
CHAPTER-III: PHYSICAL PLANNING OF INDUSTRIAL
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3.1 Planning of the Industrial Estate

Knowing the importance of planning of Industrial Estates, government policy regarding the purpose, type and geographical distribution of estates is an essential pre-requisite, because it is on the basis of such policy that a programme at national or regional level, supported with necessary legislative and budgetary measures, can be framed. Thus, the programme of industrial estates requires proper care at every stage at establishment and operation of industrial estates. It should also be remembered that the programme of industrial estates can be fully effective only when integrated with basic development plans and coordinated with the physical and social affairs of a particular region, such as regional development, town planning and employment potentiality. In fact these issues occupy a very important place in the programme of economic development because industrialisation does not mean the mere establishment of factories. For achieving the advantages of industrial development, proper location and development of industries is the foremost requirement and therefore, in order to locate and promote industries, the industrial estates must be established at a suitable place, where necessary facilities and services with favourable economic environment can be developed for the promotion and expansion of industries. A good deal of attention is necessary in deciding about the location of an

industrial estate in terms of national and regional requirements. They must be located at places having potentialities for basic industrial facilities as well as for attracting a sufficient number of entrepreneurs to set up their industries. In planning the establishment of an industrial estate, certain elements should be taken into consideration.¹ Mr William Bredo has suggested the following main elements of planning the estate.

1. Location of the estate.
2. Selection of industrial occupants.
3. General lay-out, facilities and services.
4. Phasing of construction.
5. Organisational arrangements for construction and long term management, and
6. Methods of financing and evaluation of financial feasibility of the project.

These aspects may be generalised in a more simple way. In the physical planning of industrial estates, the following aspects should be essentially considered:

1. Feasibilities surveys,
2. Location of estates,
3. Layout of estates,
4. Provision of facilities and services
5. Factory plots and buildings.
6. Programme scheduling.

3.2 Physical Planning of Industrial Estates in India

Physical planning of industrial estates has received a careful examination by the Government of India. It has been recognised that, the objectives set forth are to be fulfilled and the capital invested is to be utilised in an effective manner, great care must be exercised in the planning of industrial estates. As the industrial estates have to play a major role in the promotion and development of small scale industries, it becomes necessary that planning of the estate be done in such a way that the small enterprises may really benefit from them. The prospective industrial units may be either old units wanting to shift away from congested area, or new units willing to avail themselves of the comprehensive facilities on the estate. The location, layout and the design of an estate have to be decided according to the type, size and nature of the prospective industries. A brief discussion of policy regarding the physical planning of industrial estates in India has been attempted in the following paragraphs:

Before deciding on the location of an industrial estate, a thorough techno-economic survey or feasibility study of a particular area is conducted with a view to assessing the area or the region. The factors to be considered are the availability of land, raw materials and labours, external economies, infrastructure etc. Satisfaction on the following points is necessary: Are a sufficient

number of small entrepreneurs willing to start their units on the estate in that area? Which type of industries do they want to establish? Which ^{of} these industries be able to operate at the lowest possible cost and with maximum production capacity? Are materials and skill required for industries available? Is the necessary infrastructure available in the region or will it require a heavy investment for its development? A careful and intensive survey should be made so that information collected through the survey is available to provide answers to the above questions.

After the feasibility studies of the region, the next step is the selection of suitable sites in that particular region or area. Normally, a suitable site should be close to the basic utilities such as water, power, transport and railway so that there will be a saving in the cost of installation and utilisation of these utilities. When the site for locating the estate has been decided, the question of deciding the size of the industrial estate arises. According to their size, industrial estates may be classified as follows:

1. Large Estates - over 30 acres,
2. Medium Estates - between 30 and 10 acres,
3. Small and rural Estates - under 10 acres
4. Worksheds - under 2 acres.

The size of an industrial estate depends on several factors like availability of land and its cost, anticipated number of small

entrepreneurs, the nature and type of prospective industrial units, and other relative factors. After deciding the location and size of the industrial estate, the next step is to plan a layout of the estate. Here there is hardly any need to emphasise that the utilisation of land should be most economical and efficient. The Government of India has recommended the following broad allocations of land:

(a) Factory plots	...	60 to 65 per cent
(b) Roads	...	20 per cent
(c) Open space	...	10 per cent
(d) Administration ancillary and amenity buildings		5 to 10 per cent

[Source: Industrial States in India (Ministry of Industrial Development and Corporation, Government of India)]

The size of the factory buildings should be decided on the basis of the information collected through a survey about the needs of the industrialists who are to occupy them. The factory therefore, may vary in size according to the requirements of occupations. As a general guideline it has been laid down that the largest plot to be provided in an industrial estate should not exceed 15,000 sq ft, out of which 9,000 sq ft could be built upon immediately with a provision for expansion upto 12,000 sq ft ultimately leaving 3,000 sq ft as open space. The minimum size of the plot has been fixed at 2,000 sq ft. Thus, two limits of the plot sizes have been fixed and the sizes of the plots, covered area, open space, and area for future expansion vary from

different sizes of factories. These variations are shown in the following table.

Table 3.1: Sizes of factory plots

Type	Size of plot (sq.ft.)	Initial covered area (sq.ft.)	Area for future expansion (sq.ft.)
A	2,000 / 40'x50'	400 / 20'x20'	1,000 / 20'x50'
B	2,000 / 40'x50'	500 / 25'x20'	1,000 / 20'x50'
C	4,000 / 80'x50'	1,000 / 20'x50'	2,000 / 40'x50'
D	4,500 / 90'x50'	2,000 / 40'x50'	3,000 / 60'x50'
E	9,000 / 90'x100'	4,500 / 60'x75'	6,000 / 80'x75'
F	11,500 / 115'x100'	5,000 / 50'x100'	7,500 / 75'x100'
G	13,500 / 135'x100'	6,000 / 60'x100'	9,000 / 90'x100'
H	15,000 / 150'x100'	8,000 / 80'x100'	10,000 / 100'x100'
I	15,000 / 150'x100'	9,000 / 90'x100'	12,000 / 120'x100'

- Notes: 1. Dimensions are only given in round figures.
 2. The spans could be multiples of 20, 25 and 30 or larger.
 3. Internal partition for stores, office etc. should be left to the occupants.

Source: Report of the SubCommittee on Industrial Estates
 (S.S.I.B., Government of India, 1960), p. 26,

In the case of a small and rural industrial estate, sheds, smaller than 400 sq.ft. may also be provided. The sizes of plots in small industrial estates would generally be as shown in the Table No. 3.2 on the following page.

Table 3.2: Sizes of plots in small estates

Type	Size of plot (sq.ft.)	Initial covered area (sq.ft.)	Area for future expansion (sq.ft.)
A	1,000	200	400
B	1,000	250	500
C	2,000	400	1,000
D	2,000	500	1,000
E	4,000	1,000	2,000
F	4,500	2,000	3,000

Source: Report of the Sub-Committee on Industrial Estates
(S.S.I.B. Government of India), p. 29.

Here it may be pointed out that where the sheds are not constructed by the Government or the sponsoring agencies, industrialists get plots according to their requirements, and thus the sizes of the factories differ according to the sizes of the plots. It is clear from the tables above that a provision was made for the future expansion of the units.

Roads: According to the allocation of area of the estate in different categories it is clear that 20 per cent of the total area has been reserved for the construction of the roads. Generally, local Governments or municipal committees or corporations have to bear the cost of construction of roads. Normally the widths of the roads suitable for large and medium industrial

estates have been presented in Table No. 3.3 below.

Table 3.3: Road width for Industrial Estates

Sr. No.	Type of Road	Land width	Paved width
1	Main Arterial	60 ft.	24 ft.
2	Secondary	40 ft.	16 ft.
3	Service	30 ft.	10 ft.

Source: Report of the Sub-Committee on Industrial Estates

(S.S.I.B., Government of India), p. 30.

As mentioned in the above table land widths and paved roads have been proposed by the Central Small Industries Organisation (CSIO). The CSIO has also suggested that in no case should the land width of the road be less than 30 ft. except for small and rural estates. In the case of small and rural estates, the width may be reduced to 40 ft., 30 ft. and 20 ft. for arterial, secondary and service roads respectively, with corresponding paved widths. One-way road system is generally considered most efficient and economical. To ensure one-way traffic, all roads to sheds should branch off from one in-coming road and one common out-going road. The overall lane width for ordinary roads should be 45 ft. in the case of an ultimate double lane traffic, and 33 ft. for single lane traffic.

3.3 Designs of Buildings

Administration and Ancillary Buildings

On the industrial estate, suitable buildings for several purposes like administration, canteen, medical centre, bank and Post office, should also be constructed. Under the programme, it has been proposed that in the case of large and medium estates, suitable space may be reserved for public buildings such as bank, Post office, dispensary, fire station, transport agencies etc. The Government prefers that the departments concerned should put up their own buildings. In small estates it has been considered necessary to build a small Post office, local telephone exchange or public call booth, a transport shed, a raw material store, and shop for multi-stories. There is also a provision for other ancillary buildings such as quarters for essential staff.

Design of Factory Buildings

So far as the height of plinth and the buildings is concerned, they must be according to the bye-laws of the Local Governments in this regard. Therefore, before starting the construction of buildings, the approval of Plans from the concerned local authority is essential. In any case, however, the height of plinth should not, on an average, be less than 1 ft. above the crown of the adjoining road. The minimum height of the building according to the Factories Act is required to be 14 ft. above the floor level. This height may be increased to 15 or 16 ft. Particularly

in regions with hot and dry climates; but in humid regions it should not be beyond 14 ft. In accordance with the requirements of the factory buildings, proper arrangements of ceiling and roofing, doors and floors, lighting and ventilation, etc. should be made.

3.4 Utilities, Services and Other Amenities

Under physical planning, the provision of services and facilities is of vital importance. It is an important consideration in selection of suitable site for locating the estate. Generally arrangement for the following utilities and services is necessary on the estate.

A] Transport: Availability of adequate transport facilities has been considered an important factor of an industrial estate. Generally, road and railway transportation facilities are available in different parts of countries. Therefore, in the construction of an industrial estate, it is always taken into account, whether the site is located near rail roads or highways. It is intended to provide a railway siding for each large industrial estate and for this reason, big industrial estates are to be located close to the railway stations with good yard facilities.

B] Water: Adequate arrangement for water supply has to be made by the sponsoring agency. Sometimes the agency enters into a contract with the water supplying agency of the city for getting

the required quantum of water for industrial use. The distribution of water to different industrial units could be arranged either by the sponsoring agency or by the water supplier. Generally, the former has to take the responsibility of laying the pipelines and distributing water.

C] Electricity: Electricity is the basic need of practically all modern enterprises. In the planning of industrial estate, the adequacy and dependability of the sources of supply and availability of services at reasonable rates must be carefully considered. Arrangement for adequate power supply from State Electricity Board or any other supplying agency should be made so that the power needs of the occupants can be adequately met.

D] Drainage and Sewerage: Arrangement for drainage and sewerage are also essential for good sanitations. In general the use of open drains has been suggested as an economical solution with brick pitching on both sides of the main road, and on one side of the subsidiary roads. If an underground system with concrete pipes is found necessary, it can be adopted. The storm water must be channelled into a natural drainage outlet or connected to the main storm water drain for the area.

E] Communication: Where the communication system is available, adequate arrangement for communications should be made on the estate so that the industrial units may have the facility of tele-communication and Post office. A small telephone sub-exchange

can also be installed in case of necessity.

From the discussion above, it is clear that the Government of India has given a detailed consideration to various aspects of physical planning of industrial estates, and necessary provisions are made under the schemes for industrial estates. The criteria for setting up an industrial estate, recommended by the Government, are uniform for all States, though the responsibility of establishing the industrial estate is that of the State Government.

3.5 Programme Scheduling

One more important feature of the physical planning consideration is regarding the preparation of a master plan of the estate. There must be a pre-planned programme of future expansion and development of industrial estate. This programme should include the proper scheduling of an industrial estate programme at all stages from pre-project planning to occupation of factory sheds and to the achievement of normal levels of production by the small industrialists, so that the delays in the aforesaid functions may be eliminated and the time-lag between planning and construction of buildings and occupation and commencement of operations and attainment of normal production can be reduced and thus efficient and economical implementation of the programme would become possible. A common criticism of industrial estate is that there is an unduly long time gap between various stages from land acquisition to operation and this affects the efficiency and

economies of the estate. In this regard, the seminar on Industrial Estates in Asia and Far East, has suggested that² "these delays could be eliminated by evolving more efficient arrangements for selection of sites, by setting up special committees or teams of representatives of the departments concerned to take final decisions for providing services by maintaining continuous liaison with prospective occupants and by leasing out each block of factories as soon as its construction was completed". It may also be mentioned here that the activities beginning from the commencement of the construction to the attainment of normal production level, should be pre-planned and covered by comprehensive master plan so that desired benefits of fullest efficiency and economy in planning and constructing industrial estates may be attained by the thoughtful physical planning, correct phasing and proper programming of work.

NOTES AND REFERENCES

- 1 Bredo William; Industrial Estates: Tool of Industrialisation, Stanford Research Institute, California, 1960, p. 71.
- 2 U.N. Report - Department of Economics and Social Affairs, New York.