



**CENTRAL  
EUROPE**  
COOPERATING FOR SUCCESS.



**EUROPEAN UNION**  
EUROPEAN REGIONAL  
DEVELOPMENT FUND

## 1CE055P2 - SoNorA



### **O.4.6.1 – Development of Preinvestment**

#### **Studies for activity 4.6**

Work Package	Work package 4:Removing Obstacles to Infrastructure Realisation				
Action	4.6. Preinvestment Studies Cases				
Author	PP12 Zachodniopomorskie Voivodeship				
Version	3	Date	11.1.2011	Status	Final

## Document Approval Chronology

Title: O.4.6.1 – Development of Preinvestment Studies for activity 4.6

File Name: SoNorA \_ O.4.6.1 – Development of Preinvestment Studies for activity 4.6

## Document Approval Chronology

Document			Revision / Approval	
Version	Date	Status	Date	Status
1	1.10.10	First draft	5.11.10	LP revision
2	7.12.10	Second draft	11.1.11	LP revision
3	11.01.11	Final	20.1.11	LP Approved

**Table of context:**

<b>1</b>	<b>INTRODUCTION.....</b>	<b>4</b>
<b>2</b>	<b>CONTEXT AND OBJECTIVES .....</b>	<b>4</b>
2.1	DEFINITION OF GUIDELINES AND OBJECTIVES OF THE PRESENT REPORT IN THE CONTEXT OF THE SONORA PROJECT ASSUMPTIONS .....	5
<b>3</b>	<b>METHODOLOGY AND PRE-INVESTMENT ANALYSIS APPROACH.....</b>	<b>7</b>
3.1	ROLE OF PRE-INVESTMENT ANALYSIS DURING THE FEASIBILITY EVALUATION PROCESS .....	7
3.2	DESCRIPTION OF OBJECTIVES AND ELEMENTS OF PRE-INVESTMENT ANALYSIS .....	8
<b>4</b>	<b>DETAILS OF ACTIVITIES WITHIN THE SCOPE OF THE PRELIMINARY STUDY .....</b>	<b>13</b>
4.1	DEFINITION OF FUNDAMENTAL PROJECT GUIDELINES .....	13
4.2	SOCIO-ECONOMIC ANALYSES AND FORECASTS .....	14
4.3	STRATEGY ANALYSIS .....	15
4.4	MARKETING ANALYSIS – SUPPLY AND DEMAND OF TRANSPORT SERVICES .....	15
4.5	INFRASTRUCTURE CONDITION AND EFFICIENCY EVALUATION .....	16
4.6	DEFINITION OF INVESTMENT SCENARIOS .....	17
4.7	TRANSVERSAL ANALYSIS OF PROJECT SCENARIOS, MULTICRITERIAL ANALYSIS .....	22
4.8	DEFINING THE SCOPE OF THE PROJECT'S FEASIBILITY STUDY .....	23
<b>5</b>	<b>COMPARATIVE ANALYSIS OF THE PRELIMINARY STUDY ELEMENTS.....</b>	<b>23</b>
5.1	COMPARATIVE ANALYSIS OBJECTIVES.....	23
5.2	COMPARATIVE ANALYSIS OBJECTIVES.....	24
<b>6</b>	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>27</b>

## 1 Introduction

The present report has been prepared based on the SoNorA project guidelines and the scope of the pre-investment study defined in the said project.

The detailed analysis of the SoNorA project Work Packages presented in the following chapters dedicated to the analyses of pre-investment studies and in particular the methodology documentation of Work Package 4<sup>1</sup> and the description of the outputs<sup>2</sup> foreseen within the said Package, allowed to define the concept of a pre-investment study in accordance to the SoNorA project guidelines, as a set of pre-investment analyses corresponding to the scope of activities performed as part of the preliminary study on the investment project.

Furthermore, analysis of projects which were subject to an analysis in Work Package 4 of the SoNorA project indicates, that three chosen railway projects will be subject to analysis:

- Construction of the Klagenfurt-Villach railway line (Output 4.6.2);
- Construction and modernisation of the Berlin – Prague line (Output 4.6.3);
- C-E59 railway line modernisation to meet AGTC standards (Output 4.6.4).

In light of the above, the comparative pre-investment analysis study was carried out with a particular consideration for the specific conditions relevant to the evaluation railway investments.

## 2 Context and objectives

Research activities relating to research area 4.6 are relevant to three investment projects within railway transport. From the point of view of the types of outputs resulting from the Sonora project, each one of the investment projects will be the subject of a different type of document.

- Carinthia case study: Feasibility study for a non-existent Klagenfurth-Villach railway link (O4.6.2) will be based on the full feasibility study within the scope of one general report. Analysis and evaluation of this case will, amongst others, evaluate whether the investment

---

<sup>1</sup> Development of overall WP4 methodology. 2009

<sup>2</sup> Refinement of Scope of all Outputs, 2009

project is technically feasible, can be performed within the estimated cost and if it will be profitable<sup>3</sup>.

- For USTI case study: Feasibility study for the Berlin – Prague railway line (O4.6.3) a preliminary study will be undertaken. Based on the preliminary study will, a decision will be made as to the existence of sufficient reasons to undertake a feasibility study for the planned investment. The preliminary study will be presented within the scope of one general report.
- Case study in the West-Pomerania region: Modernisation of C-E59 to comply with AGTC standards (O4.6.4) will be drawn up in the form of a description of a case study, documenting a given situation or a pre-planned activity scenario. This case description will be drawn up and used as an educational tool. It will be presented within the scope of one general report.

## **2.1 Definition of guidelines and objectives of the present report in the context of the SoNorA project assumptions**

Based in the analysis of the projects described in the previous chapter and the three types of documents attributed to them that is: feasibility study, preliminary study and a case study description, a transversal (cross-section) and detailed analysis of the cases (Output 4.6.5) will be developed. In order for a successful performance of these tasks it is essential that data contained in the aforementioned types of documents is comparable. Such comparability will be ensured by the preliminary study. As a rule, an preliminary study is prepared before a full feasibility study is undertaken. Additionally, an preliminary study is a document, which contains main information about the project. Without the preliminary study, it would be difficult, if not impossible to formulate an essential and logical case description.

Within the methodology documentation relating to Work Package 4<sup>4</sup> and the characterization of the outputs foreseen in this Package<sup>5</sup>, a pre-investment study can be clearly distinguished from the feasibility study. The scopes of the subjects of the studies are different. The scope of the feasibility

---

<sup>3</sup> The scope of the feasibility study for the SoNorA Project is defined in 1CE055P2 – SoNorA, O4.1.3, Refinement of Scope for all Outputs, WP4, Removing Obstacles to Infrastructure Realization, str. 20-23.

<sup>4</sup> Development of overall WP4 methodology. 2009

<sup>5</sup> Refinement of Scope of all Outputs, 2009

study reflects to a large extent the scope of the feasibility studies undertaken for European Union projects, and the scope of the pre-investment study closely follows the scope of pre-investment studies<sup>6</sup>.

The subject of the present order refers to a comparative analysis of pre-investment studies' elements within the scope of the SoNorA project. This is in accordance with Action 4.6 in Work Package 4, within which references should be made to the comparative analysis of individual parts of the pre-investment study in order to create a basis for cooperation on common subjects, the defining of subject outlines and the possibility of the transnational strategic platform playing a part in these matters.

In the document describing the outputs foreseen as part of Package 4<sup>7</sup>, in Annex 6 defining the scope of the preliminary study, a desired flow-chart of a preliminary study is shown. However, an analysis of the document leads to the conclusion that in order to include all off the issues generally taken into consideration with the scope of such studies, and to ensure agreement with international standards, the described scope of the preliminary study should be extended and updated. This is particularly important for railway projects, which are the subject of Action 4.6.

Considering the above guidelines and with reference to the SoNorA programme objectives, for the present report, the following objectives have been defined:

- To define a recommended scope of the preliminary study for railway investment projects
- To define potential cooperation areas for the SoNorA programme partners within studies undertaken for individual projects, with the objective of considering the programme's strategic transport network development objectives in the fullest scope possible.

In the following subsections of the present report, a detailed scope of the preliminary study will be shown, which should form a guideline for all forthcoming works being part of the SoNorA project. The aforementioned scope was prepared based on an analysis of preliminary studies for a number of investment projects implemented in Poland and other European Union countries.

---

<sup>6</sup> From the point of view of investment preparation both the pre-investment and feasibility studies are actions performed before the decision is made and investment commences. Therefore these are pre-investment studies. In English, the term "pre-feasibility" study is also in use – it seems to be more appropriate than "preliminary study".

<sup>7</sup> 1CE055P2 – SoNorA, O4.1.3, Refinement of Scope for all Outputs, WP4, Removing Obstacles to Infrastructure Realization

## 3 Methodology and pre-investment analysis approach

### 3.1 Role of pre-investment analysis during the feasibility evaluation process

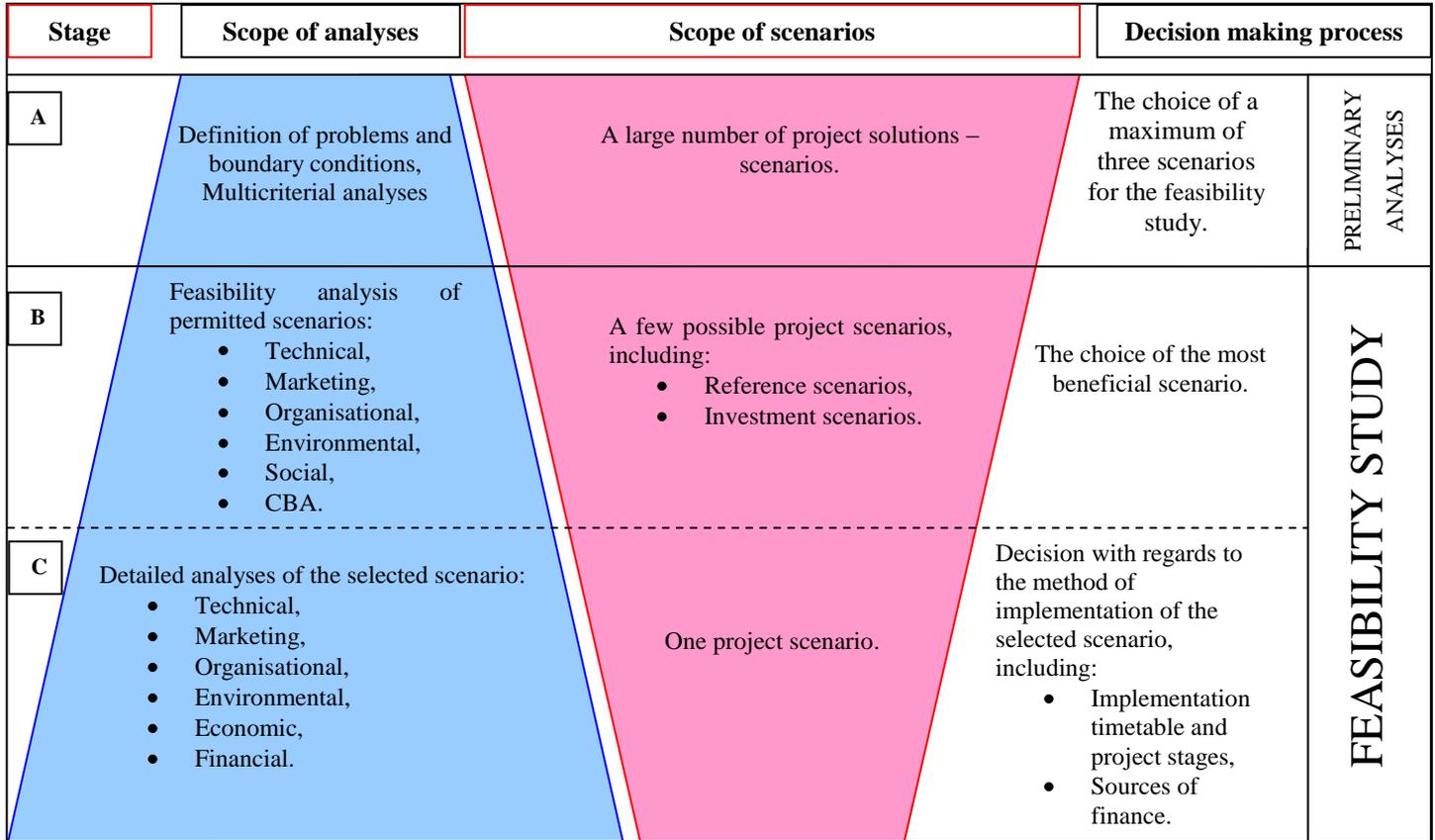
An investment project feasibility evaluation process encompasses a number of analyses and preliminary reports, which allow for the correct definition of the investment scope. All of these activities are elements of the decision process, striving to define whether a project should be undertaken and in what way. A correctly executed feasibility evaluation should ensure:

- An objective verification of the project feasibility,
- The choice of the most beneficial option for project implementation,
- Defining of the direction for forthcoming short and long term actions related to project implementation.

The feasibility evaluation consists of three fundamental elements (see figure below):

- *Preliminary study*, encompassing the pre-investment analysis of the project, which consists of describing the projects guidelines, defining project scenarios and selecting the scenarios for future analyses as part of the feasibility study (Stage A).
- *Feasibility study* encompassing the analysis of technical, financial and economic feasibility of project scenarios selected during the pre-investment analysis and the final scenario selected for investment implementation (Stage B).
- *Detailed feasibility study of the selected investment scenario*. Encompassing the technical and financial documents reports required to obtain funding from external sources and begin the design and implementation phases of the investment (Stage C).

**Figure 1: Diagram of the feasibility evaluation process.**



Source: Own work.

### 3.2 Description of objectives and elements of pre-investment analysis

*Pre-investment analysis* (preliminary study) is a preliminary element of the feasibility evaluation process. Pre-investment analysis is carried out before commencing the feasibility study and its objectives are:

- Definition of project guidelines (and the implementation scenarios),
- To come to a decision regarding initiation of work on the feasibility study.
- Selection of scenarios which will be subject to analysis as part of the feasibility study
- To define the scope of the feasibility study analysis

Analyses within the scope of the preliminary study should encompass the following elements:

1) Definition of fundamental project guidelines. including:

- Identification of problems which shall have impact on stakeholders in case of not executing the investment
- Identification of project guidelines
- Identification of a general project outline
- Identification of project stakeholders and participants of the decision making process
- Definition of the area of project implementation

Preliminary identification of project scenarios based on technological, logistical, traffic, environmental, financial and social analyses

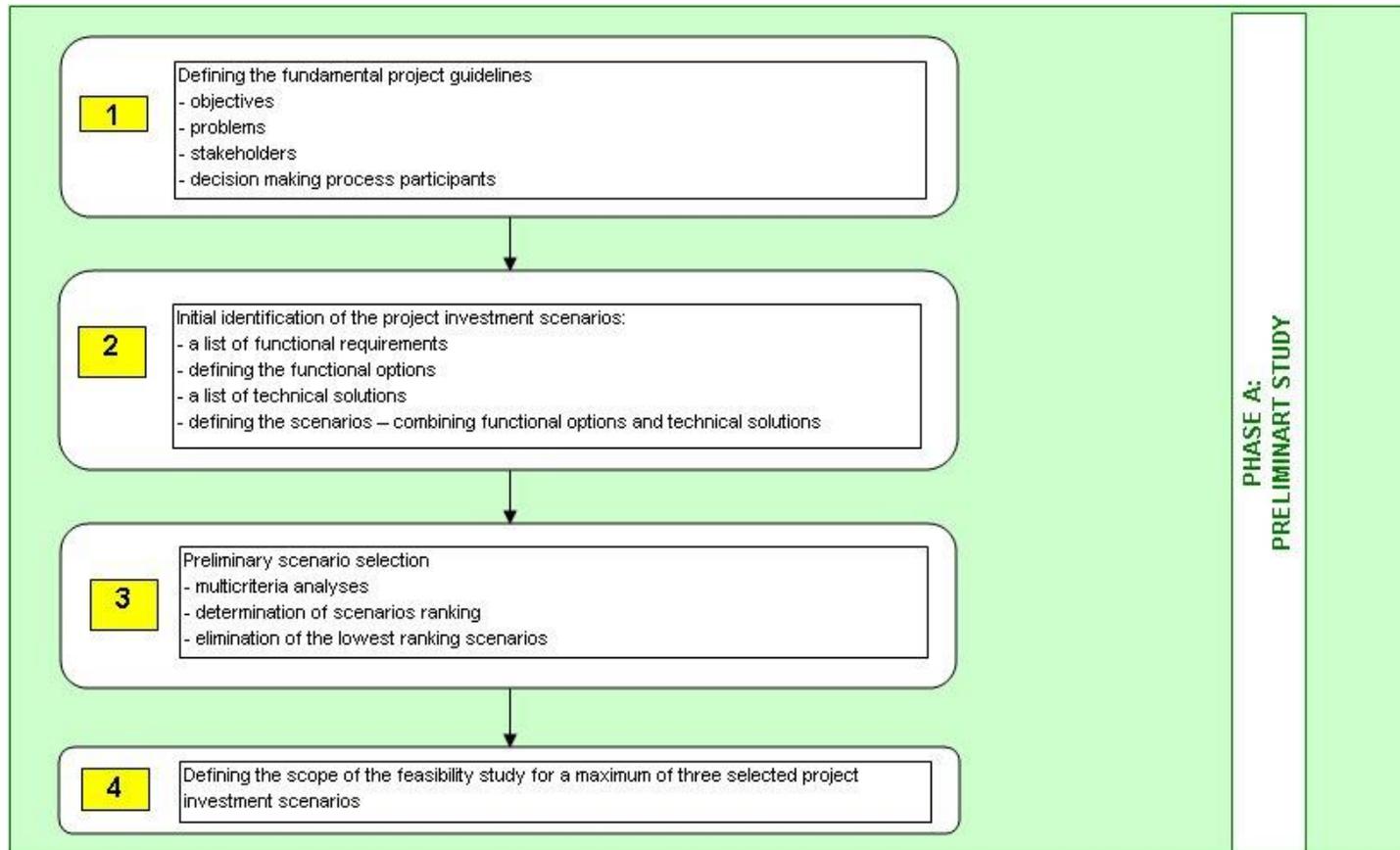
Preliminary selection of scenarios

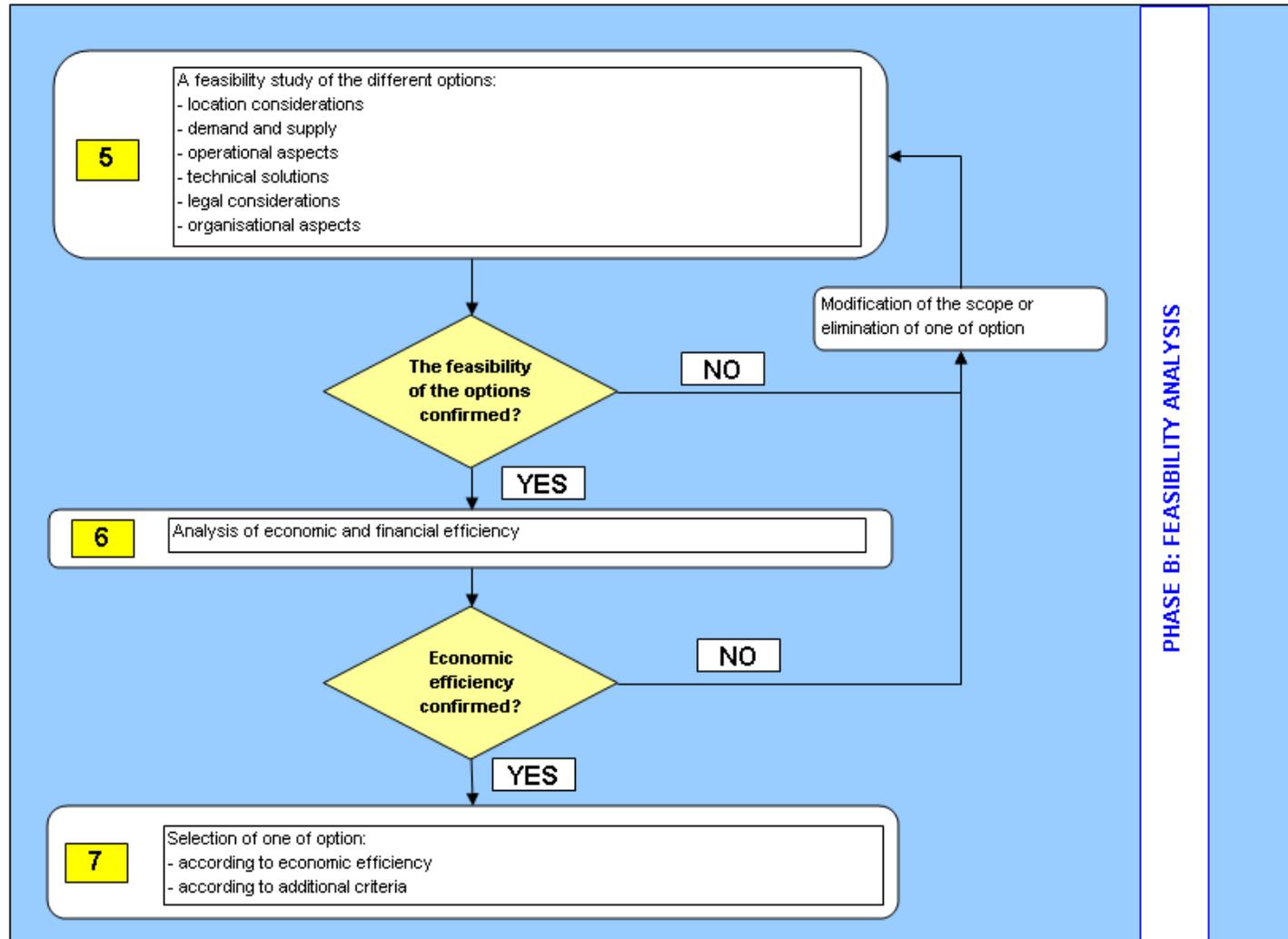
- Preliminary feasibility evaluation of individual options – multicriteria analysis
- Removal of scenario ranking
- The selection of scenarios submitted for feasibility study analysis.

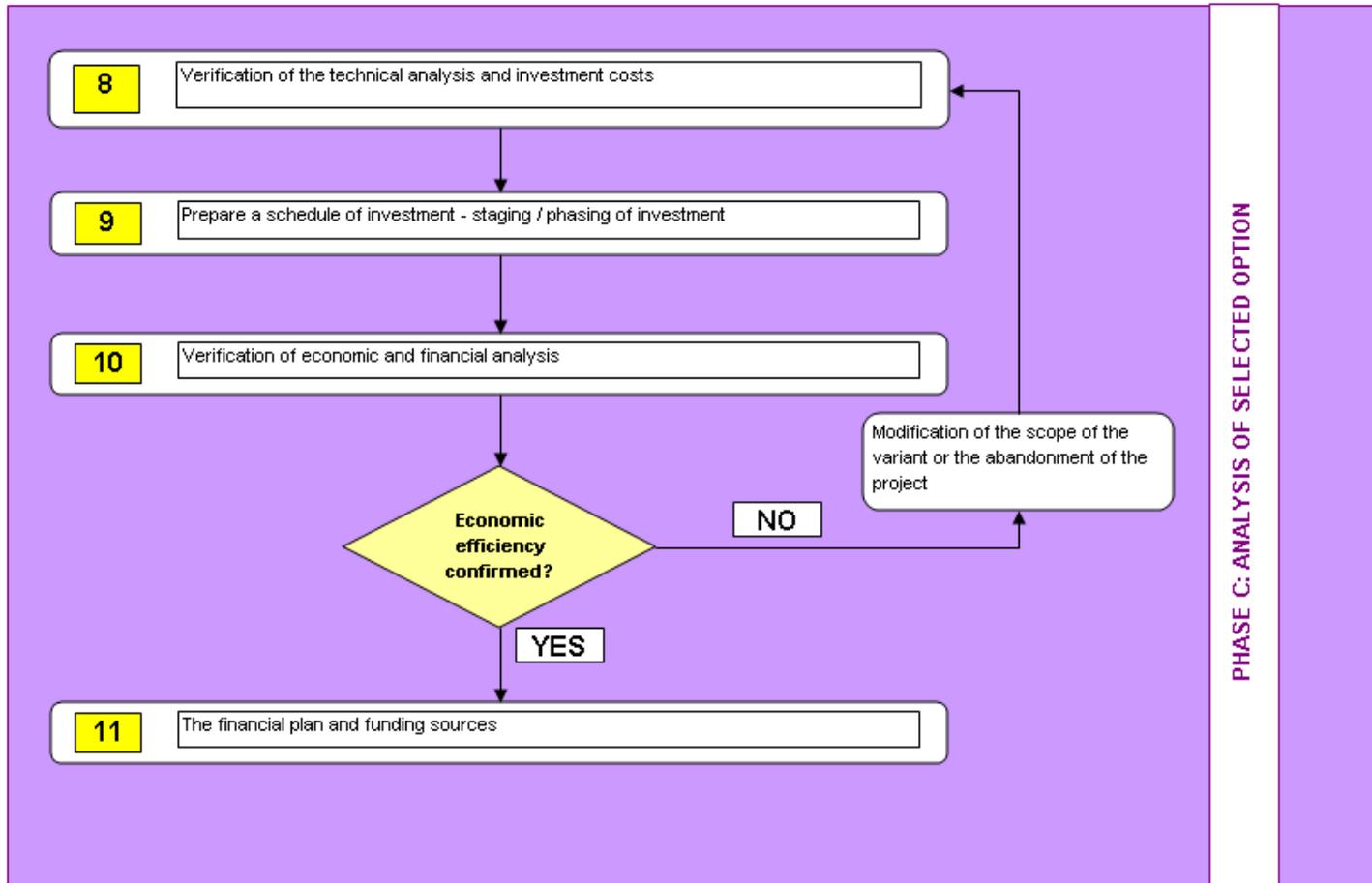
Furthermore, within the scope of pre-investment analyses, the areas for which additional, detailed analyses within the scope of feasibility analyses, such as geological research, should be defined. A detailed definition of the scope of the feasibility study for the selected investment scenarios should be an element of the pre-investment analysis.

Below a framework plan for pre-investment analysis (preliminary study) is shown. A detailed description of the scope of individual elements is presented in the following chapter.

**Figure 2: Pre-investment analysis framework plan.**







Source: Own work

## 4 Details of activities within the scope of the preliminary study

### 4.1 Definition of fundamental project guidelines

The fundamental activity initiating work on the preliminary study is the definition and description of fundamental project guidelines treating:

- **Preliminary identification of problems which shall have impact on stakeholders in case of not executing the investment** Whereby in defining the requirements and problems, both the transport and socio-economic issues should be considered, and in particular: the throughput of links and communication routes, transport efficiency, impact on natural environment, improvement in access to communication, the shift in transport demand between given transport modes, safety, quality of services rendered, the development of competition within railway markets, economic development, labour market.
- **Identification of project objectives**, i.e.: definition of the way in which the planned undertaking is to contribute to the achievement of socio-economic objectives and those related to transport development,
- **Identification and description of the project in qualitative terms**, i.e.: what changes should be introduced as effects of project implementation. The detailed technical scope will be defined in future project analyses
- **Identification of project stakeholders and participants of the decision making process** This element is key from the point of view of many activities and objectives of the SoNorA programme. The correct identification of stakeholders, i.e.: individuals and groups, who have an interest in the implementation of the project, will allow the creation of an appropriate platform for the cooperation for future actions within the scope of the preliminary study.
- **Definition of the implementation area and investment location.**
  - The project implementation area is the area within which the inhabitants will feel the effects of the implementation phase of the project including, benefits attributed to new jobs generated during the implementation phase of the investment as well as inconveniences attributed to the construction process (noise, air pollution, changes in the landscape). The project implementation

area is also affected by the direct consequences of the investment implementation, such as abolition of crossings and the associated changes in inhabitants movements, including the separation effect

- Project location entails the presentation of an outline plan, depicting the course/location of sections considered within the planned project on a map, with a scale which shows the planned investment activity and its connections with the existing transport network.

## 4.2 Socio-economic analyses and forecasts

Socio-economic analyses and forecasts are carried out for the whole of the south – north network impact area which is a part of the SoNorA project, regarding two fundamental aspects:

- **Analysis on the international scale.** Socio-economic analyses and forecasts on an international scale, aim to indicate key pre-conditions (events, occurrences, tendencies), which affect the current and future socio-economic development of international relations, which may influence the demand structure for transport services within the international network associated with the project, for various transport modes including passenger and freight transport. The characterisation of socio-economic situation in Europe is an element of the analyses, with particular consideration for economic links between countries participating in the SoNorA project and based on these the indications of key possibilities and dangers which will affect the current and future transport situation.
- **Analysis on the regional scale.** Socio-economic analyses and forecasts on a regional scale, aim to locate the planned investment within a context of socio-economic development of a given country and indicate the regional aspect of the planned undertaking. The result of the analyses is an indication of areas and socio-economic matters, which are most significant to the planned undertaking as well as an identification of the most significant regional problems, which may be overcome through the project implementation.

### 4.3 Strategy analysis

Strategy analysis objectives to identify and analyse the current strategic documents associated with the planned undertaking, taking into account the international, national and regional issues, with the aim of identifying the ways in which a given project supports the strategic development directions:

- international transport networks
- the country and its regions.

### 4.4 Marketing analysis – supply and demand of transport services.

Marketing analyses carried out for a project being implemented within the scope of SoNorA should encompass an analysis of the project within the context of its role in the whole south - north transport network which is the subject of the project. Marketing analyses consist of:

- **Supply analysis.** Supply analysis encompasses an evaluation of the current supply of services and a description of transport offers within individual modes of transport in order to define the main competitors to rail transport or the possibility of supporting rail transport with flows from other transport modes.
- **Demand and customer preferences analysis.** Demand and customer preferences analysis describes the current and future requirements for passenger and cargo transport and in particular
  - Current market situation evaluation;
  - A summary of the beneficial and detrimental development trends identified by other analyses;
  - Qualitative and quantitative description of the influence of analysed transport variables on intermodal divisions.
  - Definition and justification of the demand forecasts used in future analyses of scenarios;
  - The definition of the minimum stream levels, which will have to be serviced by the implemented investment

The demand analyses results also provide information regarding:

- A snapshot of the current situation and development areas for passenger and freight transport, including in particular with regards to identification of main areas which are the sources and targets for movement
- The characteristics of forecast trends within the scope of customers expectations, taking into account the changes in intermodal divisions,
- The results of simulations of market reactions to changes in main transport variables (transport time, frequency, comfort and others) in accordance with defined trends,
- Transport demand forecasts taking into account intermodal divisions.

#### 4.5 Infrastructure condition and efficiency evaluation.

Performing this element of a preliminary study yields the following results:

- Description of the current infrastructure condition,
- Definition of development plans with regards to investments linked with the analysed project;
- Identification and detailed characterisation of bottlenecks together with a graphical representation of the identified bottlenecks locations’.

Within the scope of this element of the preliminary study the following actions are undertaken:

- **An analysis of the existing railways infrastructure** The objective of the analysis is an evaluation of the existing railway infrastructure within the area covered by the project, with particular emphasis on potential trouble spots transport and network throughput.
- **An analysis of railway infrastructure development linked with the project.** The objective of the analysis is a characterisation of undertaken and planned investment actions within the SoNorA project network within the scope of infrastructure modernisation and development, including in particular an evaluation of the impact of these investments on the foreseen effects of the analysed project.
- **Movement analysis and identification of bottlenecks.** The transport offer is defined based on the prepared transport forecasts for passenger and freight transport. At the same time, this offer presents a movement burden for railway nodes and tracks, for which the throughput is being

evaluated. In the analysis the bottlenecks are identified (railway nodes, tracks, numbers of sidings at railway stations, train control system, organisation of train movement). Throughput analysis is executed for the current state and for the forecast period.

## 4.6 Definition of investment scenarios

Within the scope of this activity a technical scope of individual project scenarios should be defined. The correct scenario definition process should be based on:

- 1) **The drawing up of a fundamental functional requirements list for the project.** Functional requirements, define the methods of achieving objectives and minimising identified problems which originate from previous analyses, including:
  - key problems, where the considered investment will contribute to their solving;
  - transport services demand forecast scenarios;
  - the fundamental bottlenecks which should be eliminated with the scope of the project
  - other guidelines relevant to future actions, including guidelines stemming from the requirement of ensuring interoperability of the south - north rail network.

As an example, the technical speed of a track could be a functional requirement. These requirements should be defined in the following groups:

- Necessary requirements. i.e.: those which have to be fulfilled by all of the project investment scenarios,
  - Additional requirements, the fulfilment of which, by the project scenarios, is desired, but not necessary for its implementation.
- 2) **The drawing up of a list of possible functional options.** Functional options encompass groups of functional desired requirements to be fulfilled by the project. Functional options can be varied – from those which present only the minimal requirements, to those, which fulfil all of the minimal and additional requirements.
  - 3) **The drawing up of a list of possible technical solutions,** representing the whole possible scope of available solutions. Each of the proposed solutions should correspond to at least one of the above defined functional project options.

For example: The implementation of ERTMS or the elimination of level crossings are technical solutions and are in accordance with the functional option to introduce a maximum speed limit exceeding 160 km/h.

- 4) **Drawing up of a summary list of the project scenarios and the descriptions of particular scenarios.** A project scenario is a set of technological solutions employed in order to implement one of the functional options.

The construction of investment scenarios in accordance to the above mentioned objectives allows for the identification and preliminary evaluation of all possible functional and technical solutions. This method of proceeding ensures that no significant project scenarios will be omitted within the analysis.

It is recommended to analyse the maximum justifiable number of possible alternative solutions before a decision is made on the investment scenario to be analysed as part of the feasibility study. The definition of the scenarios should depend on the particular project, for example in case of railway infrastructure projects - on condition of the railway track and its surrounding area being part of the investment. Furthermore, during the definition of scenarios for lines of international significance, it is necessary to take into consideration the requirements of the binding AGC (The European Agreement on Main International Railway Lines) and AGTC (European Agreement on Important International Combined Transport Lines and Related Installations) agreements, and in case of lines included in the network of interoperation systems – the technical specifications for interoperability (TSI). Below, examples of the makeup of investment scenarios for railway lines modernisation project are shown:

**Figure 3: Definition of investment scenarios – example**

Functional option	Functional option	Technical solutions scenario	Technical solutions general examples	NOTES	
1	Maximum line speed: 140 km/h	A	Bridge re-building	Minimum scope of investment allowing the achievement of objective functional parameters	
			Railway bed replacement		
			Curves re-building		
			Replacement of overhead contact systems while retaining the current parameters		
			Replacement of switches		
		B	Bridge modernisation		Minimum scope of investment allowing the achievement of objective functional parameters and an increase in operational efficiency
			Railway bed replacement		
			Curves re-building		
			Replacement of overhead contact systems while changing the current parameters		
			Replacement of switches		
2	Maximum line speed: 160 km/h	A	Bridge modernisation	Minimum scope of investment allowing the achievement of objective functional parameters	
			Railway bed replacement		
			Curves re-building		
			Replacement of overhead contact systems while changing the current parameters		
			Modernisation of switches - change in parameters		

			Signalling system modernisation	
		B	Bridge modernisation	Minimum scope of investment allowing the achievement of objective functional parameters and an increase in operational efficiency
			Railway bed replacement	
			Curves re-building	
			Replacement of overhead contact systems while changing the current parameters	
			Modernisation of switches - change in parameters	
			Signalling system modernisation	
			Introduction of ERTMS	
3	Maximum line speed: 200 km/h	A	Bridge modernisation	Minimum scope of investment allowing the achievement of objective functional parameters
			Curves re-building	
			Replacement of overhead contact systems while changing the current parameters	
			Modernisation of switches - change in parameters	
			Introduction of ERTMS	
		B	Bridge modernisation	Minimum scope of investment allowing the achievement of objective functional parameters and an increase in operational efficiency
			Curves re-building	
			Replacement of overhead contact systems while changing the current parameters	
			Modernisation of switches - change in parameters	
			Intertrack space widening	
			Introduction of ERTMS	

		C	A complete change in the track course	Minimum scope of investment allowing the achievement of objective functional parameters and an increase in operational efficiency
			Installation of a modern overhead contact system - change in the current parameters	
			Installation of modern switches - change in parameters	
			Introduction of ERTMS	

Source: Own work.

## 4.7 Transversal analysis of project scenarios, multicriterial analysis

A multicriterial analysis is a method facilitating investors in making strategic decisions. This tool is used in the preliminary stage of the project cycle, when many possibilities and solutions with varied parameters are being analysed. The essence of a multicriterial analysis is a simulation of the decision making process, taking into account the various criteria and points of view, and its fundamental objective is the narrowing down of the set to a pool of beneficial solutions, which will be subject to further, more detailed analyses. Multicriterial analysis consists of the following elements:

- Identification and selection of criteria differentiating the analysed scenarios.
- Definition of measurable indicators for an evaluation of individual scenarios.
- An evaluation according to selected criteria and definition for individual scenarios of the values of the defined indicators. The indicator values are the basis for multicriterial analysis.
- Assigning to the individual transport criteria of weights reflecting the level of significance for the project evaluation.
- The determination of a numerical grade for individual scenarios.
- The choice of scenarios for further analyses.

The choice of criteria is of fundamental importance to the results of multicriterial analysis. It should encompass the most significant project issues and allow the validation of individual scenarios. The project scenarios evaluation criteria should be selected on the basis of previous detailed analyses and take into account the following groups of criteria:

- Transport criteria, including amongst others the impact of individual scenarios on intermodal divisions.
- Movement criteria, including amongst others the throughput and an elimination of bottlenecks in the transport system.
- Technical criteria, including amongst others those relating to interoperability, engineering and geological conditions, applied technology and its availability, fulfilment of international standards.

- Financial criteria, including amongst others the cost of investment implementation, changes in the costs of maintenance and operation, change in incomes derived from infrastructure leasing and other financial criteria significant to the project.
- Socio-economic criteria, including amongst others criteria associated with the reduction in travelling time and the ensuing social benefits (increase in jobs availability) and others, significant to the project.
- Environmental criteria, including amongst others environmental dangers and conflicts with protected areas, the possibility and effectiveness of making use of mitigation measures for unfavourable impacts, the possibility of social conflicts occurring.

The weights of the individual criteria used for the multicriterial analysis should be agreed with the appropriate beneficiaries.

Based on the multicriterial analysis of the project scenarios recommendations should be prepared as to the most beneficial scenarios which will be subject to further analyses within the scope of the project's feasibility study.

## 4.8 Defining the scope of the project's feasibility study

The final element of the pre-investment analysis (preliminary study) is the definition of the scope of work to be carried out as part of the feasibility study based previous activities' conclusions. The said scope, apart from typical feasibility study elements, should contain indications regarding the requirement to undertake additional detailed analyses, such as geological or archaeological research, etc.

## 5 Comparative analysis of the preliminary study elements.

### 5.1 Comparative analysis objectives

The detailed scope of the preliminary study of the investment project, described in the previous chapters of this report was subjected to comparative analysis. Analysis of individual elements of the study was

carried out with reference to the following issues linked with the implementation of the SoNorA project:

- Transversality of issues and the possibility to define uniform flow charts for the implementation of individual activities
- The possibility and scope of the SoNorA project partners cooperation during definition of objectives and the preparation of individual study elements
- Making use of the cooperation platform of the SoNorA project partners to achieve uniform and complex data for the analyses of individual investment projects.

## 5.2 Comparative analysis objectives

As a result of the analysis, the following transversal issues have been identified, for which it is possible to define a uniform flow chart for the implementation of individual cases analysed within the scope of the SoNorA project.

- **Socio-economic analyses and forecasts.** The definition of a uniform flow chart for this study element may encompass the definition of common socio-economic factors influencing the passenger and freight demand structure an international (transit) and regional scale, which will be subject to analyses in the studies prepared for each individual project. Amongst the factors which will be subject to analysis allowing the comparison and unification of analyses objectives for individual projects, the following can be distinguished:
  - Socio-demographic factors such as: the current and forecast population numbers, peoples mobility, society affluence, level of motorisation,
  - Economic factors including amongst others: the dynamics of the gross domestic product, the size and geographical structure of imports and exports,
- **Multicriterial analysis** An important element of the unification of methodology of investment project evaluation could also be an agreement on the scope of criteria and weights used during evaluation of projects in order to establish a hierarchy of individual project scenarios. The

definition of a uniform system of criteria groups<sup>8</sup> and the definition of their weights for the evaluation of the project would allow for a comparison of the performed evaluations. In case a need arises to amend or introduce changes by a project beneficiary to the criteria used or their weights, the necessity of justifying these changes by the beneficiary would make the identification and evaluation of specific differences between different projects possible.

Cohesion and comparability of investment projects evaluations is also possible to achieve through *the cooperation of SoNorA partners during the determination of objectives and elaboration of preliminary study elements*. Such cooperation may be implemented in the following way:

- **Definition of fundamental project guidelines.** This element is particularly significant from the point of view of the SoNorA project implementation, as it allows taking into consideration the needs and objectives of the whole of the transport network already in the initial stage of the works associated with the determination of guidelines of the investment project. The next significant issue is the consideration amongst the SoNorA project stakeholders and partners as a cooperation platform and the decision making participants. The SoNorA project partners' cooperation with the project beneficiaries during the investment project design stage is a recommended activity supporting the implementation of the programme objectives.
- **Strategy analysis.** This element particularly important from the point of view of implementing strategies' objectives of the SoNorA programme. The common determination by the SoNorA project partners of development directions and needs for the whole South - north network would allow taking them into consideration during the process of defining the guidelines for individual projects.
- **Demand analysis.** Within the scope of demand analysis, it would be advisable to determine amongst the SoNorA project partners a common map of the main areas which are the sources and targets for international movements within the whole transport network covered by the SoNorA project. This would allow for a cohesive approach to the evaluation and forecasting of transit movement within the whole network, which would be an indispensable element of the evaluation of individual investment projects.

---

<sup>8</sup> E.g. according to criteria groups presented in this report.

- **Selection of elements for the evaluation of the infrastructure condition and efficiency.** From the point of view of cohesive investment activities within the scope of the SoNorA project, the common determination of development and investment plans within the network covered by the project would be very significant. Appropriate coordination of investment activities and taking into consideration the investment plans within the whole network during the evaluation of individual projects would allow for the identification and evaluation of the projects' synergy and consideration of the added value resulting from the implementation of individual projects.
- **Definition of investment scenarios.** A key element of the evaluation of each investment project is the analysis of all justified and desired investment scenarios. From the point of view of the SoNorA project objectives it is possible to define common and unified functional requirements for the whole network in such a way, as to ensure a similar level of quality and interoperability across the whole network. The determination of common recommendations with regards to functional requirements for the whole network would allow taking them into consideration during whilst elaborating the scope of technical solutions and defining the implementation scenarios of individual investment projects.
- **Multicriterial analysis.** Multicriterial analysis is a tool which allows the consideration of the needs and preferences of various project stakeholders, through a selection of criteria and assignment of appropriate weights considering the significance of a given criteria for the project evaluation and for the stakeholders. From the point of view of a cohesive projects evaluation and implementation of strategic SoNorA project objectives it would be desirable for the programme partners to determine recommendations regarding strategic specific projects evaluation criteria, reflecting the significance of a given project for the development of the whole network and recommendations with reference to the weights of these criteria in the performed analysis.

Furthermore, an issue which is key to the cohesion and comparability of the investment projects evaluations is quality, comprehensiveness and detail level of input data used for project analysis. This factor is particularly significant when it comes to data used for the analysis and forecasts of transport demand. The results of the demand evaluation frequently determine the functional requirements of the project and the choice of the most beneficial scenario. In this case, the existence of an international cooperation platform provides a unique opportunity to collect and make use for the analyses of individual projects a uniform database with information regarding the size and structure of passenger

and freight transport, and in particular when it comes to international and transit movement. The creation of a common database with historic records and an information database regarding occurring or forecasts trends in transport development would allow supporting the demand forecasts with reliable and cohesive data and a fuller consideration of issues related to transborder transport along the whole network during projects evaluation.

## 6 Conclusions and recommendations

The comparative analysis results of the preliminary study elements indicate that there exists a broad area for a potential participation of the SoNorA project partners, in the form of a cooperation platform, in the definition and evaluation of the investment project. Undertaking of coordinated and cohesive activities by the SoNorA project partners may constitute a significant added value facilitating the implementation of development objectives for the whole of the transport network encompassed by the programme.

However, it should be pointed out, that the process of project defining and pre-investment analysis is a long one and burdened with multiple technical, institutional and organisational dangers. Therefore it is significant, for the SoNorA project strategic platform participation to be fully coordinated with the activities of the beneficiary and preliminary study in such a way, as to ensure that methodological recommendations and those regarding project guidelines are seamlessly integrated with the process of project evaluation so that they would not require a repeated implementation of some of its elements.