# Learning Materials on

# Project Management

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

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The learning materials were developed for capacity building activities to strengthen subregional connectivity in East and North-East Asia through effective economic corridor management. ESCAP East and North-East Asia Office worked with Dr. rer. oec. habil. Norbert Wagener (Professor, WSL School of Logistics, Poznan Potsdam) in developing the learning materials.

## Objectives and Content

The overall objective of the training is to provide an introduction to project management and feasibility studies from the perspective of rail and intermodal infrastructure projects. It aims to provide the participants with an understanding how projects can be prepared and managed successfully. For effective preparation and optimum use of financial budgets, feasibility studies are essential prerequisites for investors and financing institutions when preparing large infrastructure investment projects. The participants shall get an insight into the structure and methodology of feasibility studies, explained by case studies from the transport sector.

The training module aims to give a thorough understanding on:

- How to prepare and to manage projects by objectives using the logical framework approach (LogFrame)
- The role of infrastructure master planning and assessment and prioritization of projects
- How to conduct a feasibility study for infrastructure projects
- The concept of Integrated Logistics Centers / Freight Villages as an investment case in rail corridors
- Cost Benefit Analysis and assessment of external costs

## Learning Outcomes

After completing this training module and recommended readings, the participants will be able to:

- Understand the LogFrame approach for effective preparation and management of projects
- Understand the importance of knowing the stakeholders of a project and how to win their cooperation
- Recognize the importance of master planning and feasibility studies in project preparation
- Understand the structure and methodology of feasibility studies in infrastructure projects
- Explain the benefits of Integrated Logistics Centres / Freight Villages and their cargo generating and intermodal functions in rail corridors
- Know essential preconditions for a successful preparation of feasibility studies for

infrastructure projects

- Understand the difference between financial and economic appraisal and how to assess external costs of infrastructure projects

## Reference Readings


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  *https://openknowledge.worldbank.org/handle/10986/31089*
- Intermodal Logistics Centres and Freight Corridors - Concepts and Trends / N.Wagener.- LogForum Scientific Journal of Logistics, Poznan: 2017, 13 (3), pages 273-283
  *https://www.logforum.net/volume13/issue3*
- The New Silk Road: Opportunities for Global Supply Chains and Challenges for Further Development/ N.Wagener, B.Aritua, Tong Zhu.- Paper on WSL Forum.- Poznan, 18. November 2019, published in: LogForum Scientific Journal of Logistics, Poznan: 2020, 16 (2), pages 193-207
  *https://www.logforum.net/volume16/issue2*


# Abbreviations

| | |
|---|---|
| B/C ratio | Benefit – Cost - Ratio |
| CAPEX | Capital Expenditures |
| CBA | Cost Benefit Analysis |
| CBR | Cost – Benefit - Ratio |
| ENPV | Economic Net Present Value |
| FNPV | Financial Net Present Value |
| FV | Freight Village |
| LogFrame | Logical Framework |
| OPEX | Operation Expenditures |
| PLC | Public Logistics Centre |

# CONTENTS

# 1 Project Management

## 1.1 The Project Approach

The purpose of this Chapter is to give an introduction into the essentials of project management and to provide with the LogFrame Concept a set of tools to enable responsible managers, officers and specialists to better understand how to prepare and how to plan projects effectively.

### What is a Project?

"A project is a series of activities aimed at bringing about clearly specified objectives within a defined time-period and with a defined budget." (European Commission, 2004, p. 8)

A project should have:

- Clearly identified stakeholders, including the primary target group and the final beneficiaries;
- Clearly defined coordination, management and financing arrangements;
- A monitoring and evaluation system (to support performance management); and
- An appropriate level of financial and economic analysis, which indicates that the project's benefits will exceed its costs. (European Commission, 2004, p. 8)

### Project Management

"Is the practice of *initiating, planning, executing, controlling and closing* the work of a team to achieve a specific goal and meet specific success criteria in a specified time. The primary challenge of the project management is to achieve all the project goals within the given constraints." (Phillips, 2003, p. 1)

Project Management acts within the primary constraints of scope, time, quality and budget.

### Main types of projects

| | |
|---|---|
| **Civil Engineering** | On site, remote from home office, massive capital investments, several contractors working together, rigerous management of progress |
| **Manufacturing projects** | New product research & development, often conducted in factories, on-the-spot management at a home base |

| | |
|---|---|
| **Management and business change projects** | Further development of companies, e.g. IT projects, re-structuring, mergers, organization, strategy projects, not tangible products |
| **Scientific research projects** | Pure scientific research, consume vast amounts of money, last for many years, intended outcome are unclear, aim to extend human knowledge, extremely high risks, clear budgets needed |

In the following, we will focus on civil engineering projects.

## 1.2 The LogFrame Approach

The **Logical Framework Approach (LFA)** was developed in the late 1960s to assist the US Agency of International Development to improve its project planning and evaluation systems. It was designed to address three basic problems, namely:

- Planning was very vague, without clearly defined objectives that could be used to monitor and evaluate the success (or failure) of a project;
- Management responsibilities were not clear; and
- Evaluation was often an adversarial process, because there was no agreement as to what the project was really trying to achieve.

Since then the LFA has been adopted as a project planning and management tool by most multilateral and bilateral development agencies, for instance by the German Agency for International Co-Operation (GIZ). The EC has required the use of LFA as part of its Project Cycle Management system since 1993, and it provides a set of tools to undertake assessments of project quality.

Although formats, terminologies and tools of the LFA have been modified over time, however, the basic analytical principles have remained the same. Knowledge of the principles of LFA is therefore useful for all staff involved in the design and delivery of projects.

The LFA should be understood as an aid for structured thinking. It allows information to be analysed and organized in a structured way, so that important questions can be asked, weaknesses identified and decision makers can make informed decisions based on their improved understanding of the project rationale, its intended objectives and the means by which objectives will be achieved.

Box 1

**LogFrame**

The **Logical Framework Approach (LFA)** is an analytical **process** and set of tools used to support project planning and management. It provides a set of interlocking concepts which are used as part of an iterative process to aid structured and systematic analysis of a project or programme idea.
It is useful to distinguish between the LFA, which is an analytical process (involving stakeholder analysis, problem analysis, objective setting and strategy selection), and the **Logical Framework Matrix (LFM)** which, while requiring further analysis of objectives, how they will be achieved and the potential risks, also provides the documented **product** of the analytical process.

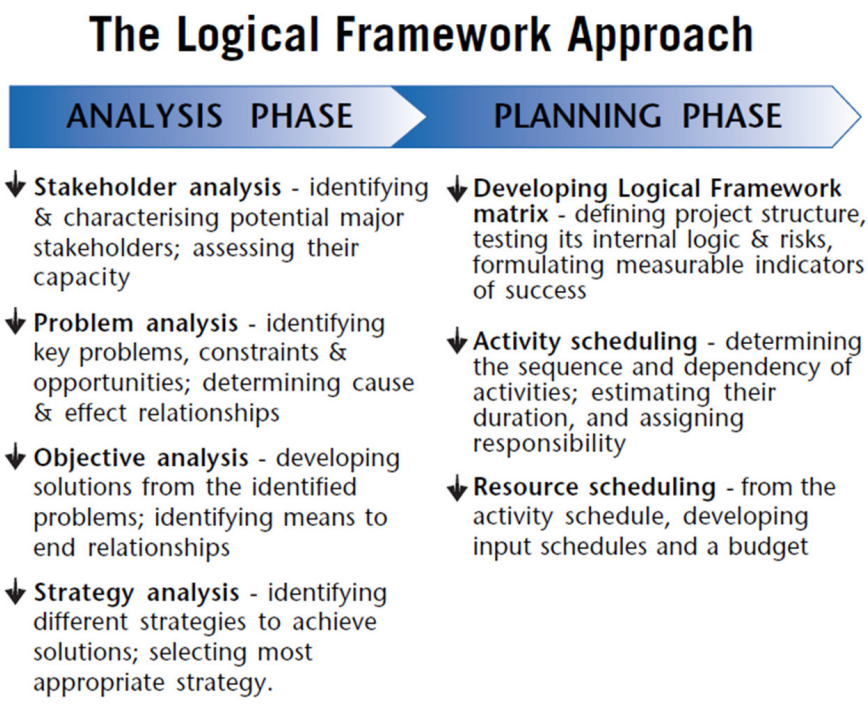
The Logical Framework Matrix (or briefly the Logframe) consists of a matrix with four columns and four (or more) rows, which summarise the key elements of a project plan, namely:

- The project's hierarchy of objectives (Project Description or Intervention Logic);
- The key external factors critical to the project's success (Assumptions); and
- How the project's achievements will be monitored and evaluated (Indicators and Sources of Verification).

The typical structure of a Logframe Matrix is shown in Figure 5.

The Logframe also provides the basis for determination of resource requirements (inputs) and costs (budget). (European Commission, 2004, p. 57)

Figure 1. Two Phases of the LogFrame Approach




source: European Commission, 2004, p. 60

## 1.3 The Analysis Stage

Projects do not simply fall from heaven, nicely packed "I am your project". Usually at the beginning we are faced with a complex and severe problem or bunch of problems which require to be solved. For instance:

"Heavy congestion and pollution in the city of XY"

"The share of logistics costs is too high compared with other countries."

"Border crossing is too slow and too complicated."

"The water quality of the river XY is deteriorating."

The challenge is how to solve these kinds of complex problems by structured, well planned and focused activities which bundle all elements – namely by projects. How to come out of the problem cloud and how to find the right allies to tackle these problems?

### Stakeholder Analysis

First, it is necessary to identify stakeholders and assessing their capacities to support or to hinder a project. "Stakeholders" are any individuals, groups of people, institutions or firms that may have a significant interest in the success or failure of a project. The basic idea behind a stakeholder analysis is that different groups have different concerns, capacities (power) and interests, and that these need to be well understood and addressed in the process of problem identification, objective setting and strategy selection.

The key questions asked by stakeholder analysis are 'Whose problems or opportunities are we analysing'; 'Who will benefit or lose out and how?; 'What are the interests and the capacities to support or to hinder the project?' The ultimate aim is to help in maximizing the social, economic and institutional benefits of the project for target groups and ultimate beneficiaries, and in minimizing its potential negative impacts (including stakeholder conflicts). We should give an answer to 'Which actions are appropriate to address the interests of the different stakeholders?' (see also (European Commission, 2004, p. 61))

As a result of a stakeholder analysis we get a clear picture who has the capacities and the motivation to support the project (allies), who is afraid of negative impacts on his interests and would hinder the project (adversaries) and who is undecided and waiting (fence sitters). We understand their motivation and can develop measures to : consider interest; inform; involve stakeholders in the course of the project planning and implementation; and generate acceptance and buy-in (to make it "their project").

The following example (Figure 2) illustrates the LogFrame Approach concerning the problem of "River water is deteriorating", a typical environmental problem in many developing countries. Waste from households and from industry is released into the river and worsens the water quality, with adverse effects on human health of the local population and the income of the fishermen.

Figure 2. Stakeholder Analysis, Example "River Pollution"

| Stakeholder and basic characteristics | Interests and how affected by the problem(s) | Capacity and motivation to bring about change | Possible actions to address stakeholder interests |
|---|---|---|---|
| **Fishing families:** c.20,000 families, low income earners, small scale family businesses, organised into informal cooperatives, women actively involved in fish processing and marketing | • Maintain and improve their means of livelihood<br>• Pollution is affecting volume and quality of catch<br>• Family health is suffering, particularly children and mothers | • Keen interest in pollution control measures<br>• Limited political influence given weak organizational structure | • Support capacity to organize and lobby<br>• Implement industry pollution control measures<br>• Identify/develop alternative income sources for women and men |
| **Industry X:** Large scale industrial operation, poorly regulated and no-unions, influential lobby group, poor environmental record | • Maintain/increase profits<br>• Some concern about public image<br>• Concern about costs if environmental regulations enforced | • Have financial and technical resources to employ new cleaner technologies<br>• Limited current motivation to change | • Raise their awareness of social and environmental impact<br>• Mobilise political pressure to influence industry behaviour<br>• Strengthen and enforce environmental laws |
| **Households:** c.150,000 households discharge waste and waste water into river, also source some drinking water and eat fish from the river | • Aware of industrial pollution and impact on water quality<br>• Want to dispose of own waste away from the household<br>• Want access to clean water | • Limited understanding of the health impact of their own waste/ waste water disposal<br>• Potential to lobby government bodies more effectively<br>• Appear willing to pay for improved waste management services | • Raise awareness of households as to implications of their own waste disposal practices<br>• Work with communities and local government on addressing water and sanitation issues |
| **Environmental protection agency:** Etc | etc | etc | etc |

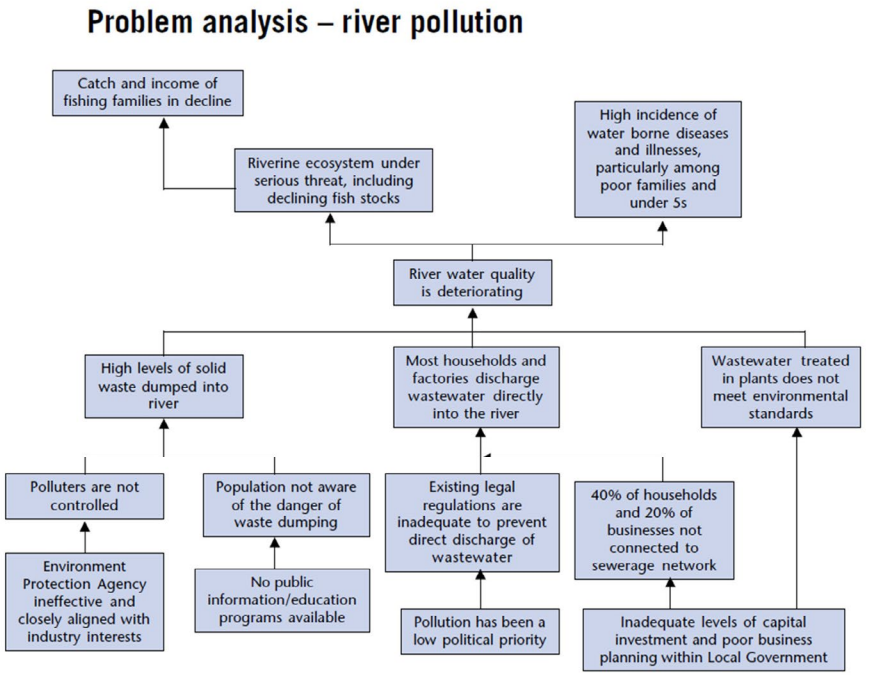
source: European Commission, 2004, p. 63

## Problem Analysis

*"If you know the real cause of a problem, you know the solution."*

The main problem we want to tackle should be broken down into a cause–effect relationship (problem analysis, see Figure 3). That means the negative effects should be listed above the problem in an effect-tree and for each effect we try to find the real cause and visualize them under the problem in a cause-tree. Often the real cause is not seen at the first glance. Then it helps to ask "5 x Why?". This analysis should be exercised preferably in a brainstorming discussion, including stakeholders. At the beginning of this discussion it is important to frame and to quantify the problem and to define the scope of the problem clearly.

Figure 3. Problem Analysis, Example "River Pollution"




source: European Commission, 2004, p. 68

Once the causes have been clearly identified we can derive from each cause an objective which should be achieved by a project or by other activities (e.g. immediate actions, more comprehensive programs etc.). We transfer causes into objectives and results to be achieved by interventions. At this stage we are still neutral to concrete solutions because there might be several alternatives to assess and to choose from in the further course of project planning. The result of the analysis phase is an objectives-tree with general objectives and desired, concrete results (See Figure 4).

## 1.4 The Planning Phase

In a following step the intervention strategy shall be determined. Which causes we want to tackle with our strategy? Which objectives we want to achieve? Which activities do we plan to achieve these objectives?

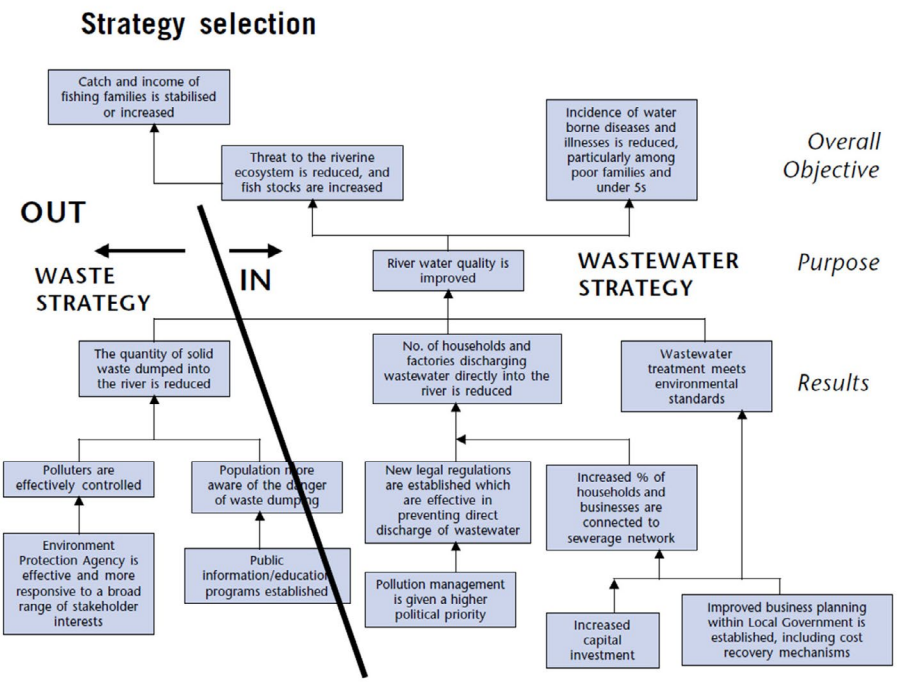
To determine the frame for our strategy it has been proven useful to agree upon certain decision criteria.

Selection criteria can be, for example:

- Expected contribution to achieving (key policy) objectives
- Complementarity with other ongoing programmes or projects
- Time horizon
- Expected costs and benefits
- Financing implications
- Environmental impact

The selected strategy will then be used to formulate the LogFrame matrix (first column) as it determines the objectives for a project.

Figure 4. Objective Tree and Strategy Selection, Example "River Pollution"




source: European Commission, 2004, p. 72

Once we have selected the objectives and results which shall be achieved by a strategy, we can proceed in defining these results further by identifying indicators and ways of verification. Necessary assumption / preconditions shall be discussed at this stage.

Often the LogFrame Matrix contains an additional line with activities which lead to the desired objectives. The following (Figure 5) shows the typical outline of a LogFrame matrix.

Figure 5. Information contained in the LogFrame Matrix

| Project Description | Indicators | Source of Verification | Assumptions |
|---|---|---|---|
| **Overall objective:** The broad development impact to which the project contributes – at a national or sectoral level (provides the link to the policy and/or sector programme context) | Measures the extent to which a contribution to the overall objective has been made. Used during evaluation. However, it is often not appropriate for the project itself to try and collect this information. | Sources of information and methods used to collect and report it (including who and when/how frequently). | |
| **Purpose:** The development outcome at the end of the project – more specifically the expected benefits to the target group(s) | Helps answer the question 'How will we know if the purpose has been achieved'? Should include appropriate details of quantity, quality and time. | Sources of information and methods used to collect and report it (including who and when/how frequently) | Assumptions (factors outside project management's control) that may impact on the purpose-objective linkage |
| **Results:** The direct/tangible results (good and services) that the project delivers, and which are largely under project management's control | Helps answer the question 'How will we know if the results have been delivered'? Should include appropriate details of quantity, quality and time. | Sources of information and methods used to collect and report it (including who and when/how frequently) | Assumptions (factors outside project management's control) that may impact on the result-purpose linkage |
| **Activities:** The tasks (work programme) that need to be carried out to deliver the planned results *(optional within the matrix itself)* | *(sometimes a summary of resources/means is provided in this box)* | *(sometimes a summary of costs/budget is provided in this box)* | Assumptions (factors outside project management's control) that may impact on the activity-result linkage |

source: European Commission, 2004, p. 73

As a result, all relevant entities and stakeholders get a well-structured overview of the key factors of the project and their linkages. The LogFrame Matrix has proved to be an effective tool for strategic planning and monitoring of projects. Also important is the process which leads to this result because all parties involved in planning undergo an essential well-defined process about the objectives, results and ways of achieving these elements, coming to an agreement in the process.

The LogFrame Matrix for our example "River Pollution" is shown in **Figure 6.**

Figure 6. Key Elements of a LogFrame Matrix, Example "River Pollution"

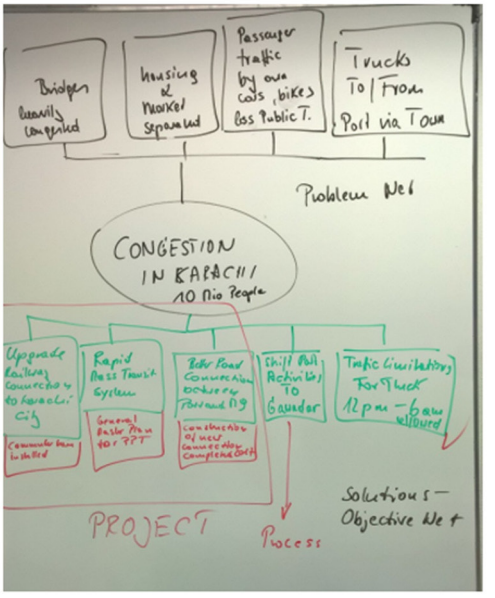
| Project description | Indicators | Means of Verification | Assumptions |
|---|---|---|---|
| **Overall objective**<br>To contribute to improved family health, particularly the under 5s, and to improve the general health of the riverine eco-system | - Incidence of water borne diseases, skin infections and blood disorders caused by heavy metals, reduced by 50% by 2008, specifically among low-income families living along the river | - Municipal hospital and clinic records, including maternal and child health records collected by mobile MCH teams. Results summarized in an Annual State of the Environment report by the EPA. | |
| **Purpose**<br>Improved quality of river water | - Concentration of heavy metal compounds (Pb, Cd, Hg) and untreated sewerage; reduced by 25% (compared to levels in 2003) and meets established national health/pollution control standards by end of 2007 | - Weekly water quality surveys, jointly conducted by the Environmental Protection Agency and the River Authority, and reported monthly to the Local Government Minister for Environment (Chair of Project Steering Committee) | - The pubic awareness campaign conducted by the Local Government impacts positively on families sanitation and hygiene practices<br>- Fishing cooperatives are effective in limiting their members exploitation of fish 'nursery' areas |
| **Result 1**<br>Volume of waste-water directly discharged into the river system by households and factories reduced | - 70% of waste water produced by factories and 80% of waste water produced by households is treated in plants by 2006 | - Annual sample survey of households and factories conducted by Municipalities between 2003 and 2006 | - River flows maintained above X mega litres per second for at least 8 months of the year<br>- Upstream water quality remains stable |
| **Result 2**<br>Waste-water treatment standards established and effectively enforced | - Waste water from 4 existing treatment plants meets EPA quality standards (heavy metals and sewerage content) by 2005 | - EPA audits (using revised standards and improved audit methods), conducted quarterly and reported to Project Steering Committee | - EPA is successful in reducing solid waste disposal levels by factories from X to X tons per year |
| **Etc** | | | |

source: European Commission, 2004, p. 84

Figure 7. Defining the Project Objectives

**The ideal project objective ….**

- describes the desired final status
- is clear and understandable
- is neutral to possible solutions
- is challenging but achievable
- is measurable
- is agreed with all involved
  - who gave the order (investor)
  - planner
  - manager
  - user / recipient




When the Logframe matrix is complete, it is then possible to identify activities (which may or may not be included in the matrix itself already). These activities are major action fields which shall be broken down into more detailed tasks.

Then activities and tasks shall be planned according their timing and according to their interdependencies. A time-active-plan (Gantt diagram) is the result of this exercise (Figure 8).

Figure 8. Activity Schedule for Operational Planning, Example "River Pollution"

**INDICATIVE ACTIVITY SCHEDULE**

| | | | Year 1 | | | | Year 2 | | | | Year 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ref no | Results and Indicative Activities | Responsibility | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1.1 | **Reduced volume of waste water directly discharged into the river system** | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | **Activities** | | | | | | | | | | | | | |
| 1.1.1 | Conduct baseline survey of households and business | Contractor to local Govt. | | | | | | | | | | | | |
| 1.1.2 | Complete engineering specifications for expanded sewerage network | Contractor to Local Civil Works | | | | | | | | | | | | |
| 1.1.3 | Prepare tender documents, tender and select contractor | Dept. of Civil Works | | | | | | | | | | | | |
| 1.1.4 | Implement and monitor capital works | Contractor and Dept of Civil Works | | | | | | | | | | | | |
| 1.1.5 | Identify appropriate incentives for factories to use clean technologies | EPA and business | | | | | | | | | | | | |
| 1.1.6 | Design and implement incentive program | EPA and Local Govt. | | | | | | | | | | | | |
| 1.1.7 | Prepare and deliver public information and awareness campaign on wate-water disposal | Local Govt. | | | | | | | | | | | | |
| 1.1.8 | Etc | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

source: European Commission, 2004, p. 89

Following that resources shall be allocated to each of the activities and tasks. Resources include manpower, costs, facilities.

Read: **Learn more about the LogFrame Approach.**

*http://ec.europa.eu/europeaid/sites/devco/files/methodology-aid-delivery-methods-project-cycle-management-200403_en_2.pdf* (pages 57 - 87).

Exercise

Choose a challenging problem which is important for your country, your company or administration or for you personally. You can do this exercise in a group or individually.

- Describe the problem.
- Analyse effects and possible causes. Develop a problem tree.
- Turn the causes into objectives. Visualize them with an objectives tree.
- Decide what should be within your strategy (and what should not).
- Develop a draft LogFrame Matrix.
- Determine activities which shall be part of a project. Sequence them into a timeline.

## 1.5 Case Study: Railway Project Rail Baltica

The RAIL BALTICA is an ambitious rail project within the EU TEN-T programme and has the objective to construct a European gauge double track electrified railway line over 870 km from the Polish border to Tallinn (Estonia) through Lithuania and Latvia. This will avoid time consuming and expensive transfer of passengers and freight from the European 1425 mm gauge rail system to the Russian 1520 mm gauge rail system. The first decisions were taken in 2011, completion of construction works is planned for 2026. (For further information see (RB Rail AS, 2020)

Feasibility studies were made for the whole line and for different sections (Figure 9). These studies laid the ground for further detailed planning and construction works.

Figure 9. Project stages of the RAIL BALTICA sector between Kaunas and Lithuania/Poland border


source: RB Rail AS, 2020

Read: Learn more about the railway project RAIL BALTICA from the official project website *https://www.railbaltica.org/*

Watch the Videos

**Learn more about the RAIL BALTICA**

project status,
jobs and contribution to economy
care for the environment
the new stations
*https://info.railbaltica.org/en/discover-rail-baltica?utm_source=railbaltica.org&utm_medium=banner&utm_campaign=Discovery_Rail_Baltica_S1*

Exercise

Write down your answers to the following questions:

- What is the scope of the project?
- What are the objectives?
- Who are the stakeholders?
- How is the project organized?
- How is the project financed?
- What are the benefits?
- How are environmental issues considered?

# 2 Freight Villages as Nodes in Intermodal Networks

## 2.1 What is A Freight Village?

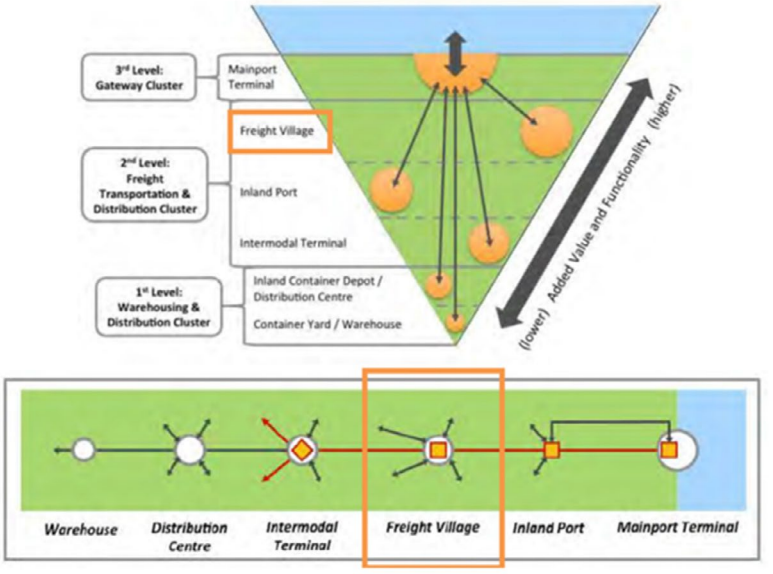
The development of international freight corridors (e.g. the New Silk Route Europe – Asia, the Russia-Mongolia-China-Economic-Corridor and the Trans European Network) requires efficient intermodal logistics centres along the corridors. These centres serve as intermodal interfaces, provide a variety of different logistics service functions and act as cargo generators.

The definition of the term intermodal logistics centre differs between countries and implies different functionalities. A common or even standardized terminology does not exist. This diversity reflects the high dynamic of the logistics sector but also the immaturity of the research field and the semantic segmentation between different countries and regions. For instance, the term Transport-Logistics Centres or just Logistics Centres is used by the European Association Europlatforms. Freight Village is used in the

U.K., Güterverkehrszentrum (GVZ) in Germany, also translated as Freight Village. In France, the term Platform Multimodales/Logistiques prevail while in Italy the term Interporti and in Spain the term Ciudad Del Transporte are used. (Wagener, 2017, p. 274)

Perhaps, more important than the term used is the understanding of the functions of logistics centres and that they differ in their scope, functionality and size. For the purpose of this materials, we follow the typology of Higgins, Ferguson and Kanaroglou (Higgins, 2012) which bases on a comprehensive literature review, including the logistics centre hierarchy developed by Notteboom and Rodrigue (Notteboom, 2009, p. 12).

Figure 10. Logistics Centre Hierarchy




source: Higgins, 2012, p. 14

According to this hierarchy we can distinct between three stages: (1) 1st Level Warehousing & Distribution Cluster (individual warehouse, private logistics centre, container yard), (2) 2nd Level Freight Transportation & Distribution Cluster (Freight Village, Inland Port, Dry Port), (3) 3rd Level Gateway Cluster (Mainport Terminal) (Figure 10). Especially for landlocked countries and for big agglomerations and hinterland regions the 2nd level, the Freight Village concept, is most interesting to bundle cargo for fast and efficient intermodal transport connections to large seaports as international gateways.

Box 2

**Freight Village**

A Freight Village (FV) is a large, designated real estate, where independent companies working in freight transport, trade logistics and supplementing services can settle and where a change of transport units between transport modes can take place in an intermodal terminal.
A freight village provides a host of various services such as warehouses, value adding services, customs, maintenance workshops, petrol station, banking, offices and an intermodal terminal for handling cargo and other services. The FV acts as a cluster of various logistics service providers located within a secure premise where a range of supporting services is offered.

Through this clustering of logistics companies at one hand, an optimum allocation of public investments into infrastructure (roads, rail, other facilities) is ensured and a scattering of settlements is prevented to achieve spatial planning objectives. On the other hand, private companies benefit from the availability of ready-to-settle land plots, easy access to highways and rail connections as well as the possibility of a 24/7 operation. Clustering also results in higher efficiencies and lower logistics costs through "productive neighbourhood" and synergies in co-operation networks within the FV.

## 2.2 Functionalities of a Freight Village

The main functions of a FV are transportation-related activities, including warehousing and forwarding, a connection to at least two modes of transport, settlement of different companies and a governance structure to best use potential synergies among the tenants. Moreover, some FV offer urban consolidation and distribution functions if located close to urban areas.

The role of a freight village is one that is enhanced by its strategic location and made diverse by its functionality. On one hand, an FV acts as a hub for transhipments for the bundling of cargo between different modes of transports, promoting interregional trade and therefore acts as an inland hub and gateway. On the other hand, the FV allows for the promotion of businesses and economic activities in the region as it provides a logistics platform for the regional industry.

Figure 11. General Appearance of a Freight Village


source: Europlatforms, 2015

State authorities usually initiate master planning of Freight Villages. The development of Freight Villages is realized in co-operation between public authorities (infrastructure) and private investors (warehouses). It is open and public.

Sharing access to other facilities, equipment and services is another distinguishing feature of a FV. These facilities are available and easily attainable on a common access basis by all companies involved in the activities. These include customs and quarantine services, truck cleaning area, post office and conference and training rooms. Some operators use their own facilities and services while others hire facilities and pay for services from other providers.

Moreover, some freight villages provide certain services to cater for social needs of the people working there by including bus services, parking facilities, restaurants, canteens and child-care facilities. Such services may not be provided initially in the FV but as it develops and attracts more businesses and operators to warrant their use.

The third distinguishing factor is the centralized management and ownership structure. The state authorities initiate the master planning of FV while cooperation between public authorities and private investors further initiates the development of the FV.

Long term investments, growth of the village as well as short term maintenance of its infrastructure are handled by the FV management, similar to the role of a port authority/corporation.

Box 3

### Freight Villages in Germany

In the FR Germany in 2010, there were 35 Freight villages which comprise in total 1,300 enterprises with 52,000 employees. That is, on average, almost 1,500 employees per Freight Village. Traffic effect and ecological benefits result from the shift of traffic from the inner cities to the suburban FV. For instance, the transfer of nine logistics companies from the inner city of Berlin to a FV resulted in a reduction of inner-city long-distance traffic of about 870 trucks per day. (LUB ISL, 2010, pp. 33,48)
The average size of FV is 140 ha in Germany. The price of fully developed land plots ranges from 10€ to 200 €/sqm, in average 60 €/sqm. The average utilization is 50%. According to German experience on average one Euro invested by the public initiates four Euro private investments.

The Concept of Freight Villages is a success story in Europe and has been adopted in many other countries taking into consideration special national and regional particularities. The ranking of EU Freight Villages shows the regional distribution and different development stages.

Figure 12. Top 20 EU Freight Villages

| | |
|---|---|
| 1 | D - Bremen |
| 2 | IT - Quadrante Europa Verona |
| 3 | D - Nürnberg |
| 4 | ES - Zaragoza (Plaza) |
| 5 | D - Berlin Süd Großbeeren |
| 6 | PL - CLIP Logistics |
| 7 | IT - Parma |
| 8 | IT - Bologna |
| 9 | A - Cargo Center Graz |
| 10 | IT - Padova |
| 11 | IT - Nola |
| 12 | D - Berlin West Wustermark |
| 13 | FIN - RRT Kouvola |
| 14 | IT - Torino |
| 15 | D - Leipzig |
| 16 | D - GVZ JadeWeserPort |
| 17 | A - Ennshafen |
| 18 | H - BILK |
| 19 | D - Erfurt |
| 20 | ES - ZAL Barcelona |

source: Deutsche GVZ-Gesellschaft, 2020

Read

**Case Study**

This would be a good time to read carefully the case study on the Freight Village Berlin - South. (Refer to Case Studies section at end of the module)

## 2.3 Lessons Learnt

From past experiences of more than 25 years, we can infer several lessons learnt. The findings are empirical and result from practical experiences in more than ten projects across five countries (from (Wagener, 2017, pp. 277 - 280))

- **Active role of the state**

High investments in public and private infrastructure are needed and there are long lasting and far reaching impacts on the regional economic and urban development as well as on the use of local resources and transport networks. The state therefore plays an active role in initiating and supporting the development of Freight Villages. Best results have been achieved when the different interest groups work together in a kind of public private partnership. Lithuania may serve as a good example where the central government initiated a programme for Public Logistics Centres in Vilnius, Kaunas, Klaipeda and Siaulai. The Lithuanian Railways played a decisive role as a project owner in the first stage, and later on, the municipalities joined the projects. In an open-tender procedure, private investors are invited to buy or lease land plots and to invest into warehouses etc.

- **Master planning is needed**

Very often warehouses and distribution centres are scattered more or less randomly along the highways and around the major cities. Land prices and land availability are the most important factors for these investment decisions. Existing infrastructure, accessibility and intermodal connections are of secondary importance. Because of a lack in spatial planning in many countries, a structured development of areas for warehousing and distribution does not exist. These results to congestions in road infrastructure and suboptimal investments in public infrastructure.

To stimulate the use of multimodal transport and to promote a more coordinated development of logistics areas, a concerted action of the stakeholders in a master planning process is required. Stakeholders are the state, municipalities, railways, ports and private property developers as well as logistics companies. The

coordinated development of designated logistics areas with multimodal connectivity and with land available at reasonable prices will create a win-win-situation for all stakeholders.

- **Selecting the right location**

Once the principal locations (e.g. according to districts or municipalities) are decided in a master plan, the micro location needs to be defined. In a multi-criteria analysis, the different criteria can be structured, weighed and then measured in a scoring model. After an evaluation, the preferred location can be determined on an objective basis. We made good experiences with interdisciplinary groups of experts which assessed each criterion according to given indicators or other information and gave a score on a Likert scale 1 (very bad) to 5 (very good).

- **Land availability**

The availability of large real estates of 100 hectares or more at locations suitable for logistics is a key issue and very often a bottleneck. Public developers face the challenge to decide between available, but sub-optimum places and optimum but not available locations. In Germany, the general construction law allows the municipality as public developers to establish a so-called development plan (B-Plan) where a certain area is determined and planned for use which is of a public interest. In this case, private owners of land plots transfer their land to the public developer. They can sell or get compensated. In Lithuania, such a legal provision did not exist, for which reason a special law for Public Logistics Centres was established.

- **Business and financing model**

For the development of a Freight Village, three principal business models can be recommended. First option is that the private or the public entity develops the FV with own capacities and on own account. Second option is that with other stakeholders where a development company as a special purpose vehicle is founded to develop the FV. This is, for instance, the case in the FV Vilnius. If own capacities or financing abilities are not sufficient, a third option is a planning or development company can be contracted, for instance, in the form of a trusteeship.

High public investments and financing costs can be limited through a revolving financing scheme. The development of the real estate in phases allows a stepwise approach. During the first phase, the first land section can be developed and land plots can be sold. The revenues gained from these sales are invested into the development of the next section of the estate. This stepwise approach reduces risks, allows a lower credit line and lower financing costs.

### • Feasibility Study and Zoning

Infrastructure investments consume vast amounts of money but are often in the public interest. Therefore, it is in the interest of the state as investor to not only assess the costs and benefits by a financial appraisal but also consider external costs and benefits through an economic appraisal. This is usually part of a full-scale Feasibility Study which covers all technical and economic aspects of such a project.

In order to make best use of intermodal and other infrastructure facilities and to create synergy effects between the companies, a careful zoning and selection of investors is important. "Synergetic Neighbourhood" is realized best if companies which could co-operate in a supply chain are located within a vicinity. For instance, around an intermodal container terminal, container depots, container freight station, repair shops and companies with container freight should be settled. For this reason, FV developers, especially ports, tend to control settlements tightly and prefer to conclude long term lease contracts instead of selling the land plots.

Read: **Learn more about the concept of Freight Villages**

- Integrated Logistics Centers – Experience from North America and Options for China / L.C.Blancas, G.Ollivier, R.Bullock.- in: China Transport topics No. 13,. The World Bank, Washington DC.- April 2015. – 8 pages
  *https://openknowledge.worldbank.org/handle/10986/23494*
- Intermodal Logistics Centres and Freight Corridors - Concepts and Trends / N.Wagener.- LogForum Scientific Journal of Logistics, Poznan: 2017, 13 (3), pages 273-283
  *https://www.logforum.net/volume13/issue3*

Exercise **Discuss if and how the concept of Freight Villages could be of interest for Mongolia.**

- Why?
- Where?
- Which functionalities?
- Which connections?
- Who should develop?
- Which benefits?
- Which challenges?

## 2.4 Case Study: Establishing a Public Logistics Centre in Vilnius / Lithuania

In the first decade of the 2000, the government of Lithuania decided to establish a network of Public Logistics centre in Lithuania in order to promote the national economy, to develop Lithuania as a logistics hub in Europe North–South and East—West Pan-European corridors and to strengthen rail transport in intermodal transport.

In 2008/2009, a feasibility study was conducted by a consortium consisting of E&Y Baltic, IPG and W&H on behalf of the Lithuanian Railways (LG). This study showed the economic feasibility to establish a Public Logistics Centre near Vilnius in the vicinity of the city of Vaidotai and the LG marshalling yard. This feasibility study was also the basis for application for EU cohesion funds financing.

Later in the implementation of the project, a separate company "Vilniaus Logistikos Parkas Vsj" was founded to develop and to manage this Freight Village. Shareholders are the Lithuanian Railways and the Vilnius Municipalities.

Figure 13. The project sponsors

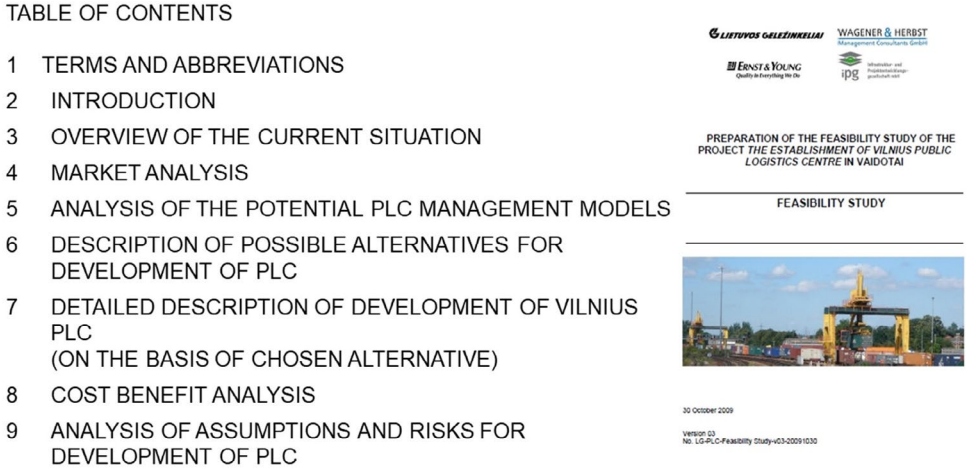

source: Vilnius Logistics Park, 2016

Figure 14. Location of FV Vilnius


source: Vilnius Logistics Park, 2016

Vaidotai was selected due to two factors: the railway lines passing by in close vicinity (the Vaidotai railway cargo marshalling yard is the largest in Lithuania) and the Southern Vilnius ring road that is planned to be built nearby. It will be possible to move rail cargo quickly and conveniently from the port of Klaipėda to Vilnius, Belarus, Ukraine and other destinations.

Figure 15. Contents of the Feasibility Study for the Vilnius FV

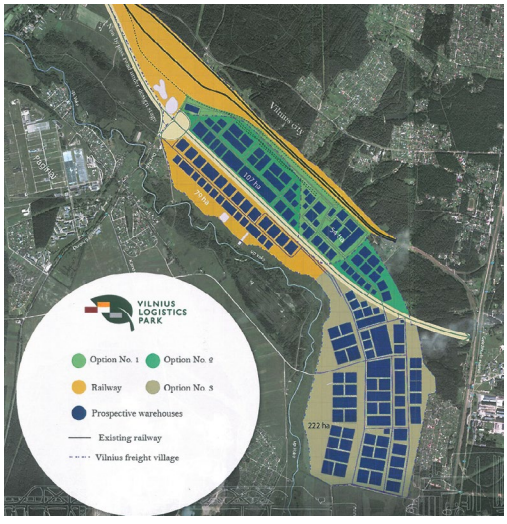


"The geographic location Freight Village is extremely convenient as it is located in Vilnius (Vilnius accounts for about 40% of Lithuania's GDP) and borders with Poland and Belarus which at the moment is suffering from the lack of warehouses but has great potential.

The geographical location of our Freight Village provides following benefits:

- Easier service of Vilnius, Lithuania's most important economic centre
- The ability to build warehouses next to the Trans-European Transport Network
- Direct links to the road and rail transport corridor IXB Klaipeda - Vilnius - Minsk - Kiev, and the connection to the rail corridor IX D Kaliningrad – Vilnius.
- Efficient allocation of goods imported from CIS countries in the Baltic countries as well as the opportunity to reach the Western and Northern Europe markets through the Baltic Sea from the ports of Klaipeda and Kaliningrad.
- Ability to consolidate cargo to the CIS and other Eastern countries next to the EU border and use existing rail corridors outside EU for freight forwarding.
- Reduce transportation time and costs related to cargo consolidation, distribution and customs clearance, using the shuttle service through railway station in Kena where the border crossing procedures lasts ½ hours in accordance with EU requirements.
- Sites inside the Freight Village will be developed in accordance with each investor's needs and a possibility to connect to the utilities network will be given." (Vilnius Logistics Park, 2020)

Figure 16 Layout Plan Vilnius FV



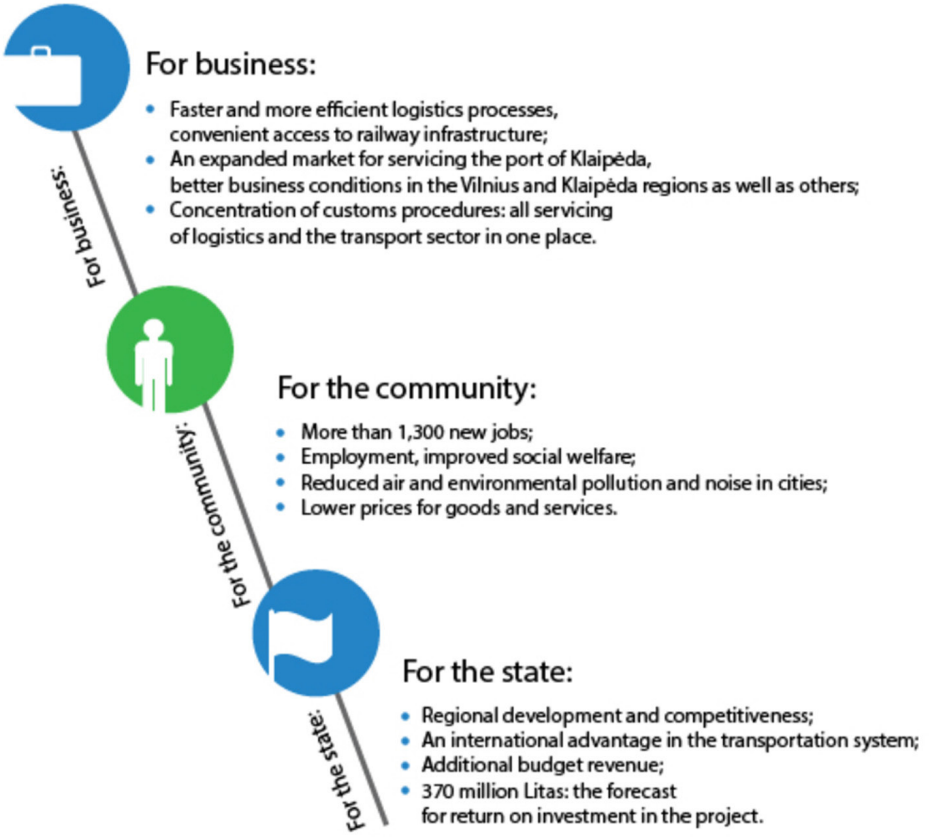

source: Vilnius Logistics Park, 2016

The layout plan foresees a stepwise development of the land in three phases. At the beginning, an intermodal terminal was planned and constructed as the core of the Freight Village.

The land development and marketing of land plots are in progress.

With the realization of another project, the RAIL BALTICA, the Freight Villages in Lithuania will benefit further.

Figure 17. Benefits of the Vilnius Freight Village




source: AB LTG Cargo, 2020

# 3 How to conduct a Feasibility Study

## 3.1 Planning and realization of infrastructure projects

The planning and realization of infrastructure projects is a very complex process which:

- relates to different stakeholders (enterprises, users, population, politicians, environment, taxpayers, financing institutions etc.)
- involves different state authorities which are responsible for the provision of public infrastructure and for financing within their scope of responsibility
- different political institutions which are responsible for setting the policy and the legal framework

- includes several steps and iterations from the first needs identification to realization.
- In general, the process consists of the following phases and steps:

**Policy Phase**

- Transport Policy
- Transport Strategy
- Set up of a Standardized Appraisal Methodology

**Master Plan Phase**

- Prognosis of transport flows
- Infrastructure needs assessment
- Proposal and definition of projects, public involvement
- (Pre-) **Feasibility Studies** including investment appraisal for projects
- Prioritization and selection of projects according to the results of the investment appraisal and funding possibilities
- Elaboration of a National Master Plan

**Planning Phase**

- Elaboration of detailed project plans
- Submission of project plans
- Approval of projects by governmental authorities
- Public involvement and consultation
- Environmental Assessment
- Decision on Project Plans

**Realization Phase**

- Construction
- Ex post Appraisal (objectives met?)

## 3.2 What is a Feasibility Study?

A feasibility study is an investigation or review that serves to decide whether the implementation of a project which should lead to a specific goal under the given conditions can be realized or not.

With the help of a feasibility study, it can be decided in advance whether a project should really be carried out. If this decision was only made after the actual project planning, the costs and time of direct project planning would be lost.

### Contents of a feasibility study

A feasibility study investigates the following points:

### Description of the project and reasoning

Definition of the project, scope and background

### Determination of the project's objectives

### Political and Legal Feasibility

Does the project serve political objectives? Is the project supported? Is lobbying required? Which stakeholders have which interests and how to address these interests? Which legal and regulatory requirements are active in the project's environment?

### Institutional Setup

What is the institutional setup for managing the project and for managing the investment after completion of the project? What is the business model? What is the involvement of state and private investors?

### Market Analysis

What is the demand (present, forecast) for the project? What about achievable prices, fees, willingness to pay by users?

### Technical Feasibility & Environmental Sustainability

What is the required technical capacity for the investment? (E.g. size of an area, throughput of a road or railway line)

Which technical options exist? What are decision criteria? What are the investment costs for each option? Which is the preferred option?

What is the project's impact on the use of natural resources? Is this acceptable?

### Detailed description of the preferred option

Detailed description of the preferred option, layout planning, investments into infra- and suprastructure, connectivity, ground exploration etc.

### Financial Appraisal

Financing, cost-benefit-assessment from a private investor point of view

### Economic Appraisal

Monetization of external effects, cost-benefit-assessment from a society point of view

### Risks and Sensitivity Analysis

Which risks exist? Which countermeasures? What are the impacts of a change of input factors on the project's appraisal?

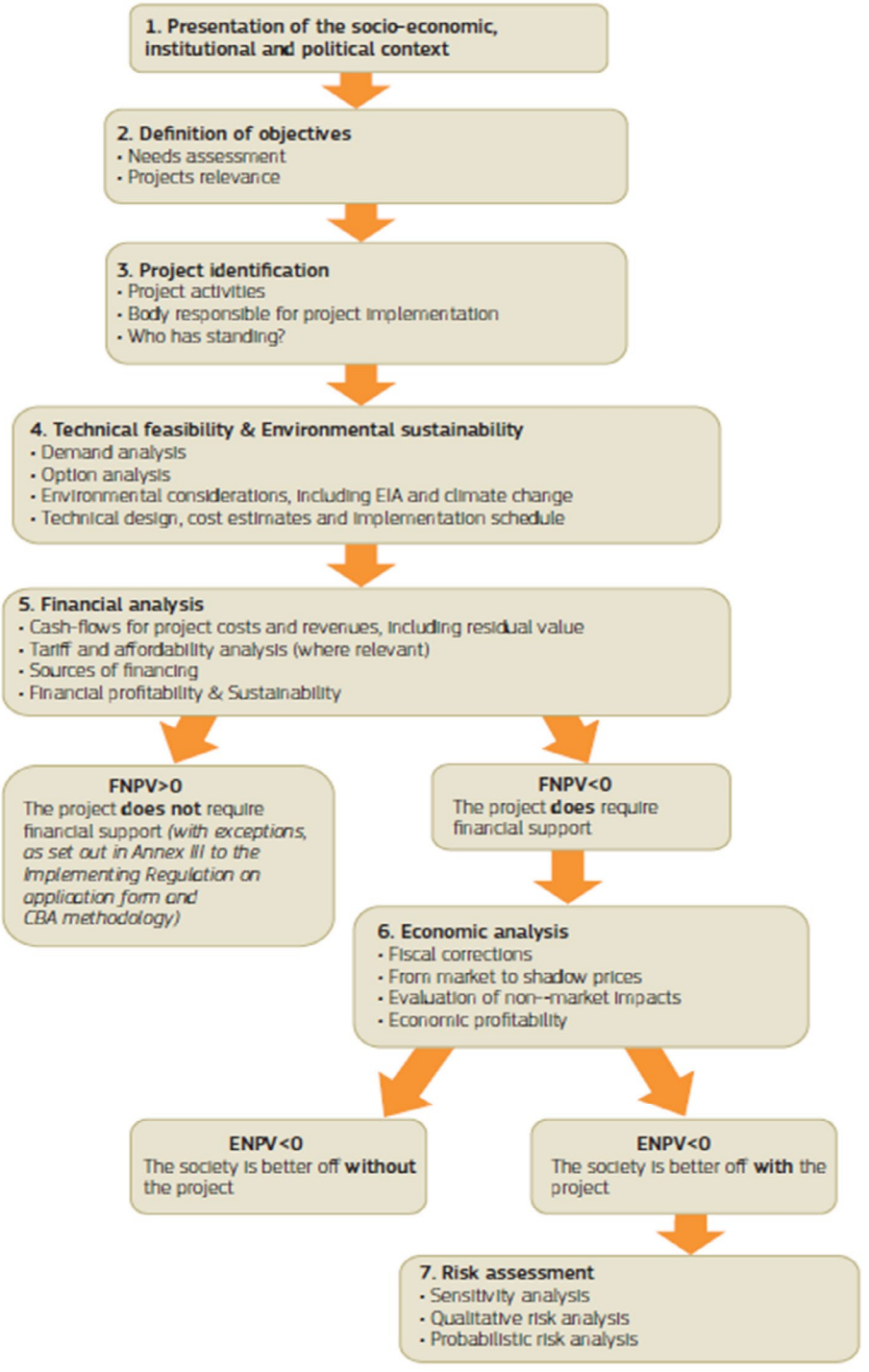
### Implementation

Timetable, activities, resources

Are the necessary resources available (e.g equipment, personnel, time, licenses, knowledge, etc.)?

Often a feasibility study is a project itself before the intended project starts. Often feasibility studies are realized by external consultants or group of consultants which combine the necessary expertise in the different disciplines of civil engineering, financial accounting, marketing, management and environmental protection. To carry out, a feasibility study may last 6 to 12 months.

Figure 18. Steps of a Project Appraisal




source: European Commission, 2014, p. 28

The following section explains these steps in more detail. For further readings (European Commission, 2014).

## 3.3 Context, Definition and Objectives of the Project

The first step aims to describe the social, economic, political, institutional and legal context in which the project will be realized. The socio-economic context is of particular importance hence it influences the monetization of external effects and the forecasts of future trends. It is obvious that, for example, the user benefits of time savings through an improved infrastructure largely depend on the GDP per capita and the level of wages. Also, the forecasts depend on the dynamics of economic growth and circumstances of a country.

The project should be appropriate to the context in which it takes place, i.e. the rules and socio-economic conditions and the political objectives of the country should be considered adequately.

The definition of a project should be complete and should ensure that no essential feature or component is left out ("half bridge is not a bridge").

The project objectives should then be defined in relation to expected results (needs). To the extent possible, project objectives should be quantified through indicators and means of verification. (see LogFrame in Chapter 1).

At this step, important preconditions and input data for the following steps should be determined. This relates, for instance, to the time horizon of the project, the financial and social discount rates and the types and (standard) values for external effects (e.g. value of time, operating costs, external environmental costs etc.).

## 3.4 Technical Feasibility and Environmental Sustainability

As a very precondition for a project appraisal (CBA), the technical solution(s) should be described and the demand must be analysed.

Once the project is defined, the next step is to carry out a demand analysis, both through desk research (secondary data) and through on field studies and surveys (primary data) (e.g. traffic counts, interviews). The demand analysis not only provides forecast data on the quantitative demand but also on

achievable prices and revenues. From this demand forecast, data and determination of the required future capacities are possible (capacity planning) which is of significant influence to the required technical solution (e.g. two lane or four lane road).

Depending on the scope of the project, technical solutions need to be identified. Very common is the approach to assess three options:

- "do nothing" (Business as usual "BAU")
- "do minimum"
- "do something"

Along with the description of the technical solutions, an environmental impact assessment (EIA) should be carried out to identify risks and countermeasures concerning environmental issues (e.g. the routing of a railway line should consider nature protected areas).

A simplified cost-benefit-analysis should be carried out to identify the best solution which should be detailed further. This includes a more detailed design, cost estimates and an implementation schedule.

## 3.5 Financial Analysis

To assess the project's profitability, a Financial Analysis is carried out from the project owner's point of view. The objective is to assess the project financial sustainability and to calculate the project cashflow.

At the beginning, it is important to define the lifetime of the project which determines the number of years for which the cashflow is calculated and which also determines the residual value of the investment after the project lifetime (Figure 19).

Figure 19. Reference periods by sector

| Sector | Reference period(years) |
|---|---|
| Rallways | 30 |
| Roads | 25-30 |
| Ports and airports | 25 |
| Urban transport | 25-30 |
| Water supply/sanltation | 30 |
| Waste management | 25-30 |
| Enetgy | 15-25 |
| Broadband | 15-20 |
| Research and Innovation | 15-25 |
| Business Infrastructure | 10-15 |
| Other sectors | 10-15 |

source: European Commission, 2014, p. 42

The determination of a financial discount rate is also important at this stage. This discount rate reflects the interest rate for capital investments in comparable situations. In state funded projects, this discount rate is usually fixed for a certain period to ensure comparability of different "competing" projects (e.g. 4 %).

The annual cashflow includes all inflows of money (as construction costs, operating costs and financing costs) as well as outflows (such as revenues and the residual value) of the project.

The decisive criterion for financial appraisal is the FNPV Financial Net Present Value, which is the discounted value of the cash flow over the project's lifetime. It is calculated as:

$$\mathrm{FNPV(C)} = \sum_{t=0}^{n} a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \ldots + \frac{S_n}{(1+i)^n}$$

St is the balance of cash flow at time t, at is the financial discount factor chosen for discounting at time t and i is the financial discount rate.

$$0 = \sum \frac{St}{(1+FRR)^t}$$ (European Commission, 2014, p. 48)

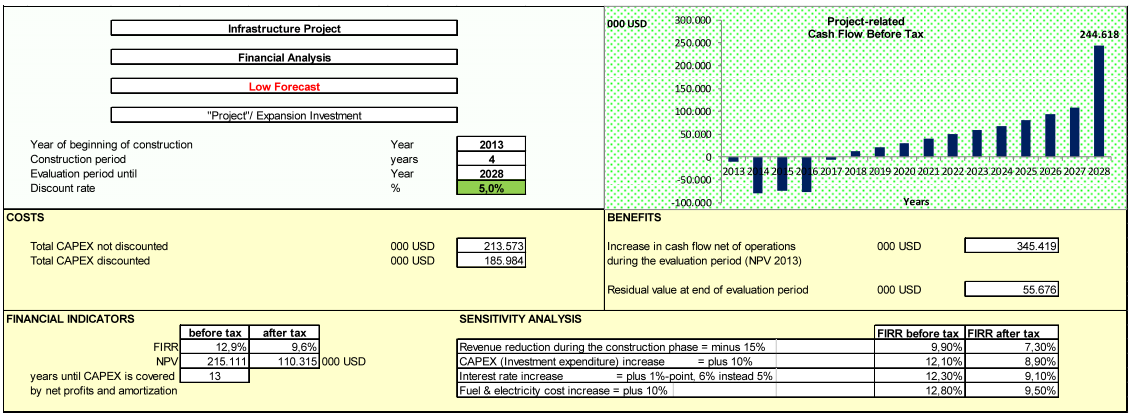
Another criterion is the FRR Financial Rate of Return. The FRR is defined as the discount rate that produces a zero FNPV, i.e. FRR is given as the solution of the equation:

While the FNPV is expressed in money terms the FRR is a pure number which allows to compare

(European Commission, 2014, p. 65)

different projects. The higher the FRR, the higher the return of the project and the shorter the payback period. If the FRR is lower than the applied discount rate or is below zero, then the project will not cover the costs and a private investor would not carry out this investment.

Figure 20. Financial Analysis Results of an Infrastructure Project (Example)




## 3.6 Economic Analysis

When the FNPV is zero or below, then a project is not profitable and private investors would not invest into this project. This is usually the case with infrastructure projects which consumes vast amounts of money, have a very long lifespan and often generate no or little financial revenues.

But from society's point of view, this kind of projects may be in the public interest because they generate positive external effects, for instance, reduction of travel times, modal shift or less operating costs for users or positive environmental effects. In this case, it should be assessed to what extend the project contributes to welfare.

The key concept is the use of shadow prices to reflect the social opportunity costs of goods and services instead of prices observed in the market, which may be distorted. Such distortions are manifold, for instance:

Some prices include fiscal requirements (VAT, import duties, other indirect taxes)

Non-efficient markets (state subsidies for energy, monopolistic prices)

For some effects, no prices are available (air pollution, time savings).

The international practice of the conversion of market prices to shadow prices and the evaluation of non-market-impacts (where no market prices exist) is explained in (European Commission, 2014, p. 54)

The shadow prices should be determined according to the type of effects a project may have. In the European Union and in some EU member countries as in FR Germany Transport Infrastructure Master Plans exist, where infrastructure projects undergo a standard appraisal process which bases on a National Traffic Flow Forecast (passenger, freight) and standard values for Economic Appraisal. This allows a standardized comparison of all projects and an adequate prioritization.

The EU Handbook on external costs in transport contains shadow prices for different modes of transport of the following effects: accident costs, air pollution costs, climate change costs, noise costs, congestion costs, costs of well to tank emissions, cost of habitat damage, other external costs. See for further details (European Commission, 2019)

In principle, the calculation methodology of an Economic Appraisal is the same as in the Financial Appraisal. It bases on a social discount rate and the project related economic cost-benefit over the project's evaluation period (lifetime) and stream over cash flow analysis.

It is important to understand that all inputs and outputs of the project, including external effects (e.g. noise, pollution etc.) should be monetized, even if there are no market prices.

Once all project costs and benefits have been quantified and monetized, it is possible to measure the economic performance of the project by calculating the following indicators:

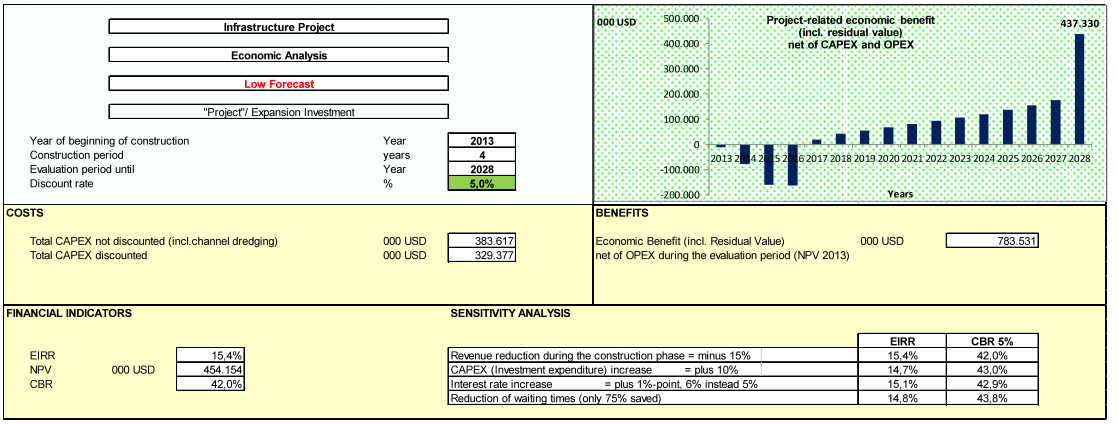
- Economic Net Present Value (ENPV): the difference between the discounted total social benefits and costs
- Economic Rate of Return (ERR): the rate that produces a zero value for the ENPV
- B/C ratio: the ratio between discounted economic benefits and costs

"The difference between ENPV and FNPV is that the former uses accounting prices or the opportunity cost of goods and services instead of imperfect market prices, and it includes as far as possible any social and environmental externalities. This is because the analysis is done from the point of view of society, not just the project owner. Because externalities and shadow prices are considered, some projects with low or negative FNPV(C) may show positive ENPV."

source: European Commission, 2014, p. 65

The following chart shows the results of an Economic Analysis of an infrastructure project (freight) at one glance.

Figure 21. Economic Analysis Results of an Infrastructure Project (Results)




Read: **Case Study Rail**

*https://www.unescap.org/sites/default/files/Intergovernmental%20Agreement%20on%20Dry%20Ports_English.pdf*

Note **Write down your answers to the following questions:**

This would be a good time to have a look into a cost-benefit-amalysis of a rail project.

Guide to Cost – Benefit – Analysis of Investment Projects – Economic appraisal for Cohesion Policy 2014 – 2020/ European Commission: Brussels, 2014. – 364 pages.- pages 113 -125 case study rail project *https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/cba_guide.pdf*

## 3.7 Risk Assessment

Every investment may face uncertainties, especially infrastructure projects with relatively long project periods. Therefore, a risk assessment including a sensitivity analysis should be carried out as part of a cost-benefit appraisal.

The sensitivity analysis helps to identify the 'critical' variables of the project. Such variables are those whose variations, either positive or negative, have the largest impact on the project's financial and/or economic performance. (European Commission, 2014, p. 67)

In transport projects, the following variables usually are under risk to change during the project implementation:

- Value of time (often with 70% of all benefits the most important variable)
- Rate of increase of traffic over time
- Investment costs
- Fares / tolls etc.
- Costs of accidents

Variations of the relevant variables are assessed concerning their impact on the Financial and on the Economic Appraisal.

Read: **Learn more about the Cost-Benefit Appraisal of transport projects**

Guide to Cost – Benefit – Analysis of Investment Projects – Economic appraisal for Cohesion Policy 2014 – 2020/ European Commission: Brussels, 2014. – 364 pages.- pages 25 - 100
*https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/cba_guide.pdf*

Exercise **Write down your answers to the following questions:**

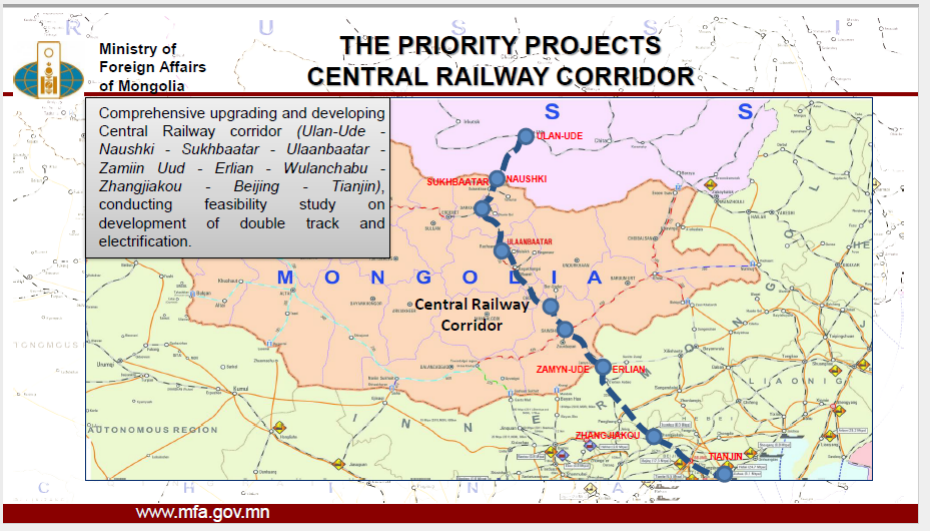
The list of projects under the framework of establishing the economic corridor Mongolia-Russia-China contains:

"Conduct feasibility study of Complex renovation and development of Central railway corridor (Ulaan Ude-Naushki-Sukhbaatar-Ulaanbaalar-Zamiin Uud-Erlian-UlaanTsav-Janchkhuu-Beijing-Tianjin), install building double-track railway line, and electrification." (Please see figure below, source (S.Gankhuyag, 2019))

There is about 1.5–2.0 million tonnes of transit traffic moving to the PRC through this corridor. The main track is 900 km long, with the entire length single-tracked and non-electrified. Capacity expansion for this rail corridor is planned by the operator.
(Asian Development Bank, 2017, pp. 33-35)

Discuss the following:

- what are the objectives the project?
- which stakeholders should be involved?
- which costs and benefits should be considered from the project owner's point of view (Financial Appraisal) and from society's point of view (Economic Appraisal)?
- which environmental impacts the project will cause?
- what are the risks to consider?



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# Case Study: Freight Village Berlin South (Großbeeren)

*The objective of this case study is to illustrate an example of good practice related to Freight Village. It can be used to explain the concept and to discuss common and differing issues in comparison with Mongolia.*

## Background information

The Freight Village Berlin South (Großbeeren) is one of the main FV in Germany and it occupies the fifth international ranking of all European Freight Villages. The FV is located 6 km South of Berlin and is connected to three TEN-T corridors North Sea – Baltic, Scandinavia – Mediterrean, Orient – East Mediterranean. Frequent container trains run to Hamburg / Bremerhaven and to Russia.

With a gross area of 440 ha and with a net area for settlements of around 220 ha, FV of Berlin Süd (Großbeeren) embodies 80 companies with approximately 4,500 employees. (IPG GmbH, 2019)

| Freight Villages | Berlin Süd Großbeeren, Germany |
|---|---|
| **Location and Accessibility** | |
| *Location* | South of Berlin connected to three TEN-T core networks |
| *Gross Area* | 440 ha |
| *Net area for settlements* | 220 ha |
| *Employees* | approx. 4,500 |
| *Firms* | 80 |
| **Funding and Management** | |
| *Infrastructure Owner of Freight Village* | Municipality of Großbeeren |
| *Management of FV* | IPG GmbH (as Agency) |
| *Terminal Operator* | Deutsche Umschlaggesellschaft Schiene-Straße mbH (daughter company of German Railways) |
| *Investments* | More than 630 million EUR in total |
| **Trimodal conneciton** | Yes |
| **Green logistics** | Initiatives taken |
| **Innovative initiatives** | Pilot project for a driver free and electrically driven passenger bus to connect the FV with railway station |

It is located at the high-speed rail route Berlin – Halle. The container terminal within the FV connects the FV to the South (Leipzig, Munich), the North Sea ports of Bremerhaven and Hamburg as well as Russia / CIS and the Ruhr area, all by rail.

The municipality of Großbeeren (9,000 inhabitants) has taken the role of the FV's infrastructure owner, while the project development agency is taken over by IPG GmbH, a regional medium sized real estate development company.

Figure 22. Macro-Location of the FV Berlin South


source: IPG GmbH, 2019

The operator of the rail / road container terminal is the Deutsche Umschlaggesellschaft Schiene Straße[1] (DUSS) which is the daughter company of German Railways (DB). The company operates and builds terminals and loading facilities at the interface of the modes of transport.

The unique selling proposition (USP) of the FV Berlin Süd Großbeeren is the vicinity to the German capital with 3.5 million inhabitants. Located about 6 km away from the city border, it hosts a variety of distribution centers of FRC in Berlin and of warehouses for contract logistics for Berlin based industrial companies. Clusters are FMC, refrigerated and temperature controlled good and pharmaceuticals.

1 DUSS = German Terminal Company Road - Rail

Figure 23. Layout plan of the FV Berlin South (Großbeeren)


source: Gemeinde Großbeeren, 2020

## Some lessons learnt

### 1 Master planning and location finding

In the 1990s, the State government of Brandenburg developed a masterplan for developing Freight Villages around Berlin. The main objective was to move heavy traffic and forwarding warehouses in Berlin into the surroundings. Within a State Development Plan, the possible macro locations were identified.

- Spatial planning and top governmental support are important.
- The decision for a certain location should be based on objective decision criteria. A multi-criteria decisionmaking process helps.

## 2 Involvement of major stakeholders

Major stakeholders were:

- the Federal German Government (for investing in Federal infrastructure)
- the State Government (for investing into State infrastructure)
- the district administration (for investing in district roads and other infrastructure)
- the municipality (as the project owner)
- the German Railways (for rail access and container terminal)
- freight forwarders as investors

A co-ordinated development and participation as well as commitment of major stakeholders is a prerequisite for success. A memorandum of understanding or a binding agreement of obligations is very helpful.

Figure 24. Multi Criteria Analysis for Determining Location

| |
|---|
| **1 Existing territory** |
| • Available state land area<br>• Private land, which should be taken for society purposes<br>• Is there a possibility to develop terminal without appropriation of the land for public needs?<br>• Land prices<br>• Is territory planning needed?<br>• Land purpose<br>• Needed works<br>• Other elements |
| **2. Infrastructure** |
| • Distance to railway station<br>• Water, electricity, sewerage<br>• Alternative access road density and quality<br>• Existing railway traffic management infrastructure<br>• Existing cargo handling equipment<br>• Existing buildings / warehouses, which can be used |
| **3. Distances to roads and operators** |
| • Distance to Transport Corridor<br>• Distance to highway A1<br>• Distance to airport<br>• Distance to the existing container terminal<br>• Distance to existing custom warehouse<br>• Distance to public transportation<br>• Number of logistics companies 7km radius |
| **4. Environmental Impact** |
| • Is it needed environmental impact assessment? |

## 3 Even a small administration can manage such a project

The municipality of Großbeeren did not have the required capacities to develop and to manage such a large project. As such, it contracted a professional and experienced private real estate development company. This company acts as a trustee (agency) on behalf of the municipality and organized all planning and construction activities as well as marketing. This approach proved to be successful.

**4 Stepwise development and financing**

The total public investment accounted for 90 million €, about 48% of which were used for land acquisition. The municipality financed through bank loans at preferential interest because of its status. The financing took place in a stepwise approach. First phase involved land being developed and then sold; and through payback of development costs, the next phase could start. The municipality can develop only on a cost recovering scheme. The major benefits for the municipality include the creation of workplaces and generation of income through a considerable annual corporate tax from the companies.

**5 Sufficient time is needed**

First planning started in 1993. Construction works started in 1995. It took 10 to 13 years until one could speak of a success. The reason is that decisions for settling in a FV took time and companies tend to make decision when an expansion of capacities and investments are due.

# Learning Materials on Project Management

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific