength but also on the interaction of their capabilities with the sub-national/national environment in which they operate. The challenge then, is to pin down the factors that contribute to microeconomic competitiveness and to identify the appropriate role for policymaking in reinforcing these factors. This would imply that competitiveness not only hinges on product prices and cost of inputs, but also on a variety of non-price factors such as scale economies (e.g. cement, automobiles, etc.), organisation (e.g. software clusters which facilitate horizontal organisational structure) and technological change (e.g. cement dry technology preference over wet technology). The policy frame has to not only facilitate these factors (e.g. MoU for mega projects, cluster development, etc.) but also identify thrust areas/industries where the state can focus its developmental efforts. In what follows, a non-traditional measure of state level industrial competitiveness is presented that involves using constant production shares. The production share analysis outlined below equates gain in competitiveness to an increase in production share and traces the proximate sources of production growth in terms of choice of commodities, increase in penetration, etc.

A country's industries can be classified into dynamic and non-dynamic product categories. There are several ways of measuring dynamism. For the purpose of our analysis, a three-digit industry belongs to the dynamic product category if its share is seen as rising in the basket of output of the entire manufacturing industry. If the share is stagnant or declining over a period of time, then the three-digit industry is in the non-dynamic category.

With regard to the economy of a state, three-digit industries can be classified into the following categories:

1) **Rising Stars**: Dynamic industries in which the state's share in national industry product is increasing.
2) **Lost Opportunity**: Dynamic industries in which the state's share in national industry product is declining.
3) **Falling Stars**: Non-dynamic industries in which the state's share in national industry product is increasing
4) **Retreat**: Non-dynamic industries in which the state's share in national industry product is decreasing.

Two key indicators were used to assess the competitive strengths and weaknesses of Uttar Pradesh's manufacturing sector:

1. Relative Production Competitiveness Index (RPC)

This is defined as production share in an industry or cluster (at the three-digit level) divided by Uttar Pradesh's average share in total national manufacture. A value greater than one indicates that a given state cluster or industry has a greater share of the country's production than average.

2. Relative Production Competitiveness Growth Index (RPCGI)

RPCGI is calculated by dividing the RPC for the current period (1994-95) by the RPC for the previous period (1985-86). A figure greater than one shows the competitiveness in production during the period under analysis.

The following formulae are used to classify a state's industries into the four categories defined above:

1. Rising Stars (RPC > 1 and RPCGI > 1)
2. Lost Opportunity (RPC > 1 and RPCGI < 1)
3. Possible Future Stars (RPC < 1 and RPCGI > 1)
4. Retreat (RPC < 1 and RPCGI < 1)

The classification of three-digit industries in Uttar Pradesh into the four categories mentioned above is provided in Table 2.6.

Though there are a significant number of rising stars, the picture is marred by lost opportunities in few three-digit industries. Significant among these are the cement, aluminium and vegetable oil industries.

Data at five-digit level for 1998-99 for Uttar Pradesh was recast to identify trend corrections for the analysis carried out between 1984-85 to 1994-95 to extend it to 1998-99. No published data was available after 1998-99 and hence this modification was adopted.

Industries such as grain milling, motorcycles, scooters and parts, heavy vehicles and railway coaches which have a significant presence in the period 1985-86 to 1994-95 experienced a fall in their market share in the late 1990s when trend correction was applied.

2.3.3. Five-Digit Organised Industry Segments-Analysis for the Period 1999-20000 to 2001-02 to Signal Short-term Policy Responses

While the time series data was analysed to arrive at policy responses appropriate for medium-term/long-term horizon, for short-term horizon a detailed breakdown of

TABLE 2.6-A

Classification of Uttar Pradesh's Industries at Three-Digit Level (1985-86 to 1994-95) as Rising Stars, Possible Future Stars, etc.

	Rising Stars	*Lost Opportunity*	*Possible Future Stars*	*Retreat*
Food Products/ Agro Processing	Dairy products, indigenous sugar, *gur* & soft drinks	Vegetable oils & refining sugar		
Textile-based	Weaving and finished cotton textiles on handloom. Spinning, weaving & production of man-made fibre-based fabrics. Blankets, shawls and carpets	Power loom textiles		
Chemical Input-based	Fertilisers and pesticides, chemical products & refined petroleum products			
Capital Goods	Industrial machinery for other than food and textile industries, electrical industrial machinery & transport equipment & parts	Agricultural machinery & spare parts Boilers, steam generating plants Railway wagons & coaches		Fabricated Metal, products hand tools, general purpose & electrical machinery, special purpose machinery
Intermediates	Steel products – rerolling, cold rolling & wire drawing, insulated wires & cables	Glass & glass products		
Consumer Durables	Electrical appliances like lamps, fans, etc., motorcycles, scooters and parts, watches & clocks sports goods	Tyres & tubes		
Engineering-based	Insulated wires and cables, heavy vehicles & railway coaches			
Metal-based			Metal products (except machinery)	
Mineral-based		Cement, lime & plaster, asbestos, cement & other cement products		
Basic Goods		Aluminium manufacturing		
Miscellaneous	Computers & computer games, X-Ray machines			

industries performance at five-digit level was conducted for the period 1999-00 to 2001-02, based on the new industrial classification evolved since 1999-00. This exercise is expected to provide insights as to which sub-components of the three-digit level industries are the drivers.

2.3.3.1. Interpreting the Five-Digit Analysis within the Framework of Three-digit Classification

Food Products/Agro-processing

For the food products category, analysis of the five-digit level within the broad three-digit category indicates that the industries which need immediate response are vegetable oils and refining sugar. Refining sugar, which appears as a lost opportunity at the five-digit level, needs to be converted into rising star, given the large sugarcane area in Uttar Pradesh as illustrated in the case study. While vegetable oil is a lost opportunity at the three-digit level, a finer analysis indicates that the state is advantageously placed in the non-solvent industry segment, but the solvent industry segment is a lost opportunity, which needs to be encouraged.

Similarly grain milling is a rising star under the three-digit level and at the five-digit level we find that rice milling is the driver of this group. As far as dairy products are concerned, at the three-digit level they have been identified as rising stars and pasteurised milk is the

TABLE 2.6-B

Classification of Uttar Pradesh's Industries as Rising Stars, Possible Future Stars, etc. (1985-86 to 1998-99)

	Rising Stars	*Lost Opportunity*	*Possible Future Stars*	*Retreat*
Food Products/ Agro Processing	Dairy products., Indigenous sugar, *gur,* soft drinks, Pan Masala distilling, rectifying & blending of spirits	Vegetable oils & refining sugar		
Textile-based	Weaving and finished cotton textiles on handloom, spinning, weaving and production of man-made fibre- based fabrics Blankets, shawls & carpets			
Chemical Input-based	Fertilisers and pesticides, plastic products, chemical products & refined petroleum products			
Capital Goods	Electrical industrial machinery	Agricultural machinery & spare parts Boilers, steam generating plants		Fabricated metal products, hand tools, general purpose electrical machinery, special purpose machinery
Intermediates	Steel products–rerolling, cold rolling and wire drawing insulated wires and cables, transmission and broadcasting equipment	Glass & glass products		
Consumer Durables	TV sets	Tyres and tubes, motorcycles, scooters and parts, watches and clocks & sports goods		
Engineering-based	Insulated wires & cables			
Metal-based			Metal products (except machinery)	
Mineral-based		Cement, lime & plaster asbestos, cement & other cement products		
Basic Goods		Aluminium manufacturing		

immediate five-digit category, which is the driver that would warrant a support from short-term policy response.

Textile-based

The textile garment and clothing accessories need immediate short-term response through promotion. Man-made fibre-based fabrics is a rising star at the three-digit level and this is confirmed at the five-digit level.

Chemical Input-based

In the chemical input-based industry, fertiliser and pesticide is identified as a rising star at three-digit level and a finer analysis at the five-digit level reveals that urea and organic fertiliser are the drivers of this category.

Capital Goods

In the capital goods segment, the medium-term indicates that in spite of a big agricultural base, agricultural machinery and spare parts are a lost opportunity and a consolidated immediate response is a necessity. However, none of the capital goods segment comes out as a significant sub-component at the five-digit level.

Intermediates

Among intermediates, steel products have emerged as a major component at the three-digit level and at the five-digit level long products (shaped)—both mild and alloy steel—are the drivers of this group.

Consumer Durables

In the medium-term, consumer durables emerged as an important industry. In the recent past, this has suffered a setback as none of these figure in the top 21 major industries in Uttar Pradesh for the period 1999-00 to 2001-02.

TABLE 2.7

Classification of Uttar Pradesh's Industries at Five-digit Level (TE 1999/00 to 2001/02) as Rising Stars, Possible Future Stars, etc.

Rising Stars	*Lost Opportunity*	*Possible Future Stars*	*Retreat*
Segments that Need to be Sustained in State	*Segments that Need Urgent Action by the State*	*Segments that Need to be Nurtured by the State*	*Segments that Do Not Warrant the Kind of Policy Attention as the Rising Stars, Lost Opportunity and Possible Future Stars in the Initial Policy Phase*
27104 - Mild Steel Primary/Semi-finished/ finished Long Products	**15421** - Sugar refining	**24119** - Basic organic chemicals n.e.c	**24130** - Plastics in primary form & synthetic rubber
15204 - Pasteurised Milk	**15143** - Vegetable oils and fats-solvent extraction	**15312** - Rice milling	**27109** - Basic iron & steel items n.e.c
15142 - Vegetable Oils and Fats-Non Solvent Extraction	**23201** - Liquid/gaseous fuel		**25209** - Other plastic products
26942 - Portland Cement	**24134** - Manufacture of natural polymers and modified natural polymers in primary forms		
27106 - Alloy Steel Long Products	**18101** - Textile garments & clothing accessories		
17114 – Man-made Fibre	**34300** - Parts & accessories for motor vehicles and their engines		
24123 - Urea & Organic Fertiliser	**24232** - Allopathic pharma preparations		
	17111 - Spinning of cotton fibre incl. blended cotton		
	23209 - Other petroleum products (incl. manf. of petroleum jelly, wax, etc.)		

Mineral-based

Cement, lime and plaster, is a lost opportunity in the medium-term but we can take solace in the fact that Portland cement is emerging as a major rising star in the recent past. Efforts are required to promote basic goods given the large mineral base of the state.

This has been summarised in the following table, which gives the classification of five-digit sub-components in industries, drivers in the three-digit broad category.

2.3.3.2. Approach to Short-term Policy Response in the Organised Industry Segment

In general, for industries which fall under the category of lost opportunity, policy measures should be geared towards creating a business environment that will help revive these industries. The category of Possible Future Stars should be the focus for policy decision making to further promote the non-dynamic industries in which state's share in the national industry product is increasing. As far as industries under rising stars are concerned, the focus should be to retain their competitive advantage through constant monitoring and policy updates.

2.3.3.3. Illustrative Example: Crafting a Conducive Policy Environment: Refined Sugar under Food Products/Agro-processing

We consider the case of the sugar industry to illustrate how policy environment can be made conducive for lost opportunity segments. The sugar industry is divided into the following three segments:

1. Centrifugal Refined Sugar: This segment has 1074 factory-registered units in India, and 25 per cent of these units are located in Uttar Pradesh. The all-India industry size is Rs. 24110 crore.

2. Centrifugal Crude *Khandsari*: There are 631 factory units registered in this category, of which 83 per cent is in Uttar Pradesh. This industry size is Rs. 1730 crore.

3. Non-centrifugal Crude *Gur*: At the all-India level, there are 112 factory-registered units, of which 85 per cent are in Uttar Pradesh. The size of this segment is Rs. 71 crore.

For the Uttar Pradesh economy, sugar is an important industry. Approximately 30 per cent of all sugar units and 25 per cent of sugar output originate in Uttar Pradesh. Roughly 50 per cent of India's *khandsari* and 75 per cent of *gur* originate in the state, which houses over 85 per cent of India's *khandsari* and *gur* units.

TABLE 2.8

Uttar Pradesh Sugar *versus* Uttar Pradesh All Industries

Parameters	*Industries All, and Uttar* Pradesh	*Units Sugar, and Uttar* Pradesh	*Sugar Unit* as a *Proportion of All Uttar Pradesh Factory Units (%)*
Number of Factories	10303	312	3.03
Fixed Capital (Rs. Cr)	37725	2507	6.65
Working Capital (Rs. Cr)	8468	713	8.42
Invested Capital (Rs. Cr)	50857	5929	11.66
Value of Output	61047	6197	10.15
PBDIT	9048	690	7.63
Gross Fixed Capital Formation	3541	379	10.70
Profits	2658	-53	-1.99
Gross Capital Formation	4723	847	17.93
Addition in Stock of Finished Goods	668	435	65.12
Total Person Engaged (No. in Lakh)	5.71	0.64	11.21

At present, most of the sugarcane output is used for the production of *khandsari* and *gur*. The *khandsari* is a high-return industry due to the non-restrictive policy environment. However, *khandsari* is a shrinking industry. This is evident from the fact that its per capita consumption is declining at a compound annual growth rate (CAGR) of 2.86 per cent and the share of *khandsari* in the sweet market is also decreasing. On the other hand, the per capita consumption of sugar is increasing at 2.76 per cent and its share in the sweet market is increasing. This implies that the future prospects of farmers in Uttar Pradesh can be ensured by encouraging the sugar industry.

Sugar industry has the potential to deliver profits but net profit to net worth is eroded by high inventories and opportunity cost because of sub-optimal government policies. Sugar being relatively capital-intensive, and important in terms of its employment potential, attracts significant annual additions to plant and machinery but marked by high stock of finished goods. Thus, the liberalisation of the policy environment for the sugar industry could help Uttar Pradesh become the largest sugar producer, displacing current leaders such as Maharashtra. The mix of policy measures specific to this segment could range from provision of incentives to new sugar units, realistic pricing of sugarcane through State government's 'advised' price (SAP), lobbying with the Central government to reduce interferences in the release of levy sugar to the market, allowing sugar units to set up ethanol by-product production units and facilitating through policy measures that encourage blending of ethanol with petroleum fuels, a suitable policy instrument to facilitate co-generation of energy, etc. In a similar fashion, policy planners should evolve a special set of policy measures to facilitate growth and nurturing of industry segments falling under stars, future stars and lost opportunity categories.

2.3.4. Unorganised Industry Sector Analyses Based on NSSO Sample Observations 2001

For the unorganised sector, we have used the data provided by the National Sample Survey Organisation (NSSO). The NSSO conducted an integrated survey of households and unorganised manufacturing enterprises during July 2000 to June 2001. The survey covered manufacturing enterprises which are not registered under Factories Act, 1948. It also includes enterprises engaged in cotton ginning, cleaning, baling and manufacturing *bidi* and cigar that are not covered under Annual Survey of Industries (ASI). A total of 152494 enterprises were surveyed. In Uttar Pradesh, 17202 enterprises were covered out of which 4451 were in the rural areas and 12751 in the urban areas. We have analysed both urban and rural unorganised sectors separately to facilitate creation of a conducive policy environment for these sectors. The analysis shows that

TABLE 2.9

Target Destination Summary for Key Industry Segments in Urban Unorganised Sector

	31909 (Manu. of Parts & Accessories for Electrical Equipment)	*36911 (Manu. of Gold Silver & Other Precious Metal Jewellery)*	*18105 (Wearing Apparel n.e.c)*	*17115 (Weaving, Manu. of Cotton & Cotton Mixture Fabrics)*	*18101 (Manu. of all Types of Textile Garments & Clothing Accessories)*	*15433 (Manu. of Sweetmeats)*	*15311 (Flour Milling)*
Key States by their Share in Value of Output & Value Added of the Given Sector	Maharashtra	Gujarat	Maharashtra	Maharashtra	Delhi	**Uttar Pradesh**	Madhya Pradesh
	Delhi	West Bengal	Tamil Nadu	Tamil Nadu	Maharashtra	West Bengal	West Bengal
	Jammu & Kashmir	Delhi	Delhi	**Uttar Pradesh**	West Bengal	Punjab	Delhi
	Uttar Pradesh	Maharashtra	**Uttar Pradesh**	West Bengal	Tamil Nadu	Maharashtra	Maharashtra
	Punjab	Tamil Nadu	Rajasthan	Madhya Pradesh	Rajasthan	Rajasthan	**Uttar Pradesh**
	West Bengal	Rajasthan	Gujarat	Karnataka	**Uttar Pradesh**	Tamil Nadu	Gujarat
			Karnataka	Rajasthan	Gujarat	Delhi	Rajasthan
					Punjab	Haryana	
					Madhya Pradesh	Karnataka	

	17118 (Weaving, Manu. Man-made Fibre & Man-made Mixture Fabrics)	*28111 (Manu. of Doors, Windows and their Frames & Other Art of Iron & Steel Used on Buildings)*	*20101 (Sawing and Planing of Wood (Other than Plywood)*	*36101 (Manu. of Furniture and Fixtures Made of Wood, Cane and Reed)*	*22219 (Printing & Allied Activities, n.e.c)*	*15312 (Rice Milling)*	*15313 (Dal Milling)*	*26960 (Cutting, Shaping & Finishing of Stone)*
Key States by their Share in Value of Output & Value Added of the Given Sector	Gujarat	Gujarat	Gujarat	Delhi	Maharashtra	Tamil Nadu	Madhya Pradesh	Karnataka
	Tamil Nadu	**Uttar Pradesh**	Maharashtra	West Bengal	Tamil Nadu	Kerala	West Bengal	Gujarat
	Maharashtra	Maharashtra	Punjab	Maharashtra	West Bengal	Jammu & Kashmir	Rajasthan	Rajasthan
	Uttar Pradesh	Rajasthan	Madhya Pradesh	Gujarat	Delhi	West Bengal	Maharashtra	Maharashtra
	Karnataka	West Bengal	West Bengal	Rajasthan	Gujarat	Bihar	**Uttar Pradesh**	Madhya Pradesh
	Punjab	Haryana	**Uttar Pradesh**	**Uttar Pradesh**	Karnataka	**Uttar Pradesh**	Tamil Nadu	West Bengal
	West Bengal	Tamil Nadu	Tamil Nadu	Punjab	**Uttar Pradesh**	Rajasthan	Karnataka	**Uttar Pradesh**
	Rajasthan		Karnataka		Sikkim	Assam	Jammu & Kashmir	Sikkim
			Rajasthan			Orissa	Bihar	

Uttar Pradesh is lagging behind in the urban unorganised sector while it has emerged as a leader in the rural sector.

2.3.4.1. Urban Unorganised Sector

In our study, the analysis has been restricted to the top 15 industries that contribute to about 80 per cent of total output in the urban unorganised sector. We have not only analysed Uttar Pradesh's position but also the performance of other states *vis-à-vis* Uttar Pradesh.

Given the size and population of Uttar Pradesh, the state could evolve policies to facilitate the urban unorganised sector to reduce urban poverty. The key industries in the urban unorganised sector that Uttar Pradesh should immediately take up for promotion are wearing apparel, cotton and cotton mixture fabrics, textile garments, sweetmeats, flour milling, weaving, manufacture of PVC/wooden windows and rice milling. In terms of value of output, the state ranks behind Maharashtra, Tamil Nadu, Delhi, West Bengal and Gujarat as shown in Table 2.10.

2.3.4.2. Rural Unorganised Sector

The following tables give the industry segments that constitute about 65 per cent of the total rural unorganised sector output in India. For each industry, the top five states have also been listed. This kind of a comparative study of different states in terms of the value of output tells us where there is scope for improvement in Uttar Pradesh.

Table 2.11 indicates that Uttar Pradesh is an important state in the rural unorganised sector. In about seven out of the 24 top industries, its share in the value of output is the highest. The key industries that need to be actively promoted are brick making, tailoring, wearing apparel, structural wooden goods, *gur*, gold jewellery, indigenous sugar, porcelain china, manufacture of PVC/wooden windows and silk. Unlike the urban unorganised sector, Uttar Pradesh has performed well in the rural sector. It is the second major state in terms of value added and value of output in rural industrialisation. It accounts for as much as 13

TABLE 2.10

Top States in Urban Unorganised Sector by Share in Value of Output and Value Added in All-India

Rank	*Value of Output (%)*	*State*	*Rank*	*Gross Value Added (%)*	*State*
1	34.20	Maharashtra	1	16.94	Maharashtra
2	10.58	Tamil Nadu	2	12.68	Tamil Nadu
3	7.80	Delhi	3	11.74	Delhi
4	7.72	West Bengal	**4**	**9.76**	**Uttar Pradesh**
5	7.34	Gujarat	5	9.17	Gujarat
6	**7.13**	**Uttar Pradesh**	6	8.56	West Bengal
7	3.96	Rajasthan	7	5.78	Rajasthan
8	3.94	Punjab	8	4.84	Karnataka
9	3.83	Karnataka	9	4.57	Punjab
10	2.66	Madhya Pradesh	10	2.56	Madhya Pradesh
11	2.29	Haryana	11	2.36	Haryana
12	1.48	Kerala	12	1.90	Kerala
13	1.14	Bihar	13	1.79	Sikkim
14	1.10	Sikkim	14	1.54	Bihar
15	0.99	Jammu & Kashmir	15	1.11	Jammu & Kashmir

TABLE 2.11

Target Destination Summary for Key Industry Segments in Rural Unorganised Sector

	15312 (Rice Milling)	*26931 Manufacture of Bricks*	*18105 Wearing Apparel n.e.c 18105/ 18109*	*15311 Flour Milling*	*16002 Manufacture of Bidi*	*15203 Manufacture of Butter, Cream, Ghee, Cheese & Khoya, etc.*	*20221 Manufacture of Structural Wooden Goods Such as Beams, etc.*	*17115 Weaving, Manufacture of Cotton & Cotton Mixture Fabrics*
Key States by their Share in Value of Output of the Given Sector	West Bengal	**Uttar Pradesh**	**Uttar Pradesh**	**Uttar Pradesh**	West Bengal	West Bengal	**Uttar Pradesh**	Tamil Nadu
	Himachal Pradesh	Maharashtra	Andhra Pradesh	Bihar	Gujarat	Maharashtra	Bihar	West Bengal
	Andhra Pradesh	West Bengal	Maharashtra	Maharashtra	Karnataka	Rajasthan	Andhra Pradesh	Andhra Pradesh
	Maharashtra	Punjab	Gujarat	Rajasthan	Tamil Nadu	Andhra Pradesh	Tamil Nadu	**Uttar Pradesh**
	Tamil Nadu	Tamil Nadu	Tamil Nadu	Gujarat	Madhya Pradesh	**Uttar Pradesh**	West Bengal	Kerala

	15422 Manu. of Gur from Sugarcane	*36101 Manu. of Furniture and Fixtures Made of Wood, Cane & Reed*	*15433 Manu. of Sweetmeats*	*15316 Manu. of Breakfast Foods Obtained by Roasting Cereals, Grains*	*36911 Manu. of Gold Jewellery*	*20101 Sawing and Planing of Wood*	*26911 Manu. of Articles of Porcelain or China, Earthenware, etc.*	*15314 Processing and Grinding of Grain*
Key States by their Share in Value of Output of the Given Sector	**Uttar Pradesh**	West Bengal	Andhra Pradesh	West Bengal	**Uttar Pradesh**	Assam	**Uttar Pradesh**	West Bengal
	Karnataka	Assam	**Uttar Pradesh**	Orissa	Rajasthan	Kerala	Rajasthan	Orissa
	Bihar	**Uttar Pradesh**	West Bengal	**Uttar Pradesh**	West Bengal	Gujarat	Bihar	Kerala
	Andhra Pradesh	Kerala	Maharashtra	Maharashtra	Bihar	Bihar	West Bengal	Bihar
	Madhya Pradesh	Rajasthan	Haryana	Bihar	Kerala	Tamil Nadu	Madhya Pradesh	Jharkhand

Contd. ...

...Contd. ...

	15111 Mutton Slaughtering and Preparation	*26914 Manuf. of Ceramic Sanitary Wares*	*15142 Manuf. of Veg. Oils and Fats*	*28111 Manuf. of Doors, Windows Windows and their Frames, Shutters, etc.*	*26960 Cutting, Shaping and Finishing of Stone*	*20233 Manuf. of Market Basketry, Grain Storage Bins and Similar Product Made from Bamboo*	*20239 Manuf. of Other Wooden Containers and Products Made Entirely of Cane, Bamboo*	*17116 Weaving, Manuf. of Silk and Silk Mixture Fabrics*
Key States by their Share in Value of Output of the Given Sector	Maharashtra	West Bengal	Andhra Pradesh	Maharashtra	Jharkhand	Madhya Pradesh	Orissa	Tamil Nadu
	Rajasthan		Bihar	**Uttar Pradesh**	Rajasthan	Maharashtra	West Bengal	**Uttar Pradesh**
	Andhra Pradesh		Gujarat	Kerala	Maharashtra	West Bengal	Jharkhand	Andhra Pradesh
	Uttar Pradesh		Haryana	Punjab	Andhra Pradesh	Bihar	Jammu & Kashmir	Karnataka
	Madhya Pradesh		Jammu & Kashmir	Bihar	Tamil Nadu	Jharkhand	Bihar	Assam

per cent of all-India value of output and its share in gross value added is 14 per cent.

Analysis of the above table reveals that Uttar Pradesh's contribution of 13 per cent of the total output puts it in the second position. But at the same time there exists further scope for improvement in its performance.

2.3.5. Factors Affecting Industrial Growth

A World Bank study for Uttar Pradesh has attributed three key factors which undermine growth and productivity: (i) inadequate infrastructure, (ii) decline in quality of governance (addressed in a separate paper) and (iii) lack of growth of quality human stock. To this list of factors we add (i) low competitiveness, (ii) lack of proper incentives, (iii) poor location of industries and (iv) lack of infrastructure. These factors are discussed below:

2.3.5.1. Low Competitiveness due to Unexploited Economies of Scale

Economies of scale are said to exist if the average cost of producing output declines as the level of output increases. Economies of scale stem from (a) large indivisible fixed costs which have to be incurred irrespective of the scale of production and (b) the fact that volume (which determines production capacity) increases more than proportionately with surface area (which determines total material costs). The cement sector and automobile sector are two sectors which display economies of scale.

The existence of economies of scale is shown by Uttar Pradesh's own experience. Table 2.13 illustrates this. ASI data reveals the crucial role played by the mega projects in providing value addition and employment in Uttar Pradesh and elsewhere. For instance, mega units providing average employment of

TABLE 2.12

Top States in Rural Unorganised Sector by Share in Value of Output and Value Added in All-India

Rank	*Value of Output (%)*	*State*	*Rank*	*Gross Value Added (%)*	*State*
1	21.77	West Bengal	1	16.91	West Bengal
2	**12.91**	**Uttar Pradesh**	**2**	**14.04**	**Uttar Pradesh**
3	7.33	Maharashtra	3	6.97	Maharashtra
4	7.33	Andhra Pradesh	4	8.31	Andhra Pradesh
5	6.43	Tamil Nadu	5	7.44	Tamil Nadu
6	5.92	Kerala	6	5.24	Kerala
7	4.75	Bihar	7	5.96	Bihar
8	4.43	Gujarat	8	3.60	Gujarat
9	4.24	Karnataka	9	4.99	Karnataka
10	3.58	Rajasthan	10	4.25	Rajasthan
11	3.12	Orissa	11	3.75	Orissa
12	2.79	Himachal Pradesh	12	0.94	Himachal Pradesh
13	2.65	Punjab	13	2.56	Punjab
14	2.28	Assam	14	2.26	Assam
15	2.20	Madhya Pradesh	15	2.82	Madhya Pradesh
16	2.13	Jharkhand	16	2.95	Jharkhand
17	1.61	Jammu and Kashmir	17	2.25	Jammu & Kashmir
18	1.30	Haryana	18	1.26	Haryana
19	0.68	Chhattisgarh	19	0.99	Chhattisgarh
20	0.66	Uttaranchal	20	0.79	Uttaranchal

500 workers or more form only 2.7 per cent of all factories in Uttar Pradesh while providing employment to more than 43 per cent of the workforce in the organised sector. Mega units employing more than 100 workers (13.6 per cent of all factories) account for over 72 per cent of employment in the organised sector.

TABLE 2.13

Large and Medium Sector Units' Share in Employment and Total Number of Factories in the Organised Sector (in Different Size Classes)

Size Class (in Terms of Number of Workers)	*Uttar Pradesh (1988-89)*			
	Total Number of Factories	*Number of Factories as a Percentage of Total Workforce of Factories*	*Average Number of Workers Per Factory*	*Percentage Terms of Workforce Employed*
Less than 10	2088	30.3	12861	2.8
10-19	1773	25.7	23770	5.2
20-49	1346	19.5	41587	9.1
50-99	736	10.7	52043	11.4
100-499	754	10.9	130992	28.6
500-999	120	1.7	70873	15.5
1000-4999	65	0.9	99626	21.8
More than 5000	6	0.1	25598	5.6
Total	6888	100	457350	100

Source: *Directorate of Statistics and Economics*, Uttar Pradesh (1993).

TABLE 2.14

Employment and Number of Factories by Size Class (Per Cent)

Number of Factories	*Punjab*	*Haryana*	*All-India*	***UP***
Number of Factories with 500+ Workers as Percentage of Total Number of Factories	5.3	4.3	2.1	2.7
Employment in Factories with 500+ Workers Percentage of Total Employment	58	42	45	42.9
Number of Factories with 100+ Workers as Percentage of Total Number of Factories	17.3	23	12	13.9
Employment in Factories with 100+ Workers Percentage of total Employment	83	78	71	71.5

Source: *Directorate of Statistics and Economics* - States, ASI - various issues.

However, these economies of scale have not been exploited in Uttar Pradesh to the extent achieved in the neighbouring states of Punjab and Haryana. Table 2.14 reveals this. The number of factories with 500+ workers as a percentage of total number of factories in Uttar Pradesh is much lower than the corresponding figures for Punjab and Haryana. The percentage share of employment accounted for by these factories is even lower than the all-India average. The figures for factories with 100+ workers tell a similar story.

2.3.5.2. Incentives

Development strategy during pre-liberalisation period (prior to 1991) did not have an adequate role for private capital and, there were restraints on the corporate sector's normal functioning. The states thus relied on resources transferred from the Central government. The programme of stabilisation and reform underway since 1991 has radically changed the framework within which the states' development policies are implemented. States can now attract private capital in such sectors as power, irrigation, ports, roads, and all areas of manufacturing and it is their ability to attract private capital, which now determines a state's growth performance. Development spending now needs to be narrowly focussed on the states' areas of comparative advantage, where it complements rather than substitutes for the private sector. This is a radical departure from the pre-1991 period, when the volume of public development spending was the key determinant of a state's growth performance.

Since private investors are guided by the return and risk on investment in choosing among alternative investment opportunities and, since 'location' is an important variable in the investor's portfolio of characteristics, the state government's incentive system guiding investment in a particular state is becoming an increasingly influencing factor. In other words a prisoner's dilemma type game is characteristic of incentives-based competition—it is collectively rational i.e. in the interest of each and every state to cease offering incentives, but it is individually rational for each to offer them.

Poor incentives to industries that exhibit scale economies and non-adoption of modern technology led to erosion of competitiveness in sectors where Uttar Pradesh earlier had a domineering presence. For example, take the case of cement. The pre-liberalisation era could sustain mini cement plants. But after 1991, the sector experienced some changes. Five major

corporates came to control more than three-fourths of India's cement producing capacity. The competitiveness of the mini cement plants got eroded in the process of consolidation, affected by the large business houses. An examination of Uttar Pradesh's cement sector shows that despite the availability of natural resources, the state lost its share of the national cement output (India is now the second largest cement producer in the world) and the expanding market because it did not take the proactive step of involving key business players through MoUs. The story was similar in many other sectors.

The competition for foreign direct investment (FDI)/ private investment comes in three main forms (Tan, 1991):

- investment incentives (fiscal, financial and others);
- efforts to emphasise the comparative advantage of host base (resource base and market factors); and
- promotional activities (such as sending missions, advertising, etc.—a role to be performed by Udyog Bandhu).

He also mentions that an intense form of rivalry usually takes place through the granting of investment incentives.

Given the fact that competition amongst the states to attract investment is akin to a prisoner's dilemma type game, the problem can thus be treated as a game between investors and host governments with the outcome being given by the sub-game perfect equilibrium. Thus, the game theoretic approach is one way of conceptualising the outcome of the competition of host governments for private investment. The competitive market-based analysis is an alternative approach where the 'wedge' that is not internalised (by the investor) is realised by luring investment through incentives.

In a recent study for Organisation for Economic Cooperation and Development (OECD) (R. Venkatesan *et al*. NCAER 1998), a set of 'incentives index' was calculated for every state and states were ranked as per incentives offered to lure private investment. This ranking was compared to the ranking of private investments invited into the state through the computation of a similarity index (Rank Correlation Coefficient). A similar exercise was carried out for states by constructing infrastructure indices (Table 2.15).

TABLE 2.15

Infrastructure Index and Incentive Index for the Seven Selected States

States	*Infrastructure Index*		*Incentive Index*	
	Value	*Rank*	*Value*	*Rank*
Punjab	1.43	3	120	4
Maharashtra	1.49	2	100	5
Gujarat	1.50	1	100	5
Haryana	1.22	4	92	6
Karnataka	0.40	5	170	1
Uttar Pradesh	**-0.67**	**7**	**153**	**3**
Rajasthan	-0.39	6	167	2

Source: R. Venkatesan *et al., Report to the OECD*, 1998.

It was concluded from the above analysis that infrastructure rather than incentives explains the ranking of states in terms of actual private capital attracted into the state. However, at the margin, incentives did play a key role in guiding the investments.

The NCAER team also collected information on experiences related to implementation of the incentives from 35 industry segments in 10 districts that availed of these incentives. The concerned officials at the DICs provided estimates of 'Deferment Trade Tax' incentives. The extent of incentives as a proportion of fixed investment has steadily increased and is the highest at present as shown in the Table 2.16.

TABLE 2.16

Incentives as a Proportion of Fixed Investment

Periods		*Number of DIC*		*Number of DIC*		*Number of DIC*	*Weighted Average Incentives*
1982-90	100	8	125	4	150	1	112
1990-95	125	3	150	5	175	2	148
1995-2000	175	6	200	3	250	2	195

Source: NCAER survey.

The conclusion was that these incentives were not strategically utilised. The NCAER survey revealed that major portion of incentives were cornered by location constrained industries such as rice mills, while the mega projects that could have helped the state industrialise faster were not targeted. In order to strategise the policy on provision of incentives (carried out in the section on 'Recommendations'), we surveyed state level policies on incentives in India and the

country level policies as listed by UNCTAD which are summarised below:

The UNCTAD report on "Incentives and FDI" (1996) lists down different types of incentives as follows:

- fiscal incentives (incentives designed to reduce the tax burden for a foreign investor);
- financial incentives (incentives designed to provide funds directly to the firm to finance new investments); and
- others such as an assumed supply of non tradables such as electricity, water (dedicated and subsidised infrastructure).

The following table gives a comprehensive view of the concessions and incentives offered by Indian states to encourage investment and promote industrial activity.

TABLE 2.17

Incentives

Financial (Capital Subsidy)	*Fiscal (Sales Tax Concession)*	*Others*
• Industry-based	• Industry-based	• Power tariff concessions
• Mega Projects	• Mega Projects	• Assistance in Project Analysis
• Location-based	• Location-based	

Source: UNCTAD (1996).

Incentives provided by various states on the basis of industrial development of areas, magnitude of various industrial sectors and sub-sectors and different classes of industrial units may be categorised as:

a. Financial Incentives-Defined as those where the government is directly involved in the financing of the projects and comprise:

- Provision of funds for financing investment operations.
- Government involvement in fixed capital investment for new industrial units.
- Financing and other assistance in setting up technologically pioneering and prestigious units.
- Expansion and diversification of existing industrial units.

b. Fiscal Incentives-Mainly aim at reducing the tax burden (and or providing subsidies) to an investor. These include:

- Provisions for various sales tax exemptions.
- Deferment of tax schemes.
- Octroi exemptions (an indirect tax).
- Reduction and exemptions of other taxes such as property taxes.
- Other incentives such as export-based incentives.

c. Other Incentives-Many other incentives are also provided to help in the setting up of projects. These include:

- Help in formulating project analysis.
- Allowances for subsidised services like generating sets.
- Feasibility reports.
- Incentives, modernisation schemes, special incentives and all other incentives that cannot be classified under a common head but basically which increase the economic viability of a foreign unit by non-financial means.

d. Categories-As mentioned before, the basis on which incentives are provided depends much upon various categories within an industry. These categories are:

- Degree of backwardness of a region where unit is located. There are four categories depending upon the degree of industrial development of the region, ranging from most backward to not so backward.
- Scale of project ranging from tiny to large and mega large.
- Other incentives are extended to those that pioneer new technology, export-oriented projects, projects where women entrepreneurs are the main promoters, and finally to those projects that are considered to be prestigious.

2.3.5.3. Infrastructure

It is said that infrastructure results in higher productivity of labour and therefore the level of infrastructure is positively correlated with income. A larger stock of infrastructure raises the level of income in two ways: (i) through the direct effect of an increase in the productivity of labour, and (ii) by increasing the levels of profitable employment of other inputs, which this increase in productivity facilitates. Infrastructure also plays a crucial role in diversifying production, expanding trade, coping with population growth, reducing poverty and in improving environmental conditions. A one per cent increase in the stock of

infrastructure is associated with a one per cent increase in GDP across all countries (World Bank, 1994). Deal (1999)[1] explores the reasons for the strong correlation between the infrastructure levels and economic development. According to him, poor infrastructure results in people seeking to earn their living from subsistence/informal activities which are not dependent on infrastructure for successful implementation. The low productivity and low (or non-existent) profit margins associated with these economic activities impede economic development. A low level of economic development implies a small tax base and, therefore, a small quantity of resources, which can be used for the development of infrastructure. The economy is caught in a low development-low infrastructure trap.

The infrastructure development level of states is a function of different variables such as physical, financial and social infrastructure. It is generally difficult to say whether District A is more developed or less developed than District B, when the infrastructure development is defined through a large number of indicators. Therefore, a methodology, which involves construction of a single composite index representative of the chosen set of variables, is required to serve the purpose. In order to remove subjectivity in assigning weights to individual indicators, a tried scientific method known as the Factor Analytic Model is used.[2] The levels of development of the districts of Uttar Pradesh based on this technique are listed below in Table 2.18.

The table indicates that only around 9 per cent of districts have a very high developed infrastructure whereas 61 per cent have poorly developed infrastructure. (see Table 2.18 below for details). Social infrastructure in Uttar Pradesh is unsatisfactory as revealed by the rankings in Table 2.18. Only 57 per cent of schools and 56 per cent of schools and hospitals fall in the 'good' or 'excellent' category. There is a paucity of virtually every element of social infrastructure except housing.

TABLE 2.18

Distribution of Districts based on their Levels of Development

Level of Development	*Per Cent Share in Total Districts*
Very High	8.51
High	10.64
Moderate	19.15
Low	48.94
Very Low	12.77

Source: *Factor Analysis* - NCAER 2000.

TABLE 2.19

Social Infrastructure Ranking (Per Cent)

Social Infrastructure	*Level of Social Infrastructure*					
	Excellent	*Good*	*Fair*	*Poor*	*Very Poor*	*Total*
Schools	16.13	41.94	32.26	3.22	6.45	100.00
Hospitals	12.50	43.75	28.12	12.50	3.12	100.00
Housing	10.00	60.00	13.33	10.00	6.67	100.00

Source: *NCAER Field Survey*-2000.

2.3.5.4. Location of Industries

The availability of skilled labour, followed by cheap land, was reported as important reasons for locating industries as illustrated by Table 2.20. Incentives and infrastructure were also ranked high. The least importance was attached to the availability of ancillary units and proximity to port container depots.

About 49 per cent of Uttar Pradesh's industrialists are sons of the soil. A large number are also from Delhi (26 per cent) and Haryana (14 per cent). Those from

TABLE 2.20

Reasons for Choosing the Particular Location Frequency of Weighted Average Rank (Per Cent)

Reasons	*Ranks Groups*				
	0	1-4	5-7	8-10	Total
Incentives	13.04	21.74	47.83	17.39	100.0
Availability of Skilled Labour	9.09	0.00	40.91	50.00	100.0
Availability of Cheap Land	8.69	8.69	26.09	56.52	100.0
Availability of Infrastructure	13.64	22.73	45.45	18.18	100.0
Availability of Auxiliary Units	45.45	27.27	27.28	-	100.0
Proximity to International Airport	13.64	50.00	31.81	4.50	100.0
Proximity to Target Market	25.00	33.33	25.00	16.67	100.0
Proximity to Port Container Depot	31.82	54.54	9.09	4.55	100.0

Source: *NCAER Field Survey* - 2000.

1. A strong association exists between the availability-paved certain infrastructure–telecommunications, power, paved roads, and access to safe water and per capita GDP.

2. Factor analysis is a scientific tool used to construct a composite index in such a way that the weights given maximise the sum of the squares of the correlation (of the indicators with the composite index).

other states like Bihar, Punjab, Rajasthan and Madhya Pradesh account for only 11 per cent of the state's industrialist community. Industrialists from Delhi operate units mainly in NOIDA and Ghaziabad keeping their offices in Delhi. Proximity to residence was crucial in this case.

2.3.6. Policy Recommendations

2.3.6.1. Recommendations Regarding Infrastructure

a. **Development of Industrial Corridors:** A viable approach for the development of infrastructure is to identify industrial corridors so those regions relatively better off in terms of infrastructure could be targeted to grow faster in the new competitive environment. An industrial corridor is a selection of contiguous districts that are fairly developed. The contiguity facilitates the realisation of benefits associated with the economies of scale, scope and agglomeration. The delineation is based on the premise that the first three categories of development, (very high, high and moderate) are most suitable to be part of the industrial corridors because of the presence of environs conducive to industrial activities. Table 2.20 identifies the industrial corridors of Uttar Pradesh.

b. **Overcoming Infrastructure Bottlenecks:** The NCAER field survey team had identified power shortages and non-availability of land as the likely key infrastructure bottlenecks. This is illustrated in Table 2.22. Land was considered as the most important element of infrastructure. Two-thirds of the units surveyed had attributed maximum ranking to land. Transportation and power were considered the next two on their scale of priorities. Water and incentives were not considered very important when it came to locating a production plant.

TABLE 2.21

Identified Industrial Corridors of Uttar Pradesh

Corridor	*Districts*
Western	Saharanpur, Muzaffarnagar, Bareilly, Badaun, Bijnor, Meerut, Moradabad, Ghaziabad, Agra, Aligarh, Mathura, Firozabad and Bulandshahr.
Central	Lucknow, Unnao, Kanpur-Nagar, Kanpur-Dehat, Jhansi and Jalaun.
Eastern	Allahabad, Mirzapur, Varanasi, Sonbhadra, Maharajganj, Siddarthnagar, Basti, Gorakhpur, Azamgarh, Mau and Ghazipur

Source: *NCAER Field Survey* - 2000.

TABLE 2.22

Weighted Frequency Percentage of Infrastructure Facilities with Regard to Importance to Production Site

Infrastructure	*Group of Ranks for Importance to Production*				
	0	*1-4*	*5-7*	*8-10*	*Total*
Land	3.12	18.75	12.50	65.62	100.00
Power	6.06	27.27	27.27	39.39	100.00
Water	12.90	41.94	19.35	25.80	100.00
Transport	5.88	8.82	26.47	58.82	100.00
Other Incentives	28.57	17.86	25.00	28.57	100.00

Source: *NCAER Field Survey* - 2000.

Ideally, the problem of power shortage should be addressed by attracting fresh investment into power generation or allowing captive generation of power by new industries. Of course, the latter route could affect the viability of UPSEB as industrial consumers pay the highest tariff. The power tariff needs to be reviewed. The experience of industry is that captive power works out to be cheaper than that available from the grid. The state government should think of ways to make cheap power available to industry. Special incentives should be offered to power sector companies to set up mega projects in Uttar Pradesh.

c. **Improving Social Infrastructure:** The private sector could be roped in for investment into education and health care. Incentives should be offered in this sector at par with those for industry.

2.3.6.2. Recommendations Regarding Incentives

Although incentives do not figure as a 'decision variable' for the investor, the investor may, other things being equal, opt for a state that offers incentives. In other words, a prisoner's dilemma type of game is characteristic of incentive-based competition. It is collectively rationale, that it is in the interest of each state to cease offering incentives, but individually, it makes sense to continue offering them.

It is important to watch the behaviour of units, which have received incentives. This helps gauge the success of the policy as well as monitors its implementation. We make the following important points about incentives:

a. Investment should be encouraged in identified thrust areas: Many countries realise that the competition to attract investment is intense. They are rapidly restructuring their response systems to investment inquiries, simplifying procedures and eliminating red tape. There are two well-established principles applied to achieve this objective.

- *The Negative List:* This is a published list of those sectors which are barred by government to private investment (for example armaments and military hardware)
- *New Operations Face the Same Rules as Old Ones:* According to a World Bank study for the Uttar Pradesh, all would-be investors are informed of the various rules under which they will be expected to operate from conception to start of production. There is transparency observed on this. Under this arrangement, no 'clearances' are required. The onus is on the investor to ensure that his operations conform to the rules just as an existing operator is expected to.

We feel that coming out with a 'positive list' can be an effective policy option for Uttar Pradesh.

- *The Positive List:* Industries that can be 'encouraged', i.e., industries whose distinctive capabilities can be turned into 'competitive advantages' at the state level. This option can be implemented by either entering into a Memorandum of Understanding for mega projects in thrust areas or through announcing a policy outlining promotional features for new industries in the identified "thrust" areas.

b. Location status-based incentives: need to be reviewed. Under-utilisation of scarce capital, encouragement of non-viable industries, low

BOX 2.1

Thrust Areas Identified for the Organised Sector

Organised Sector at Three-digit Level	*Drivers (Industry Sub-component) Identified through Five-digit Analysis within the Broad Industry Segment*
Food Products	
Sugar Vegetable oils	Refining sugar, vegetable oils- non solvent and solvent extraction.
Dairy Products	Pasteurised milk.
	Contd. ...
...Contd. ...	
Textile-based	
Garments Cotton Thread Spinning and Weaving of Fabrics Using Man-made Fibres	Textile garments and clothing accessories. Man-made fibre, spinning of cotton fibre (incl. blended cotton).
Chemical-based	
Fertilisers and Pesticides Refined Petroleum Products	Urea and organic fertiliser. Other petroleum products.
Basic Goods	
Aluminium Products	
Capital Goods	
Industrial Machinery (Electrical) Agricultural Machinery	Parts and accessories for motor vehicles and their engines.
Intermediates and Consumer Goods	
Automobiles Jewellery Sports Goods Tyres and Tubes	No drivers emerged out of top 21 five-digit analysis showing a steep decline in UP industrialisation in these sectors.
Computer Software	Emerging area.
Floriculture, Biotechnology	Emerging area.

BOX 2.2

Thrust Areas Identified for the Unorganised Sector

Urban Unorganised Sector

- Wearing Apparel
- Cotton and Cotton Mixture Fabrics
- Textile Garments
- Sweetmeats
- Flour Milling
- Weaving
- Manufacture of PVC/Wooden Windows
- Rice Milling

Rural Unorganised Sector

- Brick Making
- Tailoring
- Wearing Apparel
- Structural Wooden Goods
- *Gur*
- Gold Jewellery
- Indigenous Sugar
- Porcelain China
- Manufacture of PVC Windows/Wooden Doors
- Silk

productivity of capital invested and movement of industry to infrastructure deficient areas are all problems arising out of location-based incentives (Basis: field and literature survey).

c. **The trade tax structure:** should be simplified and the multiple tax structure needs to be addressed (Basis: State Finance Ministers' Conference in New Delhi).

d. **Only deferment schemes:** need to be in places. Existing waiver schemes can be replaced by deferment schemes. No capital or interest subsidy needs to be provided (Basis: Field Survey).

e. **Fiscal incentives:** can be addressed to fixed investments. The option of basing incentives on the amount of investment and employment generation potential for unskilled labour needs to be researched (Basis: Madhya Pradesh research study by NIPFP).

f. **Incentives:** should be given only to deserving investors by ensuring that only those who actually bring in fresh capital and new machinery get them. They should also be limited to a period of between 8 and 12 years, as technology tends to become obsolete after that (Basis: Synthesis of Analysis).

g. **Poor law and order:** is an important disincentive for producers. Eastern Uttar Pradesh has a negative image for breeding 'goonda raj' where various forms of crime and extortion thrive. The state should take serious steps to combat crime if it is interested in attracting industrialists to the state (Basis: Field Survey).

2.3.6.3. Miscellaneous Recommendations

Apart from announcing incentives, the government should make efforts to emphasise Uttar Pradesh's comparative advantages as a host base in terms of availability of resources and markets. Suitable promotional activities should be taken up like undertaking public relations drives, sending missions to other parts of India and abroad for conducting road-shows and taking out advertisements. Udyog Bandhu will have to play a crucial role in this exercise.

2.4. Small Scale Industries

2.4.1. Overview of Structure and Performance

In 1997-98, there were over three million SSI units in India, which accounted for about 40 per cent of total production in the manufacturing sector, 35 per cent of exports and 80 per cent of additional employment in manufacturing (16.8 million people). They can still play a vital role. In Uttar Pradesh alone, there are about 3.73 lakh SSI units employing about 15 lakh people (Table 2.23).

TABLE 2.23

Growth of SSI in Uttar Pradesh

Items	*1984-85*	*1996-97*	*1997-98**
No. of Industrial Units Registered with the Directorate of Industries up to 31st March	77496	342812	372946
Capital Investment (Rs. Crore)	921	3230	3629
Employment Creation ('000)	850	1425	1499
Estimated Production (Rs. Crore)*	2763	1212	1437

Source: Directorate of Industries, Uttar Pradesh.

Note: * Annual Information.

SSI Units

The SSI units are prominent in the agro-processing (sugar and *vanaspati*), brassware, glassware and cotton yarn sectors. Uttar Pradesh's success in developing SSI clusters cannot be denied (Table 2.24). Keeping the strategic perspective in mind, NCAER made a comparative observation of Uttar Pradesh's experience with that of its competing states. Uttar Pradesh has made good use of the cluster approach discussed in the next section.

2.4.2. Development of Small Enterprises Using Cluster Approach

Clusters, from an international perspective, is the major strategic approach towards developing small and medium enterprises (SME)s, because of the excellent linkages that are possible through key factors: service institutions, presence of units along various points in the value chain in fostering competitiveness, building relationships with big firms, developing niche markets, etc.[3]

Clusters of enterprises making the same, similar or complimentary products are fast becoming the norm the world over. They have many advantages:

1. **Recognition of Heterogeneity:** Product characteristics, technology, type of markets served, production scale, etc.

3. Gulati, Mukesh (1997). *Restructuring & Modernisation of Small and Medium Enterprise Clusters in India*, UNIDO.

TABLE 2.24

SSI in Uttar Pradesh and Competing States

States	*No. of SSI Units (Registered)*	*Large and Medium*	*Area of Operation*
Gujarat	170000 (1995)	1500	Textiles; Chemicals; Petrochemicals; Pharmaceuticals; Dyes; Fertiliser; Cement; Dairy; Sugar; Engineering.
Haryana	117559 (4500 in 1965) (0.7 mn employment in 1995)	590	Panipat weaves carpets; One out of four bicycles; One out of three sanitary wares; Automobiles.
Karnataka	137000 (Rs. 1473 crore)	650 (Rs. 4500 crore)	IT sector; Two wheelers; Iron ore; Silk Raw; Electronic equipments; Chemicals and Fertilisers; Transformer Granite; Quartzite.
Maharashtra			• Accounts for around one-fourth of National value addition in the organised sector. • Accounts for 30 per cent of total sugar production. • Textiles; Sugar; Petrochemicals; Pharmaceuticals; Heavy chemicals; Electronics; Automobiles; Cotton yarn; Cotton textiles; Commercial vehicles.
Punjab	188000 (Rs. 1973 crore)	475 (Rs. 6420 crore)	Electronics; Bicycle parts; Sewing machines; Hand tools; Machine tools; Sports goods; Housing; Knitwear; Nuts & bolts; Sugar.
Rajasthan	170000 (Rs. 1423 crore)	NA	Textiles; Sugar; Edible oil; Zinc; Copper; Cement; Fertilisers; Ball Bearings.
Uttar Pradesh	349000 (Rs. 2200 crore)	1399 (Rs. 10,500 crore)	Sugar; *Vanaspati* Oil; Cotton cloth; Cotton yarn; Brass-ware; Glass work; Minerals-Lime Stone; Magnesite; Rock; Dolomite; Phosphate.

2. **Collective External Efficiency:** A critical mass of firms producing a similar range of products attracts service providers. There is a free flow of useful information and market linkages are easily established. The cluster from which all member firms benefit earns an image of collective efficiency.
3. **Ease of Customisation of Support Services:** Policy makers and development agencies in the cluster can ensure
   - Customisation of their policies and support systems. That helps the cluster go on to a higher growth trajectory.
   - Comparison to a generic set of support instruments applicable for all types of small enterprises.

Industrial clustering has become popular in India too. There are more than 350 modern SME clusters and over 2000 artisan-based, rural clusters. Roughly 60 per cent of manufactured exports emanating from the SSI sector originate in clusters. They are concentrated mainly in the northern and western regions of India as is evident from Table 2.25.

Clusters in Uttar Pradesh

Uttar Pradesh has made good use of the cluster approach with 42 clusters. However, the case of Maharashtra with 66 clusters including 55 modern ones implies that there are further potential gains from this approach in Uttar Pradesh.

The important clusters in Uttar Pradesh are NOIDA for electronics, Moradabad for brassware, Meerut for sports goods, Bhadoi, Varanasi and Pratapgarh for carpets, Kanpur and Agra for leather, Aligarh for locks, Khurja for ceramics, Kannauj for essential oil and Agra for foundries. Of these, 37 are deemed 'natural' clusters. Most of the SSI units in Uttar Pradesh's clusters are export-oriented, competitive in relation to larger firms and 'market based'. The state's success with clusters gives it a definite edge over competing states. The statement below compares Uttar Pradesh's clusters with those in Rajasthan, Punjab and others.

2.4.3. Policy Recommendations and Issues

This sub-section is divided into two parts: a) recommendations regarding clusters, and b) sector-specific issues.

TABLE 2.25

State-wise Concentration

	Uttar Pradesh	*Rajasthan*	*Punjab*	*Karnataka*	*Haryana*	*Maharashtra*	*Gujarat*
Clusters	42	16	23	26	22	66	46
Natural	37	16	23	25	21	63	39
Induced	5	0	0	1	1	3	7
Modern SSI Cluster	18	14	20	13	18	53	37
Large Unit Centred	0	0	4	1	0	1	1
Horizontal	28	12	15	24	14	50	34
Vertical	6	1	1	0	1	8	4
Both	5	3	3	1	7	7	6

Source: Mukesh Gulati's Report on Clusters - UNIDO.

2.4.3.1. Recommendations Regarding Clusters

Our policy recommendations regarding the implementation of the cluster approach are drawn from UNIDO's work on clusters (Mukesh Gulati, 1997) as well as lessons learnt from successful clusters. These are listed below:

1) The private sector should be providers of common services rather than state-level public sector agencies.
2) FDI into clusters that have inherent export capabilities should be encouraged.
3) The state should involve clusters in dialogues to evolve policies and plans on industry.
4) Flexible and unconventional support instruments should be introduced. A number of consortia could be formed for export promotion, mutual credit guarantee and purchases. The institutional capacities of local associations can be upgraded. These are some of the support instruments that can be exploited to the advantage of clusters and their local economies.
5) Positive competition should be induced. Encouraging competition, both external and internal, for clusters based on quality rather than price would ensure motivation for upgradation, which is necessary for units in Uttar Pradesh to retain their competitiveness.
6) Cooperation mechanisms should be induced. Clusters could be encouraged to develop task forces so as to make them self-sufficient to the maximum extent possible.
7) Stimulate induction of new firms: A continuous process of introducing new firms into the

TABLE 2.26

Comparative Statement on Clusters

	Uttar Pradesh	*Rajasthan*	*Punjab*	*Karnataka*	*Haryana*	*Maharashtra*	*Gujarat*
Export Orientation							
High	28	8	15	17	7	26	1
Medium	6	0	5	5	8	23	12
Low	6	8	3	4	7	17	21
Infrastructure Oriented	0	0	0	0	1	1	5
Market-based	29	9	18	11	14	42	25
Resource-based	11	7	5	14	6	23	16
Competition with Large Units	28	7	15	11	9	29	30

Source: Mukesh Gulati's Report on Clusters - UNIDO.

clusters and phasing out of ineffective ones, whether induced or natural, is quite the norm. The process of development can be hastened by identifying the gaps in the value chain, which would necessitate the entry of a particular kind of firm. This is done not by the conventional system of providing financial incentives but through a positive approach. Providing services and linkages with local associations and research bodies could help new firms.

8) A database on clusters should be built. Clusters should be typecast into them according to their production and marketing at three levels—local, national and international. Some of the most important typologies relevant in Uttar Pradesh are: Family firms, rural firms operating on a survival basis for the local market; urban firms in the formal and informal sectors catering to the local markets, and specialised firms within well known areas catering to national as well as international markets.

9) Policy support and development assistance in this crucial time will have to strike a fine balance between the speed of change and the capacity of the small firms in these clusters to absorb change. At the lowest end the artisan clusters producing handicrafts would have to be protected. On the other hand, modern SSI clusters having the capacity to carry out international contracts would need to be promoted.

2.4.3.2. State Level Reforms

Components Affecting Industry

The precise approach to state level reforms and the relative emphasis on its many diverse aspects vary greatly from country to country and state to state; however, we can note some common themes, that affect the industry sector's performance as under:

- **Privatisation and Deregulation:** Privatising the state owned enterprises or confronting the state level enterprises with a competitive economic environment forcing them to become more productive, efficient, competitive and responsive to consumer preferences.
- **Facilitating Foreign Investment in the State economy:** Financial integration with world capital markets—the macro-economic counterpart of trade liberalisation achieved by replacing state government control of the capital allocation process with more efficiently functioning markets.
- **Fiscal Consolidation and Tax Reform:** Reducing the level of government expenditure and shifting the finance of continuing expenditure away from money creation towards taxes and government borrowing.
- **Investment Finance and Debt:** Evolving fundamental rules for sound debt management (i) to avoid insolvency crisis, IRR greater than the cost of debt (ii) to avoid liquidity crisis, synchronising loan maturity and project maturity, and (iii) addressing uncertainity, risk premium.

Re-engineering Government[4]

(a) **Reduce Size:** Decrease in unproductive expenditures, subsidies and the tax incentives can facilitate the reduction in size of government.

(b) **Quality of Governance:** Computers and computerised information systems are perhaps the most important productivity enhancing tools for provision of such intangible services. A comprehensive programme should be drawn up with the help of professional consultants for computerising the operations of government and all related institutions especially related to industrial sector. These systems should make it possible for the government to provide quick and efficient service to stakeholders in the sector.

(c) **Administrative Practices:** Many of our administrative practices have not changed since the colonial times. We need to urgently introduce modern management practices in departments that provide a well-defined objective like tax collection. Management consultants should be hired by large departments, to assist them in a thorough re-examination of objectives, methods and procedures using BPR, ERP or other recognised methods. Departments can also benefit from the application of modern cost accounting techniques like ABC. There is also need for decentralisation of financial powers to subsidiary institutions along with systems and procedures for greater accountability.

4. For further details on this please refer Arvind Virmani (1999) *Reforms for Accelerating Growth in the 21st Century*.

(d) **Public Procurement:** A sustained decrease in unproductive expenditures and enhanced effectiveness of desirable expenditures requires greater transparency in purchase and procurement. The rules and procedures for public procurement should be brought up to international standards.

(e) Natural Resources: Unlike normal goods and services, which can in principle be produced in quantity and in which production cost determines price, resources are finite and have a scarcity value, called 'resource rent', which is an additional element in its market price. Efficiency in the use of natural resources requires that the optimal resource rent and extraction cost be competitively determined and prices mimic competitive pricing. This needs to be factored-in, in the design of state level policies.

(f) Regulation for Infrastructure: All infrastructure sectors, which have 'natural monopoly' segments, require a regulator. The most common 'natural monopolies' are networks such as roads, canals, pipelines, and electricity. The regulatory law must provide for autonomy and independence of the regulatory authority, with full authority over pricing and conditions and quality of supply.

2.4.3.3. Policy Issues in Select Sectors

(a) EOUs and Engineering Exports: We had mentioned the need to include the development of EOUs as a special thrust area. The logic for this stems from the fact that India has been successful in engineering exports over the past decade. For instance, India's performance in exports of simple metal products with high labour content (flat forged hand tools, sanitary castings, etc.) has been quite encouraging.

(b) Information Technology–Software: IT clusters in Bangalore contribute to around 35 per cent of India's software exports. 'Electronics and computer software' accounts for 40 per cent of Karnataka's exports. The IT cluster in NOIDA has already positioned itself as one capable growing to comparable importance. NCAER's study of Bangalore, whose IT cluster has developed successful linkages with research and academic institutes ('software diamond') is a document worth recalling if NOIDA is to emulate Bangalore's success. McKinsey's projection of the growth of India's IT sector to $ 50 billion by 2008 employing 2.2 million knowledge workers throws up the possibility for exciting inter-state competition.

(c) IT Enabled Services Exports: As foreign organisations are concentrating on their 'core competencies', a lot of IT enabled services are being outsourced. A sharp fall in real costs of international telecom services has opened up enormous opportunities in this sector.

(d) Bioinformatics or the Use of IT in Biology: Bangalore has developed bioinformatics as a key growth area in service exports. NOIDA can emulate this as it has all the resources, the market technology and social infrastructure to be competitive in this important area.

(e) Garments Assembly: The assembly of garments for exports could be another key area for Uttar Pradesh's development. Modern SSI units in this sector would be in a position of strength when the Multi-Fibre Agreement lapses in 2005. A proactive, induced-cluster oriented approach in developing garments 'parks' around Delhi is the need of the hour. Garments assembly activity accounts for over 14 per cent of Karnataka's exports and the proposed garments parks of Uttar Pradesh should also aim at a similar share of the state's exports.

2.5. Concluding Remarks

The major conclusions, which emerge from our study, are the following:

a. Uttar Pradesh's large size relative to other Indian states and the professed goals of its leaders and policy makers make it imperative for industries in this state to develop fast. However, recently there has been a marked deceleration in industrial growth which needs to be addressed by a strategically oriented industrial policy, components of which are outlined in this chapter.

b. Uttar Pradesh's industrial performance is hampered by paucity and poor quality of infrastructure (both physical and social) and lack of incentives for major conglomerates to locate in the state. Infrastructure investment in identified industrial corridors and a variety of fiscal and other incentives targeted to industries which have growth potential in the state context

are called for, to improve effectiveness of utilisation of scarce investible resources.

c. With regard to small-scale industries, the implementation of the cluster approach has been satisfactory both in qualitative and quantitative terms, though there still exists room for improvement. Measures have been suggested.

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