Case study: Industry in Maharashtra

Maharashtra is an excellent example of how and why industrial development takes place in an ELDC. Maharashtra is India's third largest state, its undisputed financial centre and industrial powerhouse (Figure 5.8). In addition it has the best irrigation, power supply and communications in the country, a large reservoir of skilled manpower and management personnel, and proximity to ports. It is attractive to investors: between 1991 and 1996 it attracted over US$64 million worth of foreign investment.

The state's 80 million people, less than 10% of India's population, produce 23% of the country's output. The state's chemicals, rubber, metals, and plastics industries each account for more than a third of India's total production. 40% of income tax in India comes from Maharashtra.

Its infrastructure is among the best in India (Figure 5.9). It does not suffer from the power cuts that affect most of the rest of India, it has two large ports, and it has an efficient telecommunications network. The state's government and bureaucracy are famed for their efficiency. This is reflected in the level of inward investment into the state – it is the highest in India. A recent survey among investors listed a wide range of attractions, including:
- well-developed physical infrastructure
- reliable power supply
- proximity to ports
- good social infrastructure (concentration of skills, education and training)
- strong work ethic
- well-established law and order
- political stability.

Nevertheless some recent developments suggest that Maharashtra is becoming 'over heated', that is, it is becoming less attractive for investment, less competitive, and a victim of its own success. Labour costs in Bombay (the centre of Maharashtra's industrial base) are among the highest in the country. In addition, it has a severe transport problem and vastly excessive office costs. This has led to some companies, such as Coca-Cola, moving north out of Bombay to Delhi, where accommodation is cheaper and more accessible. Although Maharashtra is India's main centre for the car industry, new developments are taking place outside the state. Mahindra and Mahindra, a company which has always been based in Maharashtra, decided to locate its US$600 million plant in the southern state of Tamil Nadu. Hyundai, the South Korean carmaker, is also setting up a US$1 billion plant there.

Office rents in Bombay are much higher than in New York or London, yet the quality of office accommodation is very poor. Many firms rent luxury hotels rather than offices: the management consultants McKinsey have occupied a floor of the five-star Oberoi hotel since 1992. Some firms have moved out to
suburban locations where rents are cheaper, more space is available, and it is more convenient for staff. Yet, even there, traffic congestion is a major problem.

Maharashtra's industrial concentration is proving unpopular with firms who believe that greenfield sites offer not only cheaper production costs but also offer greenfield markets, that is, largely untapped areas.

Yet, for all these problems, some new developments are taking place in Maharashtra. Growing congestion, energy problems, and a shortage of trained engineers in Bangalore in the south of the country, have led to an overspill of high technology industries northwards to Pune, Maharashtra's second largest city.

**Industrial policy**

Maharashtra has to work hard to maintain its position as the industrial giant of India. New industrial policy is attempting to address the problem of overloaded infrastructure by developing nine industrial townships, ranging in size from 2000 to 7000 hectares, throughout the state (Figure 5.9). These will spread industrial activity throughout Maharashtra in a shift of emphasis from cities to large towns.

The state government believes that as a result of the dispersal of industrial infrastructure, local employment will grow, and it is planning to set up technical institutions to train potential employees in these areas. Private sector involvement is also being encouraged, and the state sees its role as a 'facilitator' rather than a controller.

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**Figure 5.9** Maharashtra: India's industrial giant

Source: Financial Times, 1996

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**QUESTIONS**

1. Explain why Maharashtra has become the economic core of India.
**India’s software industry**

India’s software export industry is worth more than $1 billion each year (Figure 5.10). It has become one of the most dynamic sectors of the Indian economy. Its growth has been based on low costs, high quality products and services. There are now more than 700 software companies in India. The number of companies in EMDCs that are outsourcing their software (subcontracting the software part of their product) to India has increased rapidly (Figure 5.11).

<table>
<thead>
<tr>
<th>Indian company</th>
<th>US partner</th>
<th>Product</th>
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<tr>
<td>Citicorp Overseas Software</td>
<td>Citicorp</td>
<td>Software services</td>
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<td>HCL-HP</td>
<td>Hewlett Packard</td>
<td>Workstations, PCs, software</td>
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<td>ITC</td>
<td>Lotus Development</td>
<td>Software services</td>
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<tr>
<td>Mastak</td>
<td>Ingres</td>
<td>Software services</td>
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<td>Onward Computer Technologies</td>
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<td>Pertech Computers</td>
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<td>Rotta Indiá</td>
<td>Intergraph</td>
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<td>Tata Information Systems</td>
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<td>Workstations, software services</td>
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<td>Wipro Infotech</td>
<td>Sun Microsystems</td>
<td>Workstations, software services</td>
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*Figure 5.11 Indian-US partnerships in the electronics industry  
Source: Bunce and Studd (Eds.), 1997, The developing world, Hodder and Stoughton*

Initially, India was used by software companies because it was a low cost location. Now, however, India is attracting software companies because of quality, speed, innovation and skills (Figure 5.12). Between 1991 and 1995, the Indian software industry grew at a rate of 46%, twice as fast as the growth in the US. It employs nearly 150,000 people in India, and its exports are worth over US$75 million each year. The Indian domestic market is worth a further US$50 million.
India is keen to develop the software industry for several reasons:
- it demands high skills
- it does not damage the environment
- it is a growth industry
- there is a great deal of investment money available.
A number of factors explain why India has been so successful and how it has outshone competition from China, the Philippines and Eastern Europe. These include:
- the availability of a huge pool of relatively low cost, technically qualified software professionals
- high levels of quality
- a time zone advantage with both the US and Europe.
In addition, there have been attempts to improve India's telecommunications.
In the USA and Europe there has been a growing shortage of software engineers. After the USA, India has the largest number of English-speaking scientific workers. The sheer size of the workforce in India, its technical competence and relative low cost have been paramount in explaining the development of the software industry in India.

Inset 5.2
Bangalore

Bangalore has been described as the 'silicon plateau' of India. It is home to a cluster of high technology firms: IBM, Hewlett Packard and Motorola. Bangalore has attracted investors for a number of reasons:
- a skilled workforce
- Bangalore has a number of research institutions and universities
- compared to the west of India, Bangalore offers low labour costs - a first class graduate can be recruited for as little as US$4200 a year
- Bangalore has low rainfall and pleasant temperatures on account of its plateau location
- India is an important base for western firms trying to enter the Asian markets.

One company that has located in Bangalore is Motorola, the US electronics and equipment company. In order to overcome the power cuts that plague most of India, Motorola has its own generator. It chose Bangalore for a number of reasons:
1. it is the high tech centre of India
2. other US multinationals, such as Hewlett Packard and 3M, have located there
3. there is high quality but relatively cheap labour
4. it wanted a foothold in the expanding Indian market.

The Bhopal disaster

Bhopal is the capital of Madhya Pradesh in central India. In the 1970s, the US firm Union Carbide established a factory in the northern part of the city to produce chemicals for pesticides. For Union Carbide the site allowed access to a pool of cheap labour, to the vast Indian market, and it gave them a location where environmental and safety procedures were not strictly enforced. At the time it was a popular decision as:
- it provided much needed employment for local people
- it reduced India's dependence on imported chemicals.
There were, however, a series of leaks, spills and accidents at the plant. The plant management did not consider these serious enough to take any action.
In December 1994, some 36 tonnes of methyl isocynate (MIC) leaked from an underground storage tank. (MIC is a toxic chemical used to manufacture carbamate pesticides.) When water accidentally entered the storage tank, the cooling system failed. This caused the mixture of MIC and water to overheat and explode. Once exposed to the air, some of the MIC was converted into poisonous hydrogen cyanide gas. Huge quantities of the gas leaked out, and the plant's safety procedures were unable to cope, and in fact, not even the warning alarm was properly sounded.

The gas covered an area of 40 square kilometres and affected about 200 000 people (Figure 5.13 on page 82). People woke up coughing and with severe breathing problems. Those who managed to escape the area, on whatever transport they could get, survived. Many of those who remained in Bhopal died. The worst affected area was close to the Union Carbide factory. Over 5000 people were killed. Of these, about half were as a direct result of exposure to MIC and the rest due to the after-effects. Close to the factory, the high density shanty towns made of wood, straw, tin, and plastic allowed the gas to seep into people's homes. In the wealthier areas further away people were able to close windows and doors and protect themselves against the gas.
Thousands were evacuated by railway staff, and the Indian army was called in to help with the evacuations. The day after the accident, over 25 000 people were crowded into Bhopal's hospitals, suffering from respiratory problems and blindness (Figure 5.14). Estimates of the number made seriously ill by the explosion vary from 10 000 (Union Carbide estimate) to 200 000 (Indian officials' estimate). The problem was made worse by the fact that little was known about the hydrogen cyanide gas and the company were not prepared to give out much information.
A number of factors explain the disaster and the scale of the effects:
- far too much MIC was stored at the factory
- normal safety procedures were inadequate
- there was a failure to sound the warning system once the leak occurred
- few details were released about the nature of the gas
- shanties were allowed to be developed close to a hazardous factory.

Over a decade later, large numbers of people in Bhopal suffer from respiratory problems, blindness, digestive problems and stress related illnesses. Many have never worked since, and will never work again. The company was brought to court, and ordered to pay US$470 million in settlement. In addition the clean up operation cost a further US$570 million. It has been estimated that the tragedy could have been prevented had the company invested US$1 million in safety equipment.