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INDUSTRIAL PLANTS

Chapter three:

Feasibility study of an industrial plant

DOUBLE DEGREE MASTER IN

“PRODUCTION ENGINEERING AND MANAGEMENT”

CAMPUS OF PORDENONE

UNIVERSITY OF TRIESTE

Design of an industrial plant

The **design of an industrial plant** is very complex because it contains a set of organizational and technological processes connected together. The design work is explicit in a decision to build a new plant or expand the existing one, and during the exercise through decisions relating to changes in the production cycle and replacement of production systems.

The design of an industrial plant is characterized by phases:

- **identification and selection needs to be met**
- **identification and selection of the degree of satisfaction**
  The two phases are proposed to identify an appropriate production schedule, the types of products or services;
- **choosing the most appropriate solution among those technically possible steps to achieve the objective**
  Identify the best procedures for the construction and operation of production, etc.).

Design of an industrial plant

The **design of an industrial plant** is carried out with:

- **principle of system**

  The industrial plant is as a set of integrated and interacting elements organized to achieve the goal

- **principle of self proposer**

  The design considers man as a variable location in the relationship man-machine-environment

- **principle of economy**

  Industrial plants are designed, built and managed with the aim of optimizing the balance of its operations throughout the duration of the facility, the only constraints dictated by the moral, social and legal:

$$\sum_{i=1}^{n}\left(R_{ai} - C_{1i} - C_{2i}\right)\cdot\frac{1}{1-i_a} = U$$

Revenue — Costs — Discount rate — Profit

Design of an industrial plant

The **design of an industrial plant** is carried out with:

- **principle of traffic**

  The network of all transport and his exercise within an industrial plant must be achieved with maximum economy and minimal consumption of resources used. Arises because of the need:

  - minimize distances
  - maximize the speed
  - minimize the needs or the time, resources, etc. along the path

Feasibility study of an industrial plant

The **study of technical and economic feasibility of building a new plant** to produce industrial goods and services requires the consideration of factors:

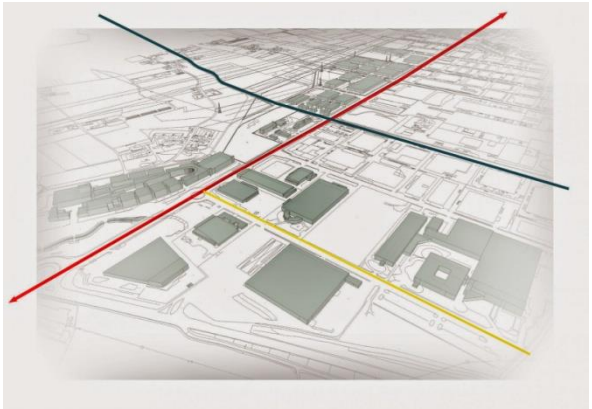
- **study of the market and the products (product design)**

  Analyze market trends in recent years conducting market research, useful to draw some useful information to define the marketing strategy

- **research on the location of the new plant**

  The choice is that of the interior of the territory in which to build new industrial plant

  The factors taken into account are the physical factors (availability of energy, communications, etc.), social (availability of labor, zoning, etc.) and economic (tax breaks, labor cost etc.).



Feasibility study of an industrial plant

The **study of technical and economic feasibility of building a new plant** to produce industrial goods and services requires the consideration of factors:

- **potential of plant (number of employees, annual sales total and per employee, production refers to a specific unit of time etc.)**

  Is the amount of goods (production volume) or services to be produced in a given unit of time and that comes from studies of sales forecasts, resulting in a specific market research, and production costs

- **definition of the cycle or cycles of processing (manufacturing process)**

  We show the basic operations of the process: storage of materials, quality control, materials handling, processing of materials in machining centers, inspection and final inspection, packing and packaging, and warehousing and shipping the final product

Feasibility study of an industrial plant

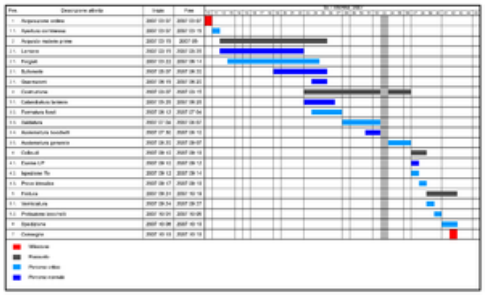
The **study of technical and economic feasibility of building a new plant** to produce industrial goods and services requires the consideration of factors:

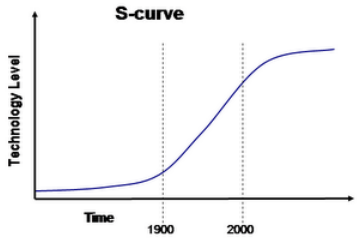
- **plant layout**:
  Plano-altimetric available cheaper machines, internal transport systems, general, ancillary and sanitation services, workers and materials
- **choice of the type or types of buildings**
  They are characterized as industrial, civil, offices, services, etc.
- **definition of the cost of construction**
  It identifies the cost of purchase, the payment terms and period of time that will be available
- **retrieval of capital**
  It can be done by increasing the equity capital, loan capital, government grants, etc.

Feasibility study of an industrial plant

The **study of technical and economic feasibility of building a new plant** to produce industrial goods and services requires the consideration of factors:

- **design of plants and general services**
  Design of the production of goods or services and that includes the arrangement of divisions, the selection and arrangement of machinery and transport systems, the configuration of the stores, the general sizing of plants, services, general services auxiliary and sanitation, etc.
- **study of a general development plan of the establishment**
  The master plan defines the area and shape of land for the construction of the plant
- **program of construction of the plant and the scheduling of investments**





Feasibility study of an industrial plant

The **study of technical and economic feasibility of building a new plant** to produce industrial goods and services requires the consideration of factors:

- **production costs**

  They are influenced by the volume of production and therefore the study of market

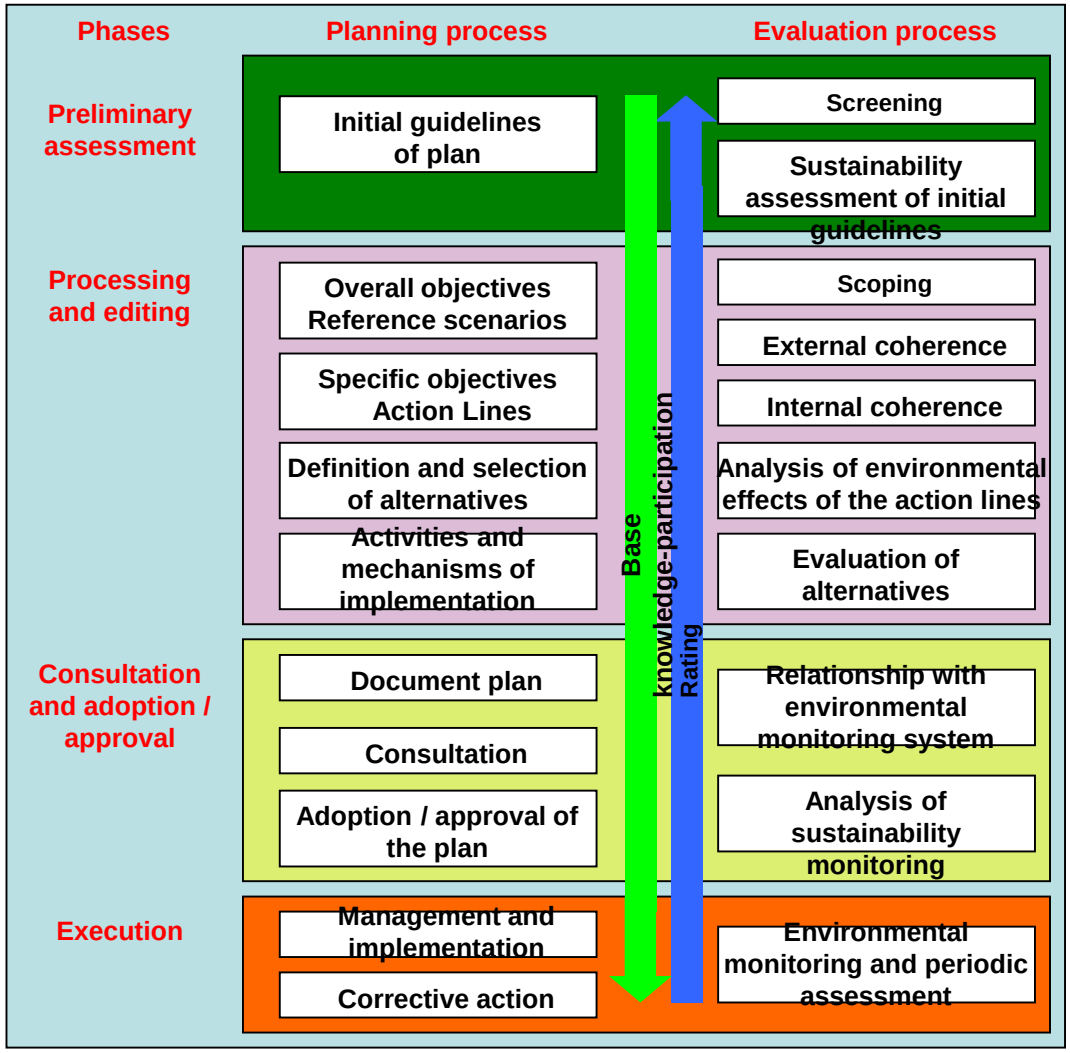
- **sales organization**

  You should try to organize the business of providing logistics and distribution activities as an achievement of the client with the best marketing mix

Feasibility study of an industrial plant

The construction of the plant can be started only after obtaining **permission of the competent authority** provided for by law. They are:

- **procedures for the Strategic Environmental Assessment (VAS)**



Feasibility study of an industrial plant

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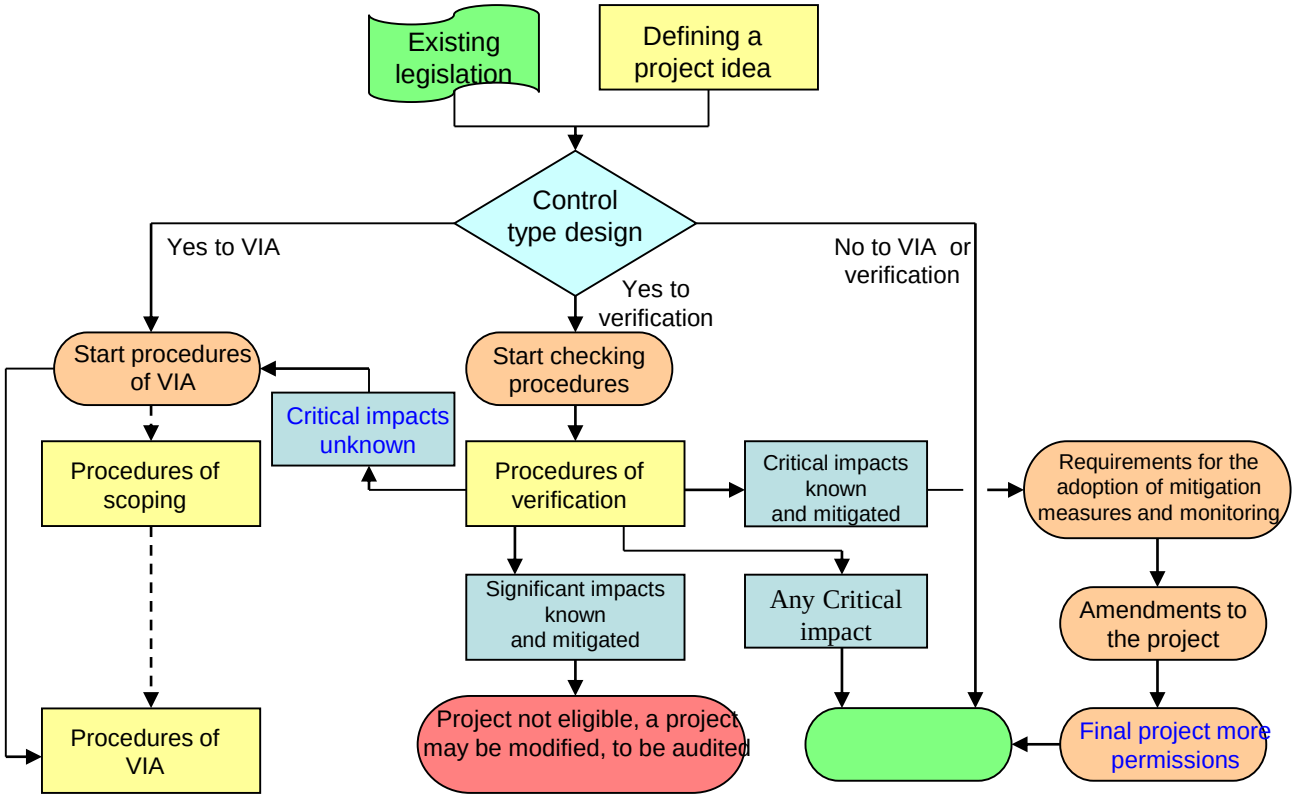
- **procedures for Environmental Impact Assessment (VIA)**



Feasibility study of an industrial plant

The construction of the plant can be started only after obtaining **permission of the competent authority** provided for by law. They are:

- **soil conservation** (Law 31.07.2002, n. 179, Law 11.12.2000, n. 365 ecc.), **prevention of water pollution and water management** (Legislative Decree 3.4.2006, n. 152 - Code of the Environment)
- **waste management** (Legislative Decree 3 april 2006**,** n. 152)
- **air protection** (Legislative Decree 7.3.2008, n. 51, Legislative Decree 3 aprile 2006, n. 152 ecc.) **and the reduction of atmospheric emissions** (Legislative Decree 3.4.2006, n. 152 ecc.)
- **compensation claims against environmental damage** (Legislative Decree 3.4.2006, n. 152 ecc.).

Feasibility study of an industrial plant

Before the construction of the plant must obtain **prior approval** from the competent Authorities of the following:

- **Ministry of the Environment, Land and Sea**: assessment of environmental compatibility for the projects planned by Decree of President of the Council of Ministers 10.8.1988, n. 377)
- **Region**: authorization integrated environmental (Legislative Decree 18.2.2005, n. 59)
- **Mayor of the municipality in area in question which will arise the plant and civil engineering works for the concrete-reinforced**: building permit (Law 28.2.1985, n. 47)
- **One stop shop for Productive Activities (SUAP) of the municipality in area concerned that the conference will launch the services (ex art. 14 Law 241/1990):** authorization to run the heating systems and technological systems that give rise to emissions into the atmosphere (Legislative Decree 3.4.2006, n. 152)

Feasibility study of an industrial plant

Before the construction of the plant must obtain **prior approval** from the competent Authorities of the following:

- **Region**: authorization of the noisy facilities (Law 26.10.1995, n. 447)
- **Local Health Department responsible for the area and, as a matter, the National Body of Fire:** authorization to protect the health and safety in the workplace (Legislative Decree 9/4/2008 n. 81) and use of lifting appliances and transport, equipment and tanks for pressurized fluids (Presidential Decree 24.7.1996 n. 459)
- **Region**: authorization to the derivation and use of water and the discharge into the public sewerage system of industrial waste water and rain water from washing external areas and waste water run-off (Law 25.2.2010, n. 36, Legislative Decree 3 aprile 2006, n. 152)
- **Ministry of the Environment, Land and Sea: authorization for the law on major industrial hazards** (Legislative Decree 21.9.2005, n. 238)