CHAPTER – 1

INTRODUCTION

Section-I

INDUSTRIAL GROWTH AND DEVELOPMENT

1.01 General

"Through out the world, industrialisation has indeed become the magic word of the mid- twentieth century" (Bryce, 1960). It is not possible to achieve economic development without industrialisation. Besides this, economic development of a country depends upon the ability of its people to use new techniques. This ability depends upon the various types of technical skills required for the introduction of modern science and technology but it also helps in the expansion of technical knowledge by training facilities. Hence, industrialisation sparks off innovation, which helps to accelerate economic development through its impact on productivity. It has subtle effects on factors, which ignite economic development (Bryce, M.D., 1960). The industrial development brings with it a relatively easy access to modern technology which is highly capital intensive and conducive to rapid capital accumulation. Capital formation, in turn, provides the base for industrial development. The spill over effect of industrialisation contributes to the growth in all sectors of the economy and thus serves as a catalyst (Chenery H., *et al,* 1986).

Apart from the existing possibilities opened up by the industrialisation for the extensive use of modern science and technology; it also leads to socio economic changes, which are necessary for a country's sustained economic progress. Industry gradually transforms the life of the regions, influences the aspirations and efforts of the people, their choices regarding training and education. Industry trains and educates a whole set of new leaders, technicians etc. (Bognor, J., 1969). Hence, industrialisation is indispensable for economic development not only as a means of economic welfare and introductions of

modern technology but also as a harbinger of socio-economic change, which activates the growth process.

With the increase in the economic development, per capita income rises; people spend more on the consumption of non-agricultural commodities. With the shift in the aggregate consumption pattern, there is a gradual shift in occupational pattern in favour of manufacturing industries. Since the secondary-manufacturing sector contributes to the growth of the tertiary or secondary sector, one would also expect the occupational structure to shift towards latter (Clark, 1951).

Before 1947, Indian economy was typically a colonial economy with its characteristics of underdevelopment such as mass poverty, chronic unemployment and underemployment, lack of industrial base, income inequalities, low level of productivity, high degree of dependence on agriculture etc. The economy of India in the post independence period may be described as one which made efforts for breaking chains of poverty, unemployment, industrial backwardness, etc. (Rosen, G., 1988). Independent India facing several economic problems realised the importance of the development of an industrial base as an instrument to transform the uneven economy towards the attainment of a self-sustaining economic growth.

1.02 Industrial Development in India

The importance of industrialisation as a means of achieving rapid growth and prosperity has long been recognized in the thinking on development strategy for India even before the formal process of economic planning was launched in the economy. The atmosphere at the end of the war, after independence and during the early plan period, was heady and effervescent. But the expectations, discussions and actions resulted in various proposals, policy resolutions, laws and plans, which set the broad framework (Chaudhari, S., 1998). Industrial production during the pre-independence period took place without a proper framework of policy and planning.

Industrial production during the period 1900-1946 is estimated to have grown at a rate of 2% per annum. The post independence economy had a small industrial base. Since independence, industrial growth, and development have been guided within the broad framework of industrial policy resolutions adopted during various years and the five-year plans. These policies and plans have been supported by massive efforts to raise resources and invest them productively by numerous rules, regulations and measures and by the establishment of a number of agencies, departments and institutions and the strengthening of the existing ones, all with a view to sub-serve the objectives of industrial growth and other objectives laid down in the policy and plans (Sandesara, J.C., 1982).

It is difficult to assess the performance with respect to broad objectives of industrialisation. There are some dimensions along which the achievements have been clearly significant. One such dimension is the substantial widening of the industrial base and the consequent ability to produce a very broad range of industrial products. Other positive aspects of industrialisation include the fostering of entrepreneurship and the development of technological capabilities and skills in the economy (Ahluwalia, I.J., 1985). On the industrial front, there were major successes such as the development of public sector, which could claim to occupy the commanding heights of the economy so as to provide direction and leadership within a mixed economy framework. The foundation of this had been laid down by the very substantial investment that was made in the public sector. The establishment of heavy industries in public sector under this strategy was combined with policies favouring import substitution, which contributed towards widening of the industrial base of the economy (Ahluwalia, I. J., 1985).

India now possesses a diversified modern industrial structure. The process of industrialisation over the last decades has been quite varied and diversified. There has been a definite shift in favour of basic and capital goods *viz.*, those engaged in manufacturing of heavy and light engineering products,

iron and steel, basic industries, chemicals, non-ferrous metals etc. (Subramaniyam, K.K, 1985). India became one of the major capital goods producers among the developing countries.

In many respects, India's overall economic performance in the modern period has been impressive even if inadequate to its needs. The rate of growth of national income has significantly increased over the years. The growth and industrialisation of India needs to be placed into historical perspective, which played a major role in a massive effort of India's economic development (Bagchi, A.K., 1981). While India has performed remarkably better than in the period before it, we need to remember that tradition of economic growth, entrepreneurship and industrialisation, which modern India inherited, was quite impressive and this tradition certainly made the task of further planning of Indian planner considerably easier (Bagchi, A. K., 1981).

In addition, there has been a major shift in the structure of manufacturing. In the early 1950's the share of the consumer goods sector was close to 60% of the value added from manufacturing. By the late 1970's the share of consumer goods sector in the value added from manufacturing had fallen to about 30.35%. Over the same period the share of basic and capital goods sector rose from about 30% to almost 50% of the value added. During 1980's, India was described as a country with widespread modern industries making everything from nuclear reactor to textile machinery, from machine tools to petrochemical plants (Ahluwalia, I. J., 1985). The period from 1951 to the mid 1960's was devoted to accelerating industrial growth.

After 1965, there was an apparent deceleration of the rate of growth of industrial output (Ahluwalia, I.J., 1985). A number of studies were carried out in the 1970's seeking to explain the deceleration of industrial growth in the mid 1960's. The industrial performance since the mid sixties has been characterized by a number of economists as a period of persistent industrial stagnation.[1]

The Economic Survey, (1984-85) while mentioning that "the explanation for this prolonged period of sluggish growth is complex"; supplements by saying, "A number of factors have combined to result in the low productivity of resources in industry, including protection in various forms, inappropriate choice of scale and technology, poor rate of capacity utilization, mismatches between capacity and demand and recurrent episodes of severe infrastructure constraints, especially with respect to power"

According to V.P. Chitale (1980), "Up to the mid-sixties, observed investment values moved up and down around the trend line in a cyclical pattern and upward thrusts were pronounced than downward drifts... But after the mid- sixties, all the observed values of investments and the general drifts are distinctly downwards and it is apparent that high levels of investment of the earlier periods are no longer sustained in the later period". Srinivasan and Narayan, (1977) Chakravarty, (1979) Dalal and Lahiri, (1977) argued that the slackening of real investment, particularly in the public sector from the mid 1960's was one of the important factors behind the deceleration in the rate of growth of industry. Industry being the major engine of economic development, the growth of the entire economy has suffered consequently. Beyond doubt, the public sector performance has not been up to the expectation, which has also contributed to a slow growth rate considering the large share of the public sector in organised industrial output. The public sector has not been able to generate adequate surpluses resulting in constraints in resources available for investment, and thus slowing down the growth process (Mohanty, B., 1966). Patnaik and Rao, (1977) also suggest that the stimulus for the development in post independence industrialisation till about the mid 1960's came primarily from the extension of protection and stepping up of public investment. Thereafter, the industrial growth rate suffered with the exhaustion of import substitution possibilities and the decline in public investment. But growth cannot be sustained by the initial rise in demand alone. Also, growth depends not only on the rate of import substitution, but even on how, in the process of

meeting the initial demand, further demand and production are generated. In other words, it depends on the structure of production, income and demand. Mitra, (1977) Nayyar, D., (1979) Chakravarty, S., (1979) show that increasing inequality in distribution of income has led to narrow based demand and has thus resulted into retardation of industrial growth.

In the initial years of planning, industrial development was largely based on import substitutions and had the advantage of a capital market... while no single factor can be defined as having a significant bearing on the rate of industrial growth, a close relationship could be identified between the trends in total investment (particularly public investment) and industrial production (GOI, Sixth Plan). Other factors, which have affected the growth rate from time to time, are the shortage of infrastructure and other vital inputs. unremunerative administered prices, disturbed industrial relations and to an extent inefficient management.

Bhagwati and Srinivasan (1975) have stressed, "India's foreign trade regime, in conjunction with domestic licensing policies in the industrial sector, led to economic inefficiencies and impaired her economic performance. The policy framework was detrimental, on balance, to the growth of the economy by adversely influencing export performance, by wasteful inter-industrial and inter-firm allocation of resources, by permitting and encouraging expansion of excess capacity and by blunting competition".

Ahluwalia, I, J., (1987) has also referred to policy constraints on industrial growth including the industrial licensing system and related import licensing and trade policy regimes, price controls, policy towards foreign investment and import of technology, etc. The economic consequences of these policy aspects are administrative hurdles, restrictions and delays affecting growth, barriers to entry, protection from foreign competition, implications for uneconomic scale of production, sickness of industry, effect on entrepreneurship and prevalence of outdated technology. The progressively

declining levels of productivity due to insufficient capacity utilisation, which in turn, has resulted from inadequate supply of raw materials; infrastructure constraints, particularly supply of power and coal and movement problems; unsatisfactory industrial relations; inadequate and unscientific maintenance and general inefficiency in management and poor worker productivity have also contributed to a low and stagnant rate of growth in industry.

In more concrete terms, Raj (1979) and Vaidyanathan (1977) argued that despite green revolution, the overall rate of growth of agriculture output did not rise. Considering the over whelming importance of agriculture in the Indian economy, private consumption demand depends to a large extent on the conditions in the agricultural sector. If output and income do not rise rapidly then the demand for industrial goods will also not rise adequately thereby adversely affecting industrial growth. Where agricultural performance is inadequate, industries are negatively affected from the supply side also through reduced availability of raw materials. Of course, production of luxury goods catering the needs of the rich is less dependent on agricultural raw materials. If the income of the rich rises rapidly then one may think of a different pattern of growth based on luxury goods. According to Raj, (1979) this is neither desirable nor politically feasible as a strategy, considering the sharp accentuation of inequalities of income it entails. A more broad-based development is possible if the problems-such as poor agricultural growth is tackled at their root.

A basic problem in India has been that whatever development has taken place; the fruits have not been equitably shared. Massive unemployment and extreme poverty continue. Some of the fundamental expectations of India's planners were not realised. "Far from the liquidation of unemployment, even the newly created industry during the second and third plans was unable to absorb the new extracts to the labour force, thus resulting in a growing backlog of employment (Shetty, S.L., 1978).

As regards constraints enervating from Government's own policies, Bhagwati and Desai (1970) stated, "Indian Planning for industrialisation suffered from excessive attention to targets down to product level, and a wasteful physical approach to setting and implementing thereof, along with a generally inefficient framework of economic policies designed to regulate the growth of industrialisation." One of the official reviews of this picture with respect to industry is contained in the Government of India's Economic Survey for 1984-85. The discussion of India's Industrial performance ends with the words "our industrial performance has been unsatisfactory and a large area of the industrial sector has been facing chronic to structural problems. Such a disappointing performance is not limited to the sixth plan period (1980-85). It was also a feature of the last 15 years. If the economy is to enjoy sustained growth then the long-term growth of industry must accelerate. The efficiency of industrial enterprise will have to improve. The framework of industrial policy may also require changes, but such reforms will only yield expected results if industry responds with dynamism and responsibility". Mundle (1982), further argued that instead of stagnation, the industrial sector is restricting itself; a reorganization of capital is taking place. He indicated that "once a certain critical weighing balance between old and new industries is passed, the growth rate of manufacturing sector as a whole should increase substantially".

1980's have been an eventful decade for industrial development in India. Changes in government policy, which had been initiated in the closing years of the previous decade, were further reinforced and accelerated during the eighties. The technological backwardness of the 1970's was replaced by a spate of technological collaborations and ambitious schemes for modernisation and capacity rejuvenation. There are hints even of a reversal in the trends of industrial efficiency as reflected in the estimates of total factor productivity. The industrial sector in India during the eighties appeared to be moving towards the intensive rather than the extensive margin on which it had operated for the last three decades (Kulkar, V. K. and Kumar R., 1989).

The overall growth rate of the manufacturing sector during the eighties (1981/82 -1986/87) has been substantially higher than in earlier periods. During these years, value added in the registered manufacturing sector, at 1980-81 prices grew at 10.13% per annum as compared to 5.5% during 1966-67 to 1979-80 and 7.6 % during 1959-60 to 1965-66 (BICP, 1987). According to Index of Industrial Production, the annual rate of growth was 7.12% as compared to 8.14% estimated on the basis of Annual Survey of Industries value addition data on registered manufacturing sector. The growth rate during 1981-82 to 1987-88 of the registered manufacturing at 9.8% was significantly higher. At the aggregate level, it is unambiguously established that the Indian industrial sector achieved rates of growth during the 1980's, which were markedly higher than those, recorded in the earlier periods. Hence, the eighties have witnessed a decisive reversal of industrial stagnation. On all accounts, thus, the industry has moved on to higher path (Bhatia, R. and Goldar, B., 1988).

Section-II

STRUCTURAL REFORMS

1.03 Developing Countries and Structural Reforms

The recession of the early 1980's hit both the developed and the developing countries. The slowdown in growth of output and trade have resulted in a higher unemployment particularly in developed countries and increased poverty in most developing countries (ILO, 1990). At least two-third of the third world countries experienced a chronic economic crisis with major imbalances especially in their external accounts. An increasing number of countries have had resources from the IMF and World Bank. The borrowing countries had to resort to structural adjustments. "Stabilisation" and "adjustment" became key words" (World Development Report, 1980).

The adjustment process is better understood as an instrument for realising certain goals. The basic idea behind this change is that rapid economic growth is best achieved when economic decisions are left to the market. The

reason why markets are being allowed to bring an adjustment is that it combines signals and incentives in response to change (Streetan, P., 1987). Streetan Paul, (1989) has explained the process of structural reforms in term of six "in's", incentives, input, innovation, information, infrastructure, and institutions- efficient market institutions. These are the six instruments in the framework (Paul, S., 1987). The policy was sought to minimise government intervention.

Over a period of time there has been a growing agreement over the issue of the inefficiency of the public in the country and bureaucratic failures have improved the scope for market friendly policy (Agrawal, S. 1994). However, reforms are not ends in themselves. They are intended to promote more sustainable economic growth and equity.

For the past several years, the countries of South East Asia are developing fast and the success of these newly industrialized countries has created a sharp sense of having being left behind among other developing countries (Kohli, A., 1989). The fourth Industrial Revolution will assist the developing countries in transforming their old industries, if they globalise their economies. Integration with the global system would thus, help them to develop rapidly (Rostow, W.W., 1985). Two reasons are given to explain why developing countries though are late comers want to catch up with the industrialized countries as fast as possible. Firstly, they are adopting short cut for their industrialization. Secondly, the short-term rationality of the producer has undermined the importance of research and development in the long run (Agrawal, 1994).

The wave of economic reforms in the developing world is being seen as a necessary consequence of a changed world economic system. Its key feature is the element of the heightened economic globalisation, which provides new external challenges as well as opportunities for development. Globalisation became an important perception of policy makers and adjustment to it in the

form of economic liberalisation and the shrinking of the state has moved to the forefront of their economic agenda (Nayar, B.R., 1997).

Not all agreed to the globalisation and liberalisation under structural reforms. There are others who believe that the immediate impact of liberalisation and openness might be the increasing debt burden of developing countries, which are already under heavy debt. The mounting import bills will lend them in a debt trap, from which it will be very difficult for them to recover. Globalisation will lead the developing countries to cut throat foreign competition which will weaken their political, social and economic independence, which will prove detrimental to the interest of the poor nations (Taylor, S., 1988).

1.04 Structural Reforms in India

What factors compelled India to adopt these reforms? Did it start on a wrong track? Our economy failed to adjust policies and institutions to emerging circumstances and opportunities. The second plan, which laid the foundation of economic planning, stated that its objectives were "not rooted in any doctrine or dogma...Economic and social policy has to be shaped from time to time in the light of historical circumstances... It is neither necessary nor desirable that economy should become a monolithic type of organisation." But our economy continued to follow policies and institution long after they served their purpose, regarding them as the goal rather than as means (Dhar, P.N., 1992). There was a time when India was regarded by some in the western world as a new model for economic development and social change. During the cold war period the Indian model of development was presented as a counter part to the Chinese model of development for other developing countries. But after mid 1960's India lost that appeal, primarily because of its economy's poor performance. In the meantime East Asian Economies developed at spectacular rate. However, since 1978, China too had charged its economic gears and

demonstrated how increased participation in international trade can boost domestic economic growth even in a large economy (Dhar, P.N., 1992).

Until 1980, economic policies of the country were often driven by inter-group and inter-regional equity considerations rather than improvement in the performance of the economy. Though the country had created all the building blocks and institutions of a capitalist free market economy including a strong entrepreneurial class, it used them to serve the goal of a centrally planned growth process (World Bank, 1992). So our economy combined the socialist model of economic development with the capitalist model of the west. However, the socialist system is in deep crisis and fundamental compromises are being made, since the external assistance is inevitable in the development process. The collapse of socialist block brought the shock of finding alternatives for development. Structural adjustment programs are being recognized as alternative model and free market model (Sundersan, S., 1993). But whatever socialism has meant in practice in India, it has never meant, anti-capitalism but rather state guided capitalism involving planning (Kohli, A., 1989).

Following the unprecedented economic crisis of 1991 the Government of India announced a package of major economic policy reforms aimed at macro-economic stabilisation and restoration of the growth momentum to the economy. A three-pronged approach has been followed to achieve stabilisation, restructuring, and globalisation of Indian economy (Basu K., 1993). This adjustment was undertaken with a view to balance the aggregate demand and supply by reducing the mounting budget deficit of the central government, to make Indian industry internationally competitive through industrial and foreign trade policies and to globalise Indian economy through reduction in custom tariffs, allowing free flow of foreign capital, devaluation of Indian rupee (Prakash, B.A., 1997). The structural reforms program adopted in India is one of the most major policy changes since independence. As Michael M., (1995) remarked "... After wasteful decades, India is set to scale new heights.

Unfortunately, the planners preferred to build a wall around Indian economy for forty years, isolating her from the global economies. I call these the wasted decades."

The structural reform was adopted as an essential remedy for the ailing economy. It was meant to enhance the competitiveness of Indian Industry, ensure rapid growth, innovation and efficiency and curb the power of the inefficient domestic industry and free economic activities from the shackles of bureaucratic control, inefficiency and corruption (Kumar, B.G., 1992). During the post reform years, government has vigorously pursued a strategy of import liberalisation and custom tariff reduction, resulting in a large inflow of imported manufactures into Indian market. This might have adversely affected manufacturing production because of the 'reindustrialisation effect' of increase in manufactured imports (Vachin, S.I., 1998).

The aim of policy was to achieve sustainable acceleration in industrial gross domestic growth. But during the early years of structural reforms Indian industry is pushed to a peculiar environment to which it was not exposed earlier. Almost for a half century, it could learn to survive under such favoured protection. The industrial units faced less or little competition, cared little about the product, quality and techniques of production. This seems to be the 'basic character' of the Indian Industry. There is a threat to this character and our industry is finding it difficult to carve a way out. Moreover, Indian industry cannot be expected to become competitive overnight

1.05 Structural Reforms and Technology

We live in the midst of one of the major technological revolutions in history characterized by two main features-information and process orientation. High technology became a key element in the competition for world markets conditioning developmental process. Once the national economy globalises, it becomes difficult to ignore technological advancements (Soete, L., 1985). Thus, import of sophisticated capital-intensive technology for industrialisation

is another objective of structural adjustment. When countries or firms are not able to integrate and use these technologies, they lag in performance, being forced to focus their comparative advantages on low production costs linked to low wages and to the lack of protection of human health and natural resources. The modernisation of industrial sector has been a permanent objective of the developing countries. Without considering the domestic adaptability, it was believed that foreign technology would solve the problem of industrialisation (Dieter, E., 1990).

However, a blind adoption of modern technology may have another adverse impact as well. The rapidity of technological change, an increase in the number of suppliers, and the faster diffusion of technology have all tended to shorten the life span of new technologies. There is pressure to cash in the profits from each new product as quickly as possible before it becomes obsolete (Perumal V. S., 1995). Structural adjustment program aims at integrating our economy with the world economy by opening it up to the inflow of latest technology and knowledge. Increased automation and the greater emphasis on product design, development, and marketing are the order of the day.

1.06 Structural Reforms and Production

This drive towards structural reform as far as production is concerned, has been motivated by three principal expectations. First, that foreign competition in the domestic market will stimulate local producers to minimise their production costs: second, with reduced cost and free access to import, India's export can rapidly be increased, and third, with freedom of access to foreign investment, the economy will benefit greatly from the inflow of modern technology and "knowledge" (Krishnaswamy, K.S., 1992). As far as the production under liberal trade policies are concerned, Bhagwati, Jagdish (1978) has established a direct link between productivity and liberal trade policies. Some of the other scholars who have undertaken studies in different countries

have also found that productivity growth is significantly higher in the period of liberal trade policies. For instance, Krueger and Tuner, (1982) on Turkey, Nishimizue, Paze (1982) on Yugoslavia and Kim (1987) on Korea, Singapore and Taiwan in the early sixties have shown that these countries went in for outward oriented policies and achieved tremendous success.

1.07 Structural Reforms and Labour

Changes in the composition of industrial output can lead to immediate changes thereby involving decline of certain industries in absolute terms. This gives rise to redundancies and job losses (ILO, 1998). The problem is likely to be more serious for a country like India that has been suffering from industrial sickness and over sized public sector much before the structural reforms began. (Agrawal and Patel, 2001).

The employment intensity of the development process has been declining over the years, particularly in the 1980s. With the structural reforms, employment scene is likely to deteriorate further (Datta R., 1993).

Unemployment due to restructuring is expected to arise from three sources: closure of some of the economically non-viable enterprises, down-sizing of the workforce in other weak units and adjustments in labour force in perfectly healthy enterprises necessitated by changes in market conditions and/or technological changes [mainly imported] (Agrawal and Patel, 2002)[2]. A UN study carried out in 1984 in regard to technological change also reveals that ineffectiveness of the institution of R&D and technology remained divorced from the genuine problem of productivity and employment. Thus, the import of new technology will have labour displacement effect and the country will be devoid of employment generation capacity (Archibugi D. and Michie J., 1997).

Government decision to follow an outward oriented economic policy was expected to have positive effect on labour market. However, new policy

contemplated a radical transformation of the existing structure in favour of privatisation, which had negative impact on labour. Newly industrialised countries of South East Asia could succeed in their process of industrialisation by adopting capital-intensive technology. The situation in India is different and the addition to the labour force has been quite high but the generation of employment opportunities has been low (Kishor A., 1996). Capital-intensive technology is likely to generate employment in the organised industrial sector only imperceptibly, and that too, for highly skilled personnel only. The sector will continue becoming more and more labour saving rather than labour using. A large majority of population joining labour market during, at least, the coming few years will have to remain either unemployed or self-employed in the non-industrial activities (Kundu, A., 1996).

The effect of structural reforms on employment can be seen in short, medium and long term perspective. In the short-term, it is generally feared that employment growth may slow down primarily due to a slow down in economic growth caused by policies to stabilisation forming an essential and often the first step in the process of structural adjustments. In the medium term, when reform measures are implemented in different sectors of the economy, creating favourable climate for accelerating investment and output growth, employment is expected to grow faster. But since the dualistic nature of the labour market continues, a major part of the new employment takes place in the unorganised sector. In the long term, however, removal of distortion in the factors and product markets is expected to lead to better integration in the labour market and employment. Growth is likely to be accompanied by overall improvement in the quality of employment (Mundle, S., 1992).

Under new economic policy, adopted for structural reforms in the economy, there is no specific employment policy for increasing the employment elasticity. Also, no human resource development programs have been framed to increase the capability of the present and future labour force participation (Kaur, K. and Bawa, R.S., 1999). This is evident from the

experience of Latin American countries that have followed structural reforms where there has been a rise in the underutilisation of labour force, which increased, from 40% to 42% during 1980 and 1990. There has also been deterioration in the quality of employment. Structural reforms resulted in more instability in employment, part-time jobs and contractualisation of the labour. In Peru, Labour legislations were modified to allow easy dismissal of the workers to minimise labour cost during structural adjustments, there was a decrease in the real earning, decline in purchasing power and compression in informal sector earning in 1990 (Chossudovsky M., 1992). The experience of Asian countries clearly points out that quick adjustments to policy change can be facilitated only with adaptable human resource having appropriate skills to face the new situation. The fact that the National Renewable Fund (NRF) has been established in India is a clear indicator of the rise in unemployment at least in the short run. This has been established for the workers who will be rendered jobless due to restructuring. It is argued that employment may increase in medium and long run but much of it will be in the unorganised sector- characterized by the poor conditions of work, low earnings and lack of social security (Papola, T.S., 1994). The National Renewable Fund addresses itself basically to those who are likely to become unemployed in the course of structural reforms in the organized sector of the economy (Prasad, M. and Prasad, M., 1992).

Section-III

TECHNOLOGICAL CHANGES

1.08 Background

In the sphere of globalisation and liberalisation, a new breeze is blowing across the world. The world has become a global village. Changes that have occurred during the past few years all over the world have established very clearly that no nation can isolate itself completely from the rest of the world and survive for too long. Government and business sector can no longer afford

to neglect the technological advancement and its commercial application (Banerjee, D. 1998).

Schumpeter long back identified the forces of innovations as "spark plug" to growth. Technical progress plays an important role in the process of economic growth. The importance of technology has two aspects: First, it helps in the process of producing new things with existing resources or uses the existing resources in new ways for increasing the productivity of different resources. Schumpeter in analysing the importance of technology in the process of economic development points out, "development consists primarily in employing existing resources in a different way, in doing new things with them, irrespective of whether those resources increase or not"(Schumpeter, J.A., 1949).

According to Schumpeter technological change covers five main types of technological dynamism in an economy. These are: new processes, new products and new sources- of types of raw materials available; new markets, and new organizational method. This shows technological change can take several forms (Schumpeter, J.A., 1942).

Technology is an instrument of development. It is a vehicle of change and a crucial variable influencing the pace and pattern of development in all countries. Developed countries are positively endowed with favourable conditions for technological development whereas the developing countries are unfavourably placed in this regard. Consequently, there is a technological distance between developed and developing countries is terms of initial endowment which further seems to be increasing (Bhalla, A.S., 1984). Often it is argued that technologies are too costly and their use results in perpetual dependence and hence developing countries are not in a position to embark upon a policy of technological development taking place in other parts of the world. The future development of these countries depends on technological progress. The dilemma of the third world estimates from the realisation that

technological development has become a compulsion for the survival in the present (Varghese, V.N., 1983).

After structural reforms, Indian economy is all set for rapid technological growth. The emphasis, today in industrial sector, is on creating efficiency, competitiveness and upgradation of technology to match international business competition (Lall, S., 1998).

The important motives which lead firms to give priority to technological changes are, "the search for new markets and business opportunities; development of an in-house technological capability; enhancement of quality for product and services; rationalisation and modernisation of production facilities; and enhancement of the technical and managerial skills of personnel. The expectations underlying all these motives are that sales will increase along with market share enabling the firm to become more competitive as a result" (Marcovitch J., 1991).

1.09 Technological Change and Production

Most critics attribute lack of competitiveness, low product quality and deteriorating standards largely to the unhealthy protectionism and isolation of Indian industry from the global scenario. In fact, the economists had recently used the metaphor of a 'caged tiger' to describe the over protected Indian economy.

After 1991, scenario has changed completely. Now, for the management of a firm operating in a competitive environment, product strategies have to follow both product design, competition (market) pressures for low production costs, and work organisation has to be fitted to the adopted technology so that the resulting products can optimally exploit the opportunity structure of the market (Teru, T., 1984). Only those who can compete in domestic market as well as global market, who can produce and deliver goods and services of high quality by making best use of the latest technology at competitive cost, will be

able to survive. It is based on Darwinian selection and survival of the fittest theory (Pandey, A., 1992).

Technological change in spite of the problems connected with its acceptance has its positive effects on product standardisation. Technological change affects industry output by providing new or improved products or services that stimulate the demand for a particular industry's products (Tulpule, B., 1990).

1.10 Technological Change and Labour

The implications of introducing new technology increasingly in many industries, has been debated continuously for the last two decades. There have been two ends to the spectrum of this debate. On the one hand, it has been argued that technological advancement is beneficial since it increases production thereby reducing labour cost, eliminates repetitive and jobs demanding physical presence of the labour, improves working conditions, allows functional flexibility and creativity, enhances skills, gives a sense of pride to the employees in operating sophisticated equipments, and provides chances for higher pay, better promotion, more jobs, better quality goods and lower prices. On the other hand, it has been argued that the worker is not able to cope with the increasing pace of technological change and therefore experiences fear of job loss, alienation, powerlessness, professional obsolescence. anxiety and fear towards changes (O.S.T. 1980). Technological change and unemployment seems to have become synonymous. Many labour leaders maintain that technological change has destroyed more jobs then it has created (Francois, W., 1964). They argue that automation is not only a threat to a particular class of employed but also to certain professional skills and that this may consequently undermine the social status of many workers in industry. Only a privileged few, they argue, can be considered safe in their jobs (Pollock, F., 1957). Much of the debate on technical change and employment has identified potential deskilling and employment displacement effects as both a

cost of and a barrier to technical change. The cost is one of high and prolonged unemployment for displaced workers and for those unable to enter employment (Jahoda, M., 1982). The evidence from the U.S.A shows that when technological progress coincided with an increase in country's labour force, it resulted in serious problem in the labour market (Moss, S., 1966). Moss, S., (1966) noted that in the period 1950-53 employment dropped to 2.5%. In the period 1958-63 unemployment rose to 5%.

'Restructuring' and rightsizing' was the industrial slogan in the 1990's in Indian companies. In 1880's and 1890's it was the case in the U.S.A. It was supposed to be the fastest and easiest way to cut business costs, be more competitive and raise profits. Some analysts have described the growth profile of 1990's as one of "jobless growth" and views have been expressed about phenomenon of rapid technological changes as the possible cause of the loss of jobs during this period (Panchamukhi, V.R. 1998).

On the other hand many business leaders take the opposite view. They argue that technological progress means more output per unit of input. This increase in productivity through either lower prices and/or higher income results in greater purchasing power and eventually into demand for the increased output. The outcome is thus an expansion in alternative employment opportunities sufficient to absorb the workers displaced by technological changes (Jequire, N., 1976). Not only this but also in the economy as a whole there will be substantial increase in demand for scientists, engineers, technicians and skilled maintenance and repairman. Thus, an over-all skill and educational requirement in the economy can be expected to rise steadily (Diebold, J., 1959). The impact of technological development on employment is positive when the rate of increase in the level of output exceeds productivity. This need not be the general case. At successive stages of technological development, it is observed that the quality of labour required for a given output declines, leading to an overall declining demand for labour units. Even when there is a general decline in employment, the demand for higher

personnel personal may increase (Katrak, H., 1985). But if a country were involved both in the production as well as in the use of technology, a substantial proportion of the loss in employment would be offset by the employment generated as a result of production of technology. However, such may not be the case with developing countries, which to a great extent depend on imported technology (Pandit, B.L. and Siddharthan, N.S., 1997).

Section-IV

1.11 Rationale of the Study

Various studies have been carried out related to industry, industrial relations, industrial workers, wages, welfare facilities, absenteeism, accidents and safety, health measures for employees, industrial disputes, etc. To understand the process of industrialization and impact of economic policies on industry and labour these aspects need to be studied in totality.

However, no study covering all aspects has been carried out at the micro level. The present study is an attempt in this direction to fill the gap.

1.12 Chemical Industry

Chemicals worldwide are 50,000 billion industries. Its growth in the last two decades has been one and a half time the world GDP. Addition to output each year is Rs. 1000 billion (Chandra, R., 1997). It is believed that Asia Pacific region will emerge as a key player in the global chemical business. The Asia Pacific region consumes up to 30% of global chemicals, which is expected to increase to 40% by 2000 AD. By the same year it will become a net exporter of chemical. The faster growing with largest share will be China and India.

The chemicals industry in India is young, large, and growing very rapidly. The first chemical factory in India was a soap factory established in Meerut about a century ago. Apart from this there was very little chemical

production until independence. However, the dawn of independence heralded a new era in the affairs of the Indian chemical industry. Today, the Indian chemical industry is highly technology-oriented, capital intensive and heterogeneous in character (Jha, J.B. and Sahani, B.S., 1994).

The chemical industry occupies a pre-eminent position in the national economy and materially contributes to the national efforts towards planned development. It also plays a key role in the country's defensive and offensive capabilities and any program of self-reliance has to provide for flourishing chemical industry base. Chemical products indeed are substituting other materials in every sector of the economy and are serving almost every industry. The increasing consumption of chemical products in place of traditional material has been an important factor in maintaining the momentum of chemical products during a period of general industrial stagnation. It can make very valuable contributions in augmenting food production, conservation of water resources, provision of newer fibres to substitute cotton, provision of improved construction materials to substitute scarce metals, in organising an effective program of population control, in meeting the needs of health of the population and creating self-reliance in strategic areas by effectively substituting import of chemical raw-materials, better utilisation of waste products and creating more employment opportunities for the qualified scientists and engineers. The industry also has an important role to play in promoting exports and in the development of the backward region of the country (Santa, N., 1994).

Apart from its importance to other sectors of the industry, the chemical industry has been notable in meeting the domestic needs such as apparels, furnishings, electrical goods, deodorants, talcum powder, detergents, shoes, flavouring agents, preservatives, creams, toothpastes, brushes and utensils, house hold remedies and disinfectants.

Chemical industry which covers a wide range of industries starting from giants petrochemicals and fertilizer complexes to the smaller and light industries such as paints and varnishes is closely linked with most of the other segments of the large and medium scale industries in the broad industrial spectrum of the nation. This industry ranks fourth (after iron and steel, engineering and textiles) amongst the top indigenous industries in India (NCST, 1981). Among the major industries of India, the chemical industry recorded the highest growth rate during the sixties gross sale (440%) and total assets (384%) It now contributes 7.2% to the national capital and 7.4% in the gross industrial output and nearly 8% to the net output. The total investment in the Indian chemical industry has risen from Rs. 304 crores in 1961 to Rs. 877 crores 1966 and to Rs. 2000 crores in 1970-71. In 1998, Indian chemical industry represented 12% of manufacturing output and accounted for 10 % of total export. The sales turnover of chemical industry in India exceeded Rs.750 billion and produced wide spectrum of products in the large, medium and small-scale industries. To take care of additional small-scale industries requirement, an investment of Rs 40,000 crores has been planned (Rao, D.V., 1995).

According to Annual Survey of Industries, total number of chemical factories shows an increase over a period of time. In 1960-61 there were 378 factories, which increased to 879 in 1970-71 to 2033 in 1980-81 and further to 2483 in 1984-85.

Chemical industries play a vital role in providing employment opportunities. The employment in chemical industry has increased continuously. In 1960-61 it was 4.02%, which increased to 5.98% in 1970-71, 7.80% in 1980-81 and to 9.49% in 1984-85.

In the post liberalisation scenario, competitiveness is the first and foremost task of industry. The industry has been restructuring to meet competitiveness through cost cutting, by means of energy conservation,

technology upgradation and expansion, even through mergers and acquisitions take place (Roy, S., 1995). Global competitiveness has become a function of day-to-day operation of chemical units especially due to progressive and high cost factors affecting the industry. Achieving competitiveness is a complex exercise and a sound business environment supported by a suitable industry friendly policy framework is required. If India has to enter into the world market as an important player, the maturity of the industry and our democratic political system should find out workable solution before it is too late.

1.13 Chemical Industries in Gujarat

Gujarat is perhaps the first of the regional economies of India to have modernised itself in a substantive structural sense. The benefits of the process led to change in the structure of work and employment with jobs expanding faster outside agriculture (Alagh, Y.K., 1995). Gujarat has been categorised as an industrially developed state along with Maharashtra. Total number of working factories in Gujarat has increased from 3649 in 1960 to 18532 in 1995. Similarly average number of workers employed in working factories has increased from 346462 lakhs in 1960 to 822200 in lakhs in 1995.

As far as chemical industries in Gujarat are concerned, there were 1108 chemical industrial units in 1980, which increased to 1767 in 1990 to 2500 in 1995. Employment in chemical industries stood at 58557 lakhs in 1980 that increased to 100869 lakhs in 1990 and further to 121000 lakhs in 1995 (GOI, 1997).

After structural reforms many changes have taken place in chemical industries too. Industrial belt running from Vapi to Mehsana is known as the "Golden Corridor". After structural reforms there is a change in the location pattern of the industrial investments in the state from south Gujarat to Saurashtra and Kutch. That is, after the golden corridor from Vapi to Mehsana industries seem to be moving to a silver corridor on the coastal Saurashtra (Shah, A., 1995).

1.14 Profile of Vapi

1.14.1 Growth of Vapi as an Industrial Estate

Vapi is an industrial estate developed by Gujarat Industrial Development Corporation. It came into existence three decade ago i.e., in 1967-68. The estate, which was developed in phases, now spreads over 1140 hectares and houses over fifteen hundred industries. Industrial area is spread over 580 hectares and commercial over 30 hectares.

Vapi is on the Western Railway on Delhi-Baroda-Mumbai route. Vapi also falls on the Western Railway on Ahmedabad-Baroda-Mumbai Route. It is 168 kilometres in north of Mumbai and 324 kilometres from Ahmedabad towards Mumbai. The Vapi railway station is a major railway station due to a centre between the union territories of Dadra Nagar Haveli and Daman. It has become more important after the development of a big industrial estate at Vapi. Vapi GIDC Estate is centrally located on the National Highway (Ahmedabad-Mumbai) with the union territories of Dadra and Nagar Haveli on either side.

Basically a "declared" chemical estate, about 70% of the industrial units are chemical and chemical related such as dyes and dyes intermediates, pigments, pesticides, fine chemicals and pharmaceuticals, etc. The remaining 30 % units are paper mills, packaging (both paper and plastic based), engineering plastics, textile, food processing, paints, printing inks and other products.

The first industry that was established in Vapi was Mutual Plastics in 1968. Government of Gujarat in order to encourage industries in Vapi gave 15% subsidy on land. Water based industries were encouraged as the town was provided with twenty- four hour water facility and electric facility. Thus, chemical and chemical product industries and paper mills were the first to develop in this area. Other industries were established later on. Vapi G.I.D.C.

industrial area is divided into four phases and in all, there are 1200 industries spread in these four phases.

The estate which, over the years, has energized as a major cosmopolitan industrial township is now equipped with all amenities like hospitals, blood banks, schools, community centres, fire stations, water filtration plant, post office, telephone exchange (Electronic), police station, Banks (Major Scheduled and Co-Operative banks), treasury, hotels, guest houses and a common effluent treatment plant, biggest in the country

Being a major commercial centre, it caters to other industrial estates like Sarigam, Umergam, Daman, Silvassa, Gondlav, etc., which are located on the periphery of Vapi.

1.14.2 Self-Governance

Vapi GIDC estate is a Notified Area and the Notified Area Authority administered by the Notified Area Advisory Committee, which has equal representation from GIDC and the industries, performs all civic functions. The Notified Area Tax paid by the industries meets the expenditure incurred by Notified Area.

Vapi Industrial Association, popularly known as VIA, is the most vibrant organ of the Industrial Township. As an integral part of the Notified Area Administrative Committee, VIA has been instrumental in all development activities that have gone into bringing up the township to what it is today. The Association, which took shape in 1971 with a handful industrialists, now has strength of over thousand members. VIA renders invaluable services to its constituents in all spheres of industrial activities and performs a catalytic role in implementing various policies and programs of the Government.

1.14.3 Service to the Surrounding Villages

Towards fulfilment of social responsibility, drinking water is supplied to the Vapi Town and some of the surrounding villages free of charge for the last 20 years at a capital cost of Rs 136 lakhs. But, together the industries of Vapi GIDC Estate contribute an aggregate sum of Rs 400 lakhs per annum towards supply of water and other development costs for the villages. It has also given impetus to organising several programs like free health camps, eye camps, etc for the benefit of villagers. Some of the industries, on individual capacity, have adopted some backward villages for development and provide schools, dispensaries and other amenities.

Section - V

1.15 Hypotheses

The study has been undertaken to test the following hypotheses:

1. Structural reforms bring significant technological changes.
2. Human resources development is an essential ingredient of industrial growth and change.
3. Technological changes not only alter the production structure but also the human resources requirements of the industrial sector.
4. Technological changes influence the industrial relations.

1.16 Objectives

The objectives of the study are:

1. What kind of technological changes have taken place in chemical industry after New Economic Policy was adopted in India?

2. What kinds of changes have taken place in sales, marketing, profit, etc. of the chemical industrial units after the introduction of structural reforms and globalisation?

3. Are there any difficulties faced by the industry after the introduction of New Economic Policy?

4. How these technological changes have affected the employment structure of the industry?

5. What has been the change in the pattern of employment in chemical industry in the wake of structural reform?

6. Is there any change in the manpower requirements of the chemical industry after structural reforms?

7. What measures have been adopted by the industry for the development of its personnel and manpower?

8. Is there any change in labour- management relations after the adoption of the technological changes?

9. How does the management perceive these economic changes taking place as a result of the structural reforms?

1.17 Research Methodology

There are 400 chemical industrial units in and around Vapi engaged in the manufacturing of chemical and chemical products. The list of these industrial units was collected form VIA directory. Through systematic sampling method, 25% of the units were then selected for a primary survey. That means every fourth unit was included in the sample of 100 industrial units. These industries were visited personally for a formal interview. The management of the unit (various personnel at different levels) being surveyed was interviewed through a pre-tested structured questionnaire. Primary data

pertaining to general information about the unit, sales and marketing, replacement and modernisation, capacity utilisation, credit facilities, industry and environment, general information about workers, recruitment and training, absenteeism, wages and salaries, welfare activities, health measures for employees, industrial disputes, impact of structural reforms on trade unionism, etc., was collected from the units. This data was then tabulated using SPSS software. Various statistical tools used in the study are measures of central tendency; compound annual growth rate, etc.

1.18 The Chapter Scheme

The thesis is divided into six chapters. Chapter one deals with introduction. Chapter two with review of literature on Human Resource Development and Industry. An attempt is also made to review some case studies related to HRD and industry. Chapter three deals with chemical industry in Vapi. Various aspects studied are general information about workers, sales and marketing, replacement and modernisation, capacity utilisation, credit facilities, industry and environment. Chapter four on workers in Vapi chemical industry deals with general information about workers, recruitment and training, absenteeism, wages and salaries, welfare activities, health measures adopted by industry for employees, industrial dispute, and impact of structural reforms on workers, employment and trade unionism. Chapter five deals with structural reforms and its impact on industry and perception of the employers about the structural reforms in industry. Chapter six deals with summary, conclusions and recommendations.

Foot Note:

1 Several studies were carried out by Chitale, V.P. (1980), Srinivasan and Narayan (1977), Chakravarty (1979), Dalal and Lahiri (1977), Mohanty (1966), Patnaik and Rao (1977), Mitra (1977), Nayyar, D. (1979), Chakravarty (1979), Bhagwati and Srinivasan (1975), Panchmukhi (1978), Wolf (1982), Ahluwalia (1987), Raj (1979), Vaidyanathan (1977), Shetty (1978), Desai (1970), Mundle (1982).

2 For details see Agrawal and Patel, 2002.

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