



TRACECA Investment Forum

ID: BG01

TRACECA PROJECT FICHE

MODERNIZATION OF RAILWAY LINE KARNOBAT – SINDEL - VARNA

1 BASIC INFORMATION

TITLE: Modernization of railway line Karbonat-Sindel-Varna

SECTOR: Rail

LOCATION: Republic of Bulgaria

2 OBJECTIVES

2.1 OVERALL OBJECTIVES

In the Karnobat - Sindel - Varna railway section, NRIC is aiming to providing better services to the population as well as domestic and international freight traffic, which will be achieved through the overall preparation and execution of the construction and repair works. Improving the state of the existing railway line will contribute to the development of Bulgaria's railway network, which also contributes to the integration of our transport system into the European part of the Trans-European Transport Network.

After improving the parameters for the above section, travel time will be reduced, which will help to develop passenger transport operations in the respective directions, will ease traffic and attract more international cargo due to the connectivity of the types of transport (especially water transport).

2.2 PROJECT PURPOSE

The railway Sindel – Varna is part of railway line Ruse – Varna who is the most direct connection between Rouse and Varna, respectively the port of Rouse on the Danube and the Black Sea port of Varna. The implementation of this project is part of the activities for the establishment of a Pan-European Transport Network on uniform technological and operational standards.



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The project will ensure the interoperability of infrastructure, equipment, management, operation and safety systems, as well as connectivity with European railway networks through the application of uniform standards.

The implementation of the project "Modernization of the Karnobat - Sindel - Varna railway line" will ensure the interoperability of the infrastructure, equipment, management, operation and safety systems, as well as connectivity with European railway networks through application of unified standards.

In order to fulfill the main goal of the project, it includes comprehensive preparation for construction and repair works on the Karnobat - Sindel - Varna railway line, through which to restore and improve the design parameters (speed, time travel, increasing throughput and Safety) of the railway infrastructure by finding the most effective financial scheme for investments in the site with clear economic, technical and time parameters.

The implementation of the project will contribute to reducing congestion on the road network, noise and pollution levels, improving human life, promoting the use of environmental-friendly modes of transport and creating jobs.

The project has a direct contribution to the fulfillment of the specific objectives:

- Integration of the national transport system into the transport network of the European Union by balancing and developing the links between the different modes of transport, thus shortening the time for citizens traveling and transporting freight. This will have a beneficial impact on the development of the economy of the region and of the country as a whole.
- Balancing between modes of transport by enabling the redirection of traffic towards more environmentally friendly modes of transport such as rail and, therefore, a more even load on modes of transport.

The main objective of the project is to prepare the construction and repair works on the Karnobat - Sindel - Varna railway line, by which to restore the design parameters (speed, time travel, capacity and safety) of the railway infrastructure by finding the most effective financial scheme for investments in the site with clear economic, technical and time parameters

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- Balancing between modes of transport by enabling the redirection of traffic towards more environmentally friendly modes of transport such as rail and, therefore, a more even load on modes of transport.

The specific objectives of the investment project are:

- Increased transport quality, reliability and safety due to the improved technical parameters and the interoperability of the line;
- Improved connections between Bulgaria and the neighbouring countries and the other EU member states;
- Creation of conditions for the development of intermodal "sea-railway-river" transportations;
- Increased competitiveness of the railway transport through improving the quality of the railway services;
- Stimulating the economic growth of Bulgaria through reliable passenger and freight railway transport.

2.3 CONTRIBUTION TO NATIONAL DEVELOPMENT PLAN

The project is in line with the objectives and priorities of the following pan-European and national strategy papers:

- The Europe 2020 Strategy for smart, sustainable and inclusive growth;
- National Reform Program - One of the identified growth factors and a priority for the Bulgarian government is "Better Infrastructure" in order to ensure better connectivity with Europe, accessible services and better connectivity between the regions. The improvement of the transport infrastructure in the country will contribute to the development of the economy and to raising the living standards of the population;
- National Development Program: Bulgaria 2020 - under Objective 2, Priority No 8 "Improving Transport Connectivity and Access to Markets", the following sub-priorities are defined:
 - Effective maintenance, modernization and development of transport infrastructure;
 - Integration of the Bulgarian transport system into the European one;
 - Achieving a high level of safety and security of transport;
 - Limiting the negative impact of transport on the environment and human health.



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- The White Paper "Roadmap to a Single European Transport Area" includes measures to ensure growth in transport and to support mobility;
- Guidelines for the development of the Trans-European Transport Network (Regulation (EU) No 1315/2013) aim at contributing to the sustainable mobility of people and goods and promoting the development of the internal market and the overall competitiveness of the Community;
- Strategy for development of the transport system of the Republic of Bulgaria until 2020, which defines the strategic goals of the national transport policy, on the basis of which the strategic priorities of the transport sector for the period up to 2020;
- Partnership Agreement - Strategic Priority 3, thematic objective No 7 "Promoting sustainable transport and removing bottlenecks in all key network infrastructures";

The implementation of the present project will achieve the objectives set out in the strategy papers, which in turn will contribute to the realization of the concept of a competitive and sustainable transport system as well as to achieve the desired sustainable mobility of people and goods, The internal market and the overall competitiveness of the Community, territorial, economic and social cohesion, social well-being, safety and security for European citizens. Ecological aspects, incl. Climate change, air pollution and protected areas.

The importance of the Rousse-Varna connection is also confirmed by the fact that the railway line is included in the TEN-T rail network, defined in the EC Decision 1962/99, revised by EC Decision 884/2004. The TEN-T railway network passing through Bulgaria is shown in the following diagram.

2.4 CROSS BORDER IMPACT

Connection to Varna Port on the former Pan-European Transport Corridor VIII (Barry) Brindisi - Durres) Vlorë - Tirana - Kafasan - Skopje - Sofia - Plovdiv - Burgas - Varna), railway connection Europe-Asia Relationship (TRACECA)

3 DESCRIPTION

3.1 BACKGROUND AND JUSTIFICATION

The Karnobat - Sindel - Varna railway line is divided into two railway sections Karnobat - Sindel and Sindel - Varna.



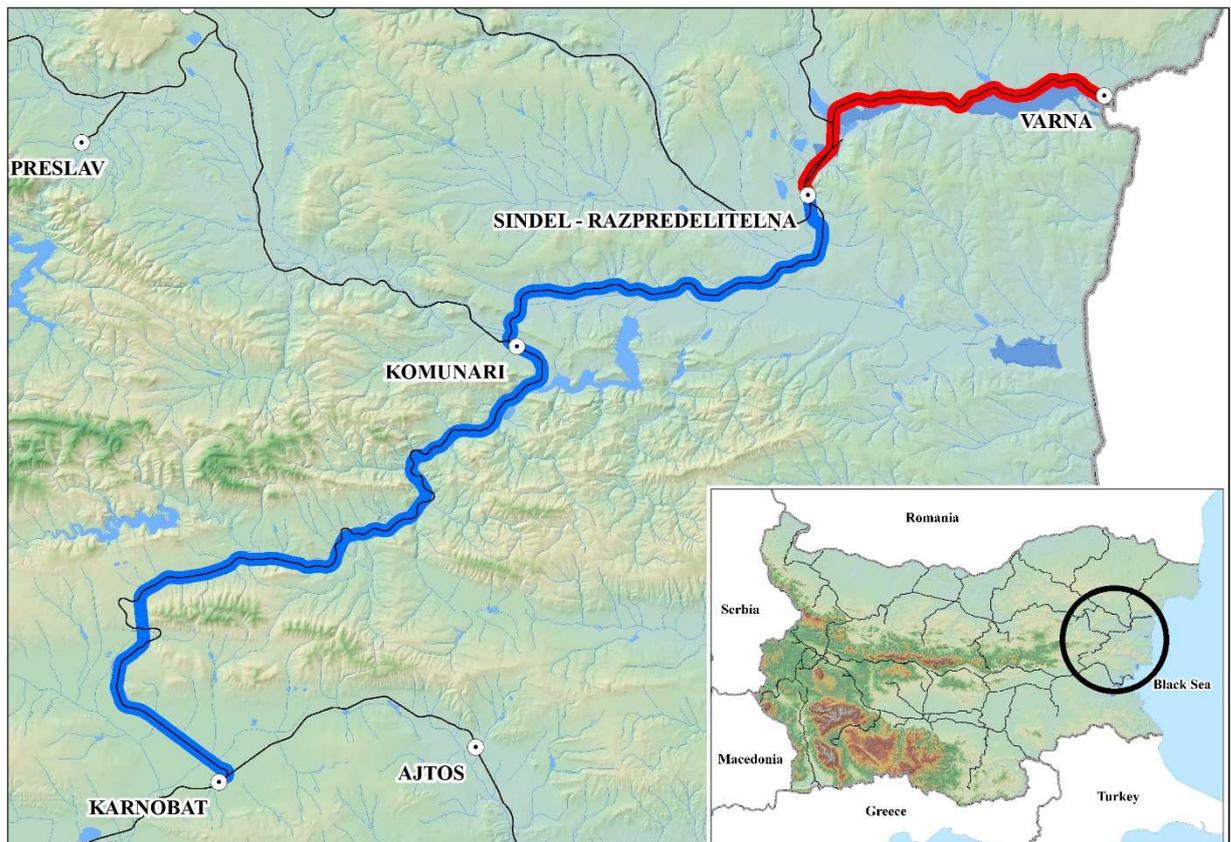
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Karnobat - Sindel railway section is part of a project for " Doubling and electrification of the Karnobat-Sindel railway line" and is part of the NRIC's investment program, which is a priority one because of the need to create a direct railway connection with an electrified double Line to connect the two largest ports in Bulgaria.

The construction of the Karnobat - Komunari - Sindel railway line starts from Karnobat Station to Lozarevo in 1916 and continues until 1918. A large part of the earthworks and facilities have been completed but has been terminated. It was renewed in 1937 and takes place in two sub-stages (Karnobat - Komunari and Komunari - Yunak).

The study of the Karnobat - Komunari section was carried out in 1937, and in the same year the construction started. For regular operation it was delivered in 1942. Its length is 87,387 km, with



a minimum curve radius of 400 m, a maximum slope of 12 %. The track of the line crosses several times the river Luda Kamchia and its tributaries with massive bridges. There are 4 tunnels with a total length of 780 m and many fortification facilities.



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The Komunari - Junak section was traced in 1940. It was built from 1940 until the end of 1943 when it was submitted for regular operation. The route along the line after Komunari station is on the left side of the Golyama Kamchia River near the villages of Boryana, Dalgopol, Velichkovo and Nova Shipka.

The section of Komunari - Yunak has a length of 35,433 km, with a minimum radius of curves of 500 m, a maximum slope of 12 ‰.

The Junak-Sindel section is a part of the Sindel-Staro Oryahovo line, 4,010 km long and constructed in 1920.

Already in 1982, a study was carried out on the necessity of doubling and electrification of the line and since 1985. Construction begins. The site is extremely complicated, located in a geographical area with mountainous areas and passing through a water body. Facilities such as tunnels, bridges and stairs are predominant, resulting in extreme difficulty not only in the construction itself but also in the maintenance of unfinished building sites. There are parts of the facilities that are partially built, others are just basics, others are completed but are not being exploited because the connecting plots are not ready. In addition to linking the two largest ports in Bulgaria, this line connects the former Trans-European Rail Corridor 8 with TRACEKA (link between Europe and Asia), it is extremely necessary for their development and especially for the intermodal terminals of the two ports.

Over the years, some of the sites have been built, but the change of traffic and safety management technologies requires that even facilities that are not put into service be replaced and upgraded.

For the most part, the track of the railway passes outside urbanized territories, mainly among agricultural land. It is situated on the territory of two districts - Bourgas and Varna and falls within the borders of 6 municipalities - Karnobat, Sungurlare, Ruen, Dalgopol, Dolni chiflik and Avren.

The project route of the sections of the new double railway line passes through an extremely varied, mainly mountainous terrain, crossing the eastern part of Stara Planina, the Luda Kamchia River Gorge and the flooded terrace of the Provadiyska River.

From the start of the construction activities in 1982 to 2004, the total length of the railway line in were doubled, electrified and commissioned totalling 65 837.59 m (65.837 km), that includes: the Karnobat - Lozarevo section from km 0 + 723.44 to km 16+684.29 with a length of 15,960.85 m, "Prilep - Lyulyakovo" from km 24 + 800 to km 40 + 663, with a length of 15,863 m, "Rousse-Asparuhovo" from km 73 + 112 to km 80 + 048 with a length of 6,963 m And "Komunari - Yunak" from km 82 + 750 to km 116 + 763.74, with a length of 34 013.74 m.



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NRIC has a pre-investment study for the construction of separate one-track and not electrified six sections of the railway line "Karnobat - Sindel", with a total length of 44 941.28 m (44.941 km), namely:

I. Lozarevo - Prilep section - from km 16 + 684.29 to km 24 + 800, with a length of 8115.71 m, incl. Lozarevo station (16 + 684.29 to km 17 + 848) and tunnel № 1 from km 19 + 542 to km 22 + 350. Tunnel 1 in the intersection of Lozarevo-Prilep is a two-way railway tunnel with a length of 2811 m, of which 2426 m are built by tunneling and 385 m in a Cut & Cover method. Currently, 1749 m have been completed, 1062 m remain, of which 777 m are tunnelled and 285 m by a Cut & Cover method.

II. "Lyulyakovo - Daskotna" section - from km 50 + 563.43 to km 59 + 800, with a length of 9236.57 m, incl. Tunnel № 2 from km 57 + 635 to km 57 + 984. / In operation / In the section, the project envisages re-kilometry by sleighing and rebound: km 40 + 663.18 \equiv km 50 + 563.43

III. "Daskotna - Tarnak" section - from km 59 + 800 to km 68 + 680, with a length of 8880 m, incl. Tarnak Station (67 + 586 - 68 + 680) and Tunnel № 3 from km 60 + 883 to km 61 + 368.

IV. Tarnak - Struya section - from km 68 + 680 to km 73 + 112, with a length of 4 432 m.

V. Asparuhovo - Komunari section - from km 80 + 048 to km 82 + 750, with a length of 2 702 m, incl. Komunari Station (81 + 450 - 82 + 750)

VI. Yunak - Sindel section - from km 118 + 300 to km 122 + 939 (km 502 + 960*), length 4639.00 m, incl. dividing point Yunak. In the plot, the project envisages a second re-milage by sleighing and restraint: km 116 + 763.74 \equiv km 118 + 300

The double and electrified sections with a total length of 65 837.59 m (65.837 km) Karnobat - Lozarevo from km 0 + 723.44 to km 16 + 684.29 with a length of 15 960.85 m, Prilep - Lyulyakovo from km 24 + 800 to km 40 + 663, with a length of 15,863 m, "RP (Railway point) Struya-Asparuhovo" from km 73 + 112 to km 80 + 048 with a length of 6,963 m and "Komunari - Yunak" from km 82 + 750 to km 116 + 763.74, with a length of 34,013.74 m need modernization to reach design speeds.

The railway section Sindel - Varna is part of the railway line Ruse - Varna, which is the first railway line built on the territory of Bulgaria. Launched in operation on November 7, 1866. This date is considered the beginning of the development of the railway transport in Bulgaria. It was built by an English joint-stock company of the Barkley brothers.

The railway line is the most direct railway connection between Ruse and Varna, respectively. The port of Rouse on the Danube and the Black Sea port of Varna. In this aspect, the Rouse -



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Varna railway line carries out the transport communication between Pan-European transport corridors Nos. VII and VIII (at Sindel railway station).

From Ruse to Varna, the railway line is 226 km long, built of 49 kg / m rails on reinforced concrete sleepers. In 1983 the electrification of the railway track was put into operation.

The railway line Sindel - Varna is 33 km long, two-way and electrified, part of the highway № 2 Sofia - Mezdra - Gorna Oryahovitsa - Kaspichan - Sindel - Varna. The security equipment at the railway stations is of the type of MRC and EMC. In the inter-grid, the train movement is provided by a semi-automatic train control system (SATCS) type "Stepanov" with the depreciation of the double-line paths. In the section Sindel - Varna the route is relatively favorable in the situation. About half the track is in line. Nevertheless, there are horizontal curves with small radii. The minimum radius of the horizontal curves in this section is 460 m and about 30 of the curves have a radius of less than 800 m. The design speeds are 100 to 130 km / h.

The lack of rail maintenance adversely affects its performance and the systematic reduction of train speeds with a view to guaranteeing minimum safety conditions for transport. The conclusion that can be drawn is that immediate action is needed to ensure train movement.

The restoration of the project parameters, the improvement of the state of the railway track and the railway facilities along the Ruse - Kaspichan - Varna route is a necessity which will lead to creating better conditions for transport communication in this region of the country, will lead to increased speeds of movement, Respectively. Reduce travel time on this destination. As a final result, better rail infrastructure will contribute to the development of the industry in the region through which the railroad passes, as well as in the national aspect.

Railway section Sindel – Varna is part of railway line Ruse – Varna. Ruse-Varna railway line is the first railway line built on the territory of Bulgaria in 1866. The railway line Ruse-Varna is a cross-border section, as Ruse city is situated on the Bulgarian/Romanian border and is a part of a Bucharest-Giurgiu/Ruse-Varna cross-border one.

Ruse-Varna railway line is very important because it is unique railway connection between ports of Ruse (Danube River) and Varna (Black sea), which are included in Annex II “List of nodes of the core and comprehensive networks” of Regulation EC 1315/2013.

The realisation of the investment project “Rehabilitation of the Ruse - Varna railway line” shall contribute to the mobility of goods and persons between Bulgaria and Romania, as well as with the neighbouring EU member states and EUN "poles" of trade flows shall be improved. The rehabilitation of the line will contribute to the better relation of the different transport modes and will create conditions for the development of "sea-railway-river" logistic chains.



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Additionally the realisation of the current project is directly connected to the investment project "Construction of Intermodal terminal in Central-North Planning Development Region in Bulgaria - Ruse".

Location of the project according to Territorial coverage of the Danube region for the Danube Region Strategy (regional level): NUTS 2, Bulgaria, Severen Tsentralen and Severoiztochen regions: NUTS 2, Bulgaria, Severen Tsentralen and Severoiztochen regions

The length of the extending railway line Ruse - Varna is approximately 226 km long and is built by rails of the 49 kg/m type on reinforced concrete sleepers. In 1983, the electrification of the railway route was put into operation. The line consists of two sections:

- Ruse-Kaspichan railway line - length 141km, single track, electrified, the section includes 5 bridges, 14 culverts, 2 overpasses (road underpasses), 3 underpasses (road overpasses). Existing design speed is 70-95 km/h. Longitudinal gradients are up to 25 %
- Kaspichan-Varna railway line - with length 85 km double track, –electrified, the section includes 22 bridges, 12 culverts, 3 overpasses (road underpasses). Existing design speeds are 100-130 km/h. Longitudinal gradients are up to 25 %.

Currently there are technical designs for the project, prepared between 2009 and 2011 (Action "Technical assistance for restoration of the design parameters of the Ruse - Varna railway line" - 2007-BG-90302-S) and revised in 2014.

The selected rehabilitation alternative was based on the comparative analysis of the potential alternatives, considering the relevant investment and other costs during the life cycle of the Project, as well as the expected business and operation benefits.

The main activities to be completed for the rehabilitation of the Ruse-Varna railway line are as follows:

- Renewal of the superstructure in open track and main station tracks and turnouts with 60E1 rails;
- Superstructure in secondary station tracks with rails 49E1 and reinforced concrete sleepers from the existing track;
- Design and construction works for the rehabilitation of the railway structures;
- Rehabilitation of the catenary;
- Rehabilitation of five power substations and five section posts;



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- Implementation of ERTMS and GSM-R;
- Construction of Dispatching Centre for Centralised Traffic Control and Electric Traction Power Supply Control in Gorna Oryahovitsa , with two workplaces for the railway line Ruse-Varna. It is planned also construction of Monitoring Control Systems, security level SIL4 and telecommunications equipment for dispatching connections.
- Station buildings rehabilitation.

After the completion of the project will be achieved compliance with the requirements according to Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU.

The project “Rehabilitation of the Ruse - Varna railway line”, was built on the revised TEN-T policy, in order to eliminate a bottleneck in the interconnections in the southeastern region of the EU, as well as those with the EU neighbouring countries; create conditions for optimal combination and integration of the various modes of transport and optimize the capacity and efficiency of the existing railway line. It is also directed to meet new demands, as the latest traffic forecasts show significant increase in the traffic on the relation served by the line, latest traffic forecasts show significant increase in the traffic on the relation served by the line. The railway line Ruse-Varna is a bottleneck in the sense of article 3 (q) of TEN-T Regulation in terms of technical and functional parameters like low bearing capacity, low operation speed, etc.

The project is in conformity with the transport policy of the EU. The project preparation started through funding by TEN-T Programme Annual Call 2007 for the Action "Technical assistance for restoration of the design parameters of the Ruse - Varna railway line" - 2007-BG-90302-S. This TA project has been completed successfully in 2011. As results of its preparation the following deliverables are available: Feasibility Study, incl. traffic analyses and demand forecasts; Technical Design for the rehabilitation of the Ruse-Varna Railway line; Economic cost/benefit and Financial analysis; Decision of MEOW stating that there is no need of a full EIA for this investment proposal (up to this moment this decision is not valid since it has expired – for more information see 1.7. Environmental analyses of current document); Tender strategy of the construction works, implementation stages defined, etc.

In order to achieve maximum effect of future rehabilitation works, in 2014 the approved Rehabilitation programme (prepared as a result of the TA project) has been revised. This actualization was necessary because of the need to meet the requirements for achievement of interoperability in accordance with Bulgarian Regulation 57upgrading related to the determination of the stations, which must be built facilities for people with reduced mobility. Based on this last revision of the approved rehabilitation programme, respectively the inclusion



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of the additional activities and considering the current bed condition of the railway line, the title of the project has been changed to “Rehabilitation of the Ruse-Varna railway line”.

3.2 LINKED ACTIVITIES

Sindel - Varna railway section is part of the 2nd railway line Sofia - Gorna Oryahovitsa - Varna and the related projects of the National Railway Infrastructure Company are as follows:

- Technical assistance for restoration of design parameters of the Rouse-Varna railway line (IX Ruse railway line - Kaspichan/Varna /);
- Pre-investment study for doubling and electrification of the Karnobat-Sindel railway line;
- Feasibility studies, conceptual design, technical design and realization of construction works for Rehabilitation of the Plovdiv - Bourgas Phase 1 and 2 railway line;
- Technical project for modernization and rehabilitation of Mezdra - Gorna Oryahovitsa railway section.

The above section connects the various railway lines with the city of Varna, which connects the railway with the water transport and provides easier transportation of people and cargoes.

3.3 LESSON LEARNT

Lessons learnt are conflicts with:

1. Politicians

We must to have clear strategy approved by all political parties and civil professional organisations.

2. EU Directorates

This is indirect conflicts, however from capacity building point of view NRIC needs:

- Qualified personals and organisation;
- Speaking perfect English;
- Having excellent knowledge of EU directives and regulations;
- Permanent communication and problem solving process during the project implementation towards EU together with MA.



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3. Government Ministries and Authorities

Government level:

- Lack of supporting process for large infrastructure project (permitting period timeless)
- Lack of appropriate communication between concerned ministries (MoF contra BDB, MRD and MTITC, Archaeological Institute and Beneficiaries, Procurement Agency and Beneficiaries)
- Recommendation: Implement the existing laws or make a special law for large infrastructure projects of having social and strategic interest for the Bulgarian society in order to speed up the lengthy permitting procedure and avoid delays

4. Local Authorities- Municipalities

Municipality level:

- Monopolistic situation in the permitting process – not eligible extra costs for projects – difficult to manage on Beneficiary level the behaviour of the Municipalities it needs legal framework to limit the unfavourable actions of the Municipalities
- Other Institutions:
- Involvement of all these institution in the early phase of the project preparation and approval.

5. Independent Supervising Engineer level

- Low price – low quality of Engineer performance
- Lack of capacity and expertise of the Engineers for large infrastructure projects
- The Employer cannot leave alone the Engineer on the site and communication with the Contractors
- The engineer is not interested in the project acceleration and give advices to the Employer in this respect.
- The Engineer is not approaching the VO, Claims, extra works from the point of view of EU requirements and eligibilities

Recommendation: The Employer needs to have strong contract/FIDIC engineer knowledge and experts in the PMIU – Training is essential

6. Contractor level



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Needs to have the international contractors:

- a) Large international expertise in complex construction project
- b) Large of experience to handle for own favour the complex situation

BUT:

- 1) Expensive
- 2) Subcontract most of the work to local companies
- 3) Poor local project management
- 4) Using political pressure
- 5) Very tough partner in claim and arbitration processes

Recommendation: The Beneficiaries need to build up its own competencies in order to avoid misuse of the contractor large experiences – Training of the state and appropriate process management, including claim, risk and contracting

7. PMIU

PMIU level

Improvement in terms of:

- Claim management
- Risk management
- Experienced staff in large, complex infrastructure projects
- As a result of above missing knowledge Dependence of Supervising Engineers

8. **NRIC organisation**

- Lack of supporting process from other departments of NRIC
- Lack of expertise in the NRIC organisation of land expropriation

3.4 ACTIVITIES



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The project "Modernization of the railway line Karnobat – Sindel - Varna " will include implementation of the following components (contracts and activities):

Main Project activities:

- Activity 1: Preparation of Detailed Development Plan and Technical Projects for Railways. Karnobat - Sindel and Updated of technical projects for railway section участък Sindel -Varna;
- Activity 2: Land acquisition
- Activity 3: Modernization of the railway line Karnobat - Sindel - Varna– construction works (construction works)
- Activity 4: Assessment of the detailed design for compliance with the requirements to constructions and Works supervision;
- Activity 5: Author supervision during construction, under SDA
- Activity 6: Assessment of compliance with the interoperability requirements
- Activity 7: Archeological site studies and monitoring during construction works
- Activity 8: Information and Publicity
- Activity 9: Project management (Technical assistance)

Activity 1: Preparation of Detailed Development Plan and Technical Projects for Railways. Karnobat – Sindel and Updated of technical projects for railway section участък Sindel – Varna

The preparation of Detailed Development Plan and Technical Projects for Railways. Karnobat - Sindel includes the following main activities:

- Full geodesic surveying, geological, hydrogeological and hydrotechnical studies;
- Design of: lower construction, overhead construction, contact network, facilities, station buildings and buildings, crossings of the railway line with other infrastructures, preparation of technical passports of existing buildings, preparation of project proposals for modernization of the existing facilities along the route - after surveying;
- Identification of the locations of noise fences (including measurements and calculations), temporary roads, landfills and landfills in accordance with environmental requirements;
- Preparation of Detailed Development Plans and Spatial Plans;



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- Identification of areas for alienation and change of land status;
- Preparation and coordination with external institutions of documentation on alienation procedures and change of land status;
- Determination of the area subject to recultivation;
- Production of Cadastre maps and registers;

Updated of technical projects for railway section участък Sindel –Varna includes the following main activities:

- Geological, hydrogeological, hydrological, geodetic and others. Studies, and measurements in the areas to be repaired;
- Updating and approval of technical projects, preparation and approval of working projects for lower and upper railway works in the interconnection and stations, for the works on the railway facilities (bridges, culverts, etc.), the facilities and devices of the power supply system of the railway infrastructure;
- Design and reconstruction / removal of intersections with any other infrastructure;
- Design and construction of a pipeline network along the entire route, including the stations for the laying of the cables for signaling and telecommunication equipment and power supply;
- Preparation of premises in the stations for deployment of signaling and telecommunication equipment, as well as repair and demolition of buildings;
 - Design and implementation of fire protection measures;
- Design of supply of the necessary materials and construction of power supply for non-consumer consumers;
- Construction waste management project

Activity 2: Land acquisition

In order to achieve line speed of 160 km/h, the modernization of the railway line Karnobat – Sindel - Varna requires realignment of the existing railway track in some sections. This in turn leads to the need for expropriation of land in and outside urban areas. The lands envisaged for expropriation are in accordance with the approved Detailed Zoning Plan.

The expropriation zone is established against the approximate amount of excavation and fill along the track, the new structures needed for crossing the existing road infrastructure are taken into consideration. Expropriation procedures would not prevent the implementation of construction works along the track.

Result: Completed procedure for acquiring land for the purpose of modernization of the railway line Karnobat – Sindel - Varna.



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Activity 3: Modernization of the railway line Karnobat - Sindel - Varna – construction works (construction works)

“Modernization of the railway section Karnobat – Sindel - Varna” – Construction contract including preparation of construction design for the railway infrastructure and implementation of construction works of modernization as follows: Railway substructure; Railway superstructure; Structures and facilities; Traction and non-traction power supply; Signalling; Telecommunications; Station facilities.

The scope of the “Modernization of the railway section Karnobat – Sindel - Varna” is:

- Railway section Sindel – Varna start of section is km 509+992 - end of section is km 542+114.
- Railway section Karnobat – Sindel start of section is 0+000 – end of section is km123+075.

Result: Modernized 155.197 km km double railway line and infrastructure along the railway line Karnobat – Sindel - Varna, including provisions of infrastructures for facilitating the access/ egress to Railway of people with reduced mobility.

Sub-activity 3.1:

Middle repair works and construction of track, equipment and electrification of double railway line Kaspichan-Varna (including all stations and stops) and in Sindel - Varna railway section

Sub-activity 3.2.:

Modernisation of the railway section Karnobat – Sindel .

Sub-activity 3.1.1 and 3.1.2 consist of the following:

- Dismantling, transporting, sorting, qualifying and storing materials from the dismantled track and arrows and handing them over to the Employer;
- Cleaning / recycling of the existing ballast prism;
- Design and execution of earthworks, rehabilitation measures, shaping of the ground and achieving the load bearing capacity, construction of new drainage systems and lined ditches;
- Verification of the sustainability of existing bridges and ground bulk equipment of the traffic flow loads for conformity of the quality of the materials with the Infrastructure TSI of the Trans-European Rail Infrastructure;
- Implementing the requirements of the TSI related to "Persons with reduced mobility" TSI in the trans-European conventional and high-speed rail system.



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- Laying of a new upper construction of the railway track in the sections and in the stations main tracks and the adjacent switches with rails type 60E1 and reinforced concrete sleepers with unsustainable elastic fastening. Construction of a jointless track(s);
- Laying up of the railway track in the secondary tracks according to the project of the Employer, with rails 49E1 and reinforced concrete sleepers, with unsustainable elastic fastening. Construction of a jointless track(s);
- Major overhaul of the grid system, replacement of all contact pylons with new ones, replacement of contact wire and carrier wire with new, overhauling of consoles, replacement of insulators, etc .;
- Preparation of a report on the results of the railway infrastructure survey carried out in accordance with Chapter Three "Examination of Existing Buildings" of Ordinance No 5 of 28 December 2006, Technical Passports of each intermunicipal and railway station that are within the scope of the project;
- Organization of the collection, transportation, disposal and utilization of construction and other waste resulting from the implementation of the activities under this contract in accordance with the Bulgarian legislation;
- Design and implementation of environmental protection activities;
- Drawing of a rebate, according to the "Railing and Railing Instruction Manual";

Sub-Action 3.3. Design, supply and installation of security equipment and railway transport. Karnobat - Sindel - Varna, which includes:

- Design and construction of route-computer station centralizations (MCCs) with routing maneuvers in all stations from the section except for Sindel station.
- Assembling all intergrades in the section with a non-signal self-locking with axle counters
- Design and construction of ETCS level 1, ver. 2.3.0d or higher for the plot.
- Overpassing
- Design and construction of a control point system for non-contact diagnostics of rolling stock in motion in the section
- Providing the necessary power supply for the installed equipment (for MCC two independent urban power supplies)
- Design, complete installation and commissioning of an optical cable in the section;
- Design, complete installation and commissioning of the digital SDH transmission system and access system;
- Design, complete installation and commissioning of a high-speed data transmission network;
- Design, complete installation and commissioning of new power supplies and construction of earth stations in the stations from the whole section;



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- Design, complete installation and commissioning of new passenger information loudspeaker systems for passengers;
- Design, complete installation and commissioning of electronic information boards;
- Design, complete installation and commissioning of an automatic clock system;
- Design, complete installation and commissioning of a video surveillance system;
- Supply of necessary hardware and software and upgrade by the Executor of existing digital automatic telephone exchanges to make connections between them;
- Design and construction of structural cabling of the station buildings in the section;
- Design, reconstruction or construction, air-conditioning and repair of the premises intended for the location of telecommunication equipment;
- Construction of new facilities for heating of stations in the stations (power supply from the urban network)
- Installation of devices for remote reading of the consumed energy
- Building new pilot and backlight lighting with modern energy-saving lighting (LED)

Sub-Action 3.4. Design, delivery and installation for modernization of Traction substations and sections (TSS Varna), which includes:

- Ensuring technical readiness for inclusion in the SCADA system for remote control of the traction substation from a working place in the energy dispatching center (EDC) in Gorna Oryahovitsa.
- Construction of perimeter security systems, security system and CCTV surveillance with work stations for surveillance in the adjacent, sub-regional sub-district network and from the energy dispatching center (EDC) in Gorna Oryahovitsa.
- Manage the adjacent section posts, as at the time of the repair work, by the TSS and the EDC.
- Transmitting and removing all dismantled equipment to sites and warehouses designated by the Employer.

Activity 4. Project management (Technical assistance)

Within NRIC a Project Management and Implementation Unit (PMIU) will be established. The unit will be required to ensure the day-to-day management and implementation of the project. The PMIU will consist of ten experts who will work full time throughout the project duration and will report their working time by means of reports. The PMIU team will be supported with specific experience by the relevant departments of NRIC when needed.



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Result: The successful implementation of the project within the defined schedule and budget and implemented measures for information and publicity as per the law.

Activity 5: Supervision of construction works Assessment of the detailed design for compliance with the requirements to constructions and Works supervision

According to art. 142, (6), item 2 of SDA, assessment of compliance of the detailed design with the requirements for the construction works and construction supervision is obligatory and is a ground for issue of building permit. According to art. 168, (2) of SDA, the design assessment is to be done by a licensed company (Consultant). During design preparation the Consultant has the following obligations:

- Control of the construction products during design;
- Assessment of compliance of part "Structural" of the detailed design;
- Preparation of Report for the compliance of the design with essential requirements for construction (Design assessment report).

Subject to the contract with the Licensed Consultant is also health and safety coordination during design.

Design assessment report shall be submitted to MRDPW for approval and issuing of Building permit. After issuing the Building permit Activity 1 will be completed.

According to art. 157 of SDA for starting of construction, which is Activity 3 is considered signing of Protocol 2 of Regulation 3 for compiling acts and protocols during construction.

During construction, Consultant has following obligations:

- Preparation of Protocol (Act) 2 for opening of construction site and issuing the Order book;
- Control on construction works and issuing of acts and protocols during construction;
- Control of the products consumed for the construction;
- Observation the requirements for occupational health and safety during construction;



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- Prevention of damages to third parties and properties during construction;
- Preparation of Technical passport for the construction;
- Preparation of Final report as per art. 168 of SDA.
- Evaluate the Contractors monthly reports and invoices for the implementation of activities and certify payment of invoices;
- Evaluate claims and report on claims and variations to the NRIC

Commissioning, according Bulgarian legislation will include following steps:

- Issuing Act 15 of regulation 3 (under SDA) for the acceptance of construction;
- Preparation and registration of Technical passport according to Bulgarian legislation.
- Issuing of Act 16 of regulation (3) for commissioning of construction

After the issuing of Act 15, Consultant will prepare Final report, which will be submitted to State Independent Construction Control (DNCC) for appointing State Acceptance Committee (SAC). According to Regulation 3 (under SDA) Act 16 will be issued.

Commissioning of the proposed action is completed with issuing of Permit to operate (Act 16) as per Bulgarian legislation. The obligations of the Consultant proceed with the Defects notification period (DNP). The DNP lasts one year after commissioning. At the end of this period, the Consultant shall issue a Report on performance during DNP.

The expected result of the activity is: issued Act 16 / permit to operate and Report after DNP

Activity 6: Assessment of compliance with the interoperability requirements for railway line Karnobat – Sindel - Varna

In connection with the legal requirements of the EU and the Republic of Bulgaria, in particular railway transport legislation related to achieving interoperability of the national railway system with that of the EU and ensuring the safety of the railway system, it is required that the design, construction or production, maintenance and monitoring of the constructed elements, incl. those relating to the movement of trains be carried out in a manner that ensures security and at the same time meets the interoperability requirements. Each subsystem of the railway infrastructure will comply with the requirements of the TSI at the time of commissioning.



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Activities include:

- EA verification and assessment of compliance with technical specifications for interoperability (TSI) by a notified body under Directive No. 2008/57 / EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the railway system within the Community, Directive 2014/106 / EC [42] of 5 December 2014 amending Annexes V and VI Directive 2008/57/ EC of the European Parliament and the Council on the interoperability of the railway system within the Community and in accordance with the requirements of the Railway Transport Act and Regulation No 57 of 9.06.2004 in Bulgaria to achieve interoperability of the national railway system with the railway system within the European Union;
- EA verification and compliance assessment in terms of the open questions in the applicable TSI with the Commission Recommendation 2014/897 / EC [59] of 5 December 2014, issues of commissioning and use of structural subsystems and vehicles in accordance with Directives 2008/57 / EC and 2004/49 / EC of the European Parliament and the Council (DV29bis), repealing Recommendation 2011/217 / EU and national safety and technical rules by an Evaluator of the compliance of a subsystem or part thereof with the national safety rules or technically, according to the Bulgarian legislation;

Independent assessment under Art. 6 of Regulation (EC) No. 402/2013 on the adoption of a common safety method on the determination and assessment of risk with respect to risk identification and assessment for the entire railway section Kostenets-Septemvri.

Result of the activity is: certificates issued by NOBO /DEBO of compliance with the TSI of the design and executive subsystems.

Activity 7: Archaeological site studies and monitoring during construction works for railway line Karnobat – Sindel - Varna

During the project implementation, in areas where there is evidence of archaeological sites, preliminary archaeological studies are performed to determine whether these archaeological sites will be affected or disturbed. The archaeological sites discovered during these studies, the rescue excavations conducted prior to the commencement of construction and during construction works are monitored by archaeologists (art. 161 of the Cultural Heritage Act (CHA)). In case of detection of archaeological sites, art. 148 and 160 of the CHA are applied (<http://mc.government.bg/page.php?p=141&s=0&sp=0&t=0&z=0>).



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Archaeological fieldwork and monitoring during construction is carried out according to the Cultural Heritage Act and Ordinance No H-00-0001 of 14.02.2011, issued by the Minister of Culture. The scope of archaeological monitoring during construction consists of monitoring by archaeologists over archaeological sites discovered along the track of the railway section Karnobat- Sindel - Varna.

Result of the activity is: Archaeological fieldwork and monitoring performed during the implementation of the modernization of the railway section Karnobat- Sindel - Varna.

Activity 8: Information and publicity

NRIC has legal obligations to perform appropriate actions to inform the public of the financial support by the European Union. In all reports, brochures and other documents related to the projects financed by the EU it should be pointed out that co-financing is provided by the European Union. The fulfilment of this obligation is important with view of the commitment to convey the important message to the European public that the European Union is supporting the development of sustainable transport. The aim is for Member States to ensure that this will be given adequate publicity and transparency of the aid granted will be ensured in order to inform the public about the EU's role in the implementation of projects.

The aim of the envisaged Contract on information and publicity is for the NRIC to fulfill the requirements of Regulation (EC) No. 1303/2013 for publicity measures. The plans for information and publicity of the project will be approved and supervised by the Beneficiary. The scope of this activity under this project includes:

Design, supply and installation of 4 billboards - one at the beginning and one at the end of the railway section Karnobat- Sindel - Varna;

Conducting 4 information events: 2 at the start of the construction period ("first sod") and 2 after completion of the construction process;

Preparation of brochures - 1000 copies;

Preparation of video.

Result of the activity is: Final report on information and publicity.



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Activity 9: Author supervision during construction, under SDA for railway line Karnobat – Sindel - Varna

Provision of author supervision during construction works is a necessary activity under the provisions of the SDA. Railway lines are categorized as first category construction works according SDA. Author supervision in all parts of the project is mandatory for all constructions from first to fifth category, according to Art. 162, para. 2 of SDA. The Designer who has prepared the technical design based on Art. 162 of SDA shall provide author supervision during works.

Result: performed author supervision during construction works, according to Art. 162 of SDA for 1 construction contract.

3.5 RESULTS/DELIVERABLES

After the implementation of the project for the modernization of the Ruse - Varna railway line will be achieved:

- Improving the quality of rail transport services by reducing transit times
- Treasuring the safety of transport operations
- Stimulating economic development at regional and national level
- To ensure technical and operational compatibility in accordance with established European requirements

Specific results:

- Rehabilitated railway line with length of 155.197 km;
- Replacement grid over 155,197 km;
- New / repaired facilities;
- Reduced travel time.

4 PROJECT ORGANISATION

4.1 INSTITUTIONAL FRAMEWORK

According to the Bulgarian legislation a number of bodies and institutions that have specific functions in relation to the management, control and coordination of the implementation of specific activities or the project as a whole are involved in the project implementation.



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The functions, roles and responsibilities of key actors, authorities and institutions in the management and implementation of the project are as follows:

- **Ministry of Transport, Information Technology and Communications (MTITC)** - MTITC is responsible for the overall coordination, financial and administrative management of the activities in the Transport sector at national level.
- **Ministry of Finance (MF)** – Co-funding for the project is provided by the state budget (SB), the Ministry of Finance is the institution responsible for the distribution of the SB. The beneficiary is obliged to perform the appropriate actions and procedures for granting of the amounts for co-financing by the Ministry of Finance set out in the estimated budget of the project. The certifying authority and the authority responsible for receiving funds under the programmes by EU funds and the Audit Authority (EA AEUF) are situated within the MF structure.
- **The beneficiary is SE NRIC** - Initiates and implements individual projects eligible for funding and receives public funds for their implementation within the planned timeframe and financial limits for the implementation of the projects. These requirements and restrictions are detailed in the contracts/orders for financial support. It implements and is responsible for managing and implementing the project. NRIC is the beneficiary of the results of the project. The Beneficiary concludes the contract for granting financial assistance (grant funding) for the project.
- **Contractors** for the implementation of the modernization of the railway section that will be selected after conducting the procurement procedures under PPA in Bulgaria - The Contractors will carry out the relevant tasks and activities in accordance with the specific requirements of each individual contract. With the implementation of all specific contracts, the objectives and targets of the project will be achieved.
- **Ministry of Regional Development and Public Works (MRDPW)** - According to the Spatial Development Act (SDA) in Bulgaria the MRDPW is the body responsible for approval of work projects, issuance of building permits and authorization for operation by the State Acceptance Committee appointed by the National Construction Control Directorate (NCCD) with the MRDPW.

4.2 OWNERSHIP/IMPLEMENTING PARTY

The project for modernization of the railway line Karnobat-Sindel-Varna will affect the following elements of the railway infrastructure in the section:

- Rail Superstructure;
- Rail Structures;



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- Catenary;
- Signalling and telecommunications;

The implementation of the will be carried out by SE NRIC which has about 11,000 highly qualified specialists in the field of rail transport, including the above. The company has successfully completed numerous similar projects financed under EU funds.

The organizational structure of SE NRIC is available on the company's website (www.rail-infra.bg).

The National Railway infrastructure company (NRIC), is a state-owned company (statute of state owned company in accordance with art. 62, par. 3 of the Trade Law), established in accordance with the stipulation of The Railway Transport Act (RTA), which has the following obligations:

- To run and manage the provided property – owned by the public and the state;
- To construct, maintain, develop, optimize and exploit the railway infrastructure of the national railway network;
- To manage the systems for control and safety of the trains movement;
- To provide access for the Railway Undertakings (art.3, par.1 of Ordinance 41) to the network.

NRIC is an independent legal entity able to conduct business activities, to sign contracts and undertake legal actions during project implementation, if necessary. It is fully equipped to undertake legal actions during the project implementation, if necessary.

Within the structure of SE NRIC a Legal Department was established. The number of legal experts working in the Legal department as of 31.12.2015 is 11. The Legal Department is directly subordinate to the Director General of the company, and performs the following functions: assist the Management Council and the Director General in exercising their functions in compliance with the legislation and norms; propose solutions to legal issues and opinions on the legal aspects of contracts, orders, regulations, instructions and rules of the enterprise; act as attorney in cases in which the entity is a party; develop draft regulations and contracts of the enterprise; participate in the development of internal documents related to the activities of the enterprise; take legal actions to collect receivables; provide legal opinions on submitted requests, complaints, warnings and suggestions; provide legal opinions on the application of the laws, regulations and acts of the Director General and the Management Council; participate with representatives in the working groups for preparation of draft legislation in the field of transport; participate with representatives in international groups, giving opinions on the correlation between international and national law; undertake and offer action to protect the property of the company; issue opinions on proposals for changes in the structure and the structural units of the enterprise; provide methodological guidance on legal services and legal representation to the legal advisers of the divisions.



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The Legal Department is managed by the General Legal Counsel of the entity whose powers are defined in the job description approved by the Director General.

In addition company has a Public Procurement department employing 19 experts which organise and manage all tenders of the enterprise.

The budget of SE NRIC for funding the activities for maintenance and operation of the rail infrastructure is formed through: the state budget; infrastructure charges; revenue from commercial activities; loans; funds under EU programmes; revenue from services under price list. The funds from the national budget is spent on: carrying out the activities of the company, including research, design, construction, maintenance, development and operation of the railway infrastructure; ensuring the safety of transport on the railway infrastructure; maintenance of the enterprise; repayment of loans received. Revenues from infrastructure charges are spent entirely on maintenance of railway infrastructure, covering the costs of the infrastructure manager, incurred in relation to implementation of transportation services by railway carriers.

The NRIC is operating on the ground of the Railway Transport act. According to Art. 1 of the Railway Transport Act (RTA), the terms and conditions for construction, maintenance, development and use of railway infrastructure, as well as the requirements for access to the infrastructure, are set out. According to Art. 3, para. 1 of Railway Transport Act, the interventions in railway infrastructure and the land on which they are built or is necessary for their construction, are public property, and are used by the National Railway Infrastructure Company. According to Art. 25, para. 1 of the RTA, the state participates in funding the activities of construction, maintenance, development and operation of the railway infrastructure, including the building, preservation and maintenance of facilities and materials for carrying out defense and mobilization events in the country. According to Art. 10, paragraph 1, item 2 of the RTA, the railway infrastructure development, repair, maintenance and operation activities is main subject of activity of NRIC.

4.3 ORGANISATION STRUCTURE

The Project Promoter/Beneficiary is the National Railway Infrastructure Company. According to Art 9 (3) of the Railway Transport Act the Company is the railway infrastructure manager and according to Art. 3 (1) of the Bulgarian Railway Transport Act the Company use all the railway infrastructure equipment and related land. The day-to-day technical implementation and administration of the contracts related to the project implementation will be managed by the Project Preparation Management and Implementation Unit (PPMIU) established within Beneficiary



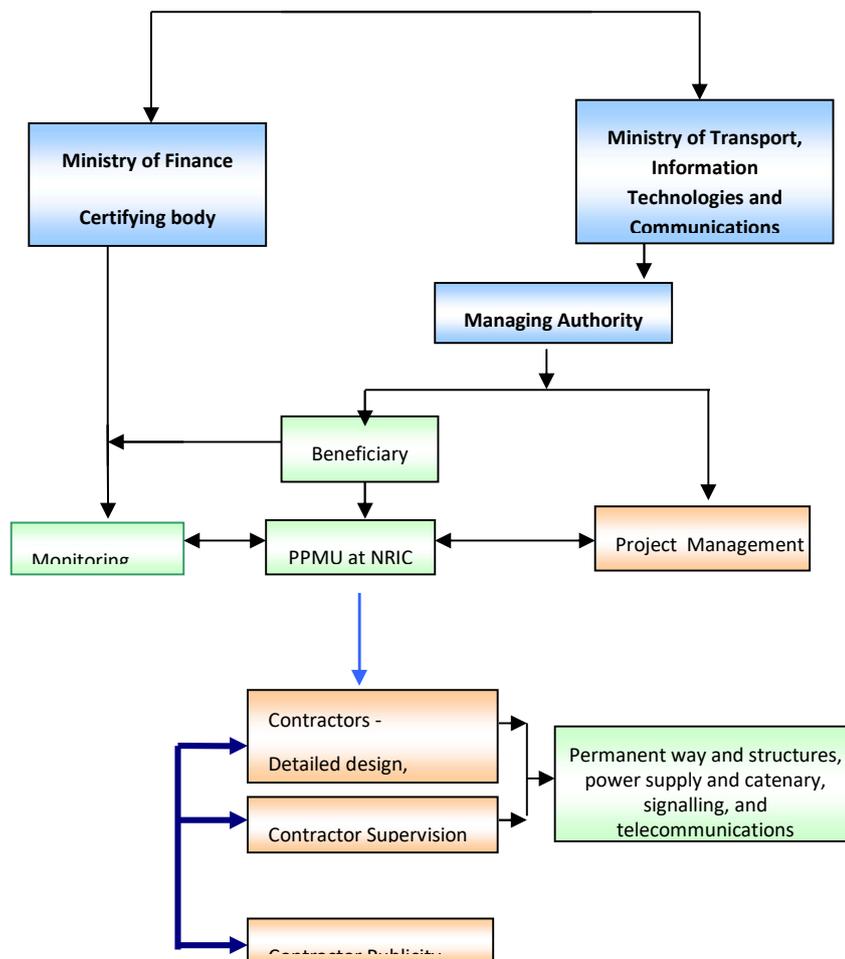
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Management structure of the Project

The management structure of the project with the associated stakeholders and their roles and responsibilities during project implementations are shown in the below figure.

Organizational chart of the project implementation



In view of precise and clear cooperation with all structures involved in project management, the PPMIU will include the following members:



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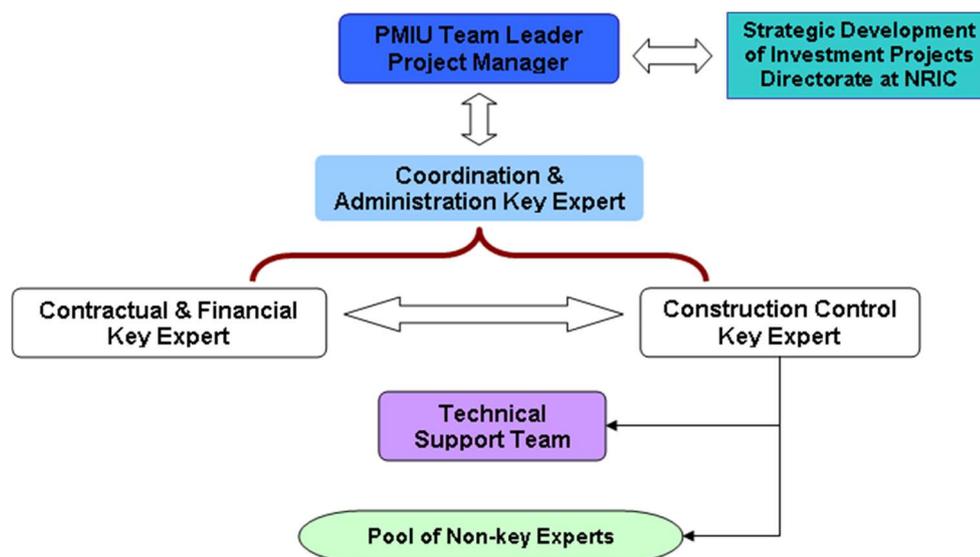
Mandatory (long-term) key experts:

- Team leader – project manager;
- Key expert on contracts, cost verification and financial issues;
- Key expert on construction control and supervision;
- Key expert in coordination and administration.

Non-mandatory (short-term) key experts will include experts on rail track, structures and buildings, signaling and telecommunication, power supply, rail traffic management and safety.

The PMIU will also include different non-key experts to support the key experts depending on the needs arising during project implementation. The PMIU has the following duties: scheduling management; quality management; cost control; contracts management; payment management; risk management; change management; claims management; communication system; other activities as required.

The general indicative structure of the PMIU and the interdependencies of its members are shown in the below figure.



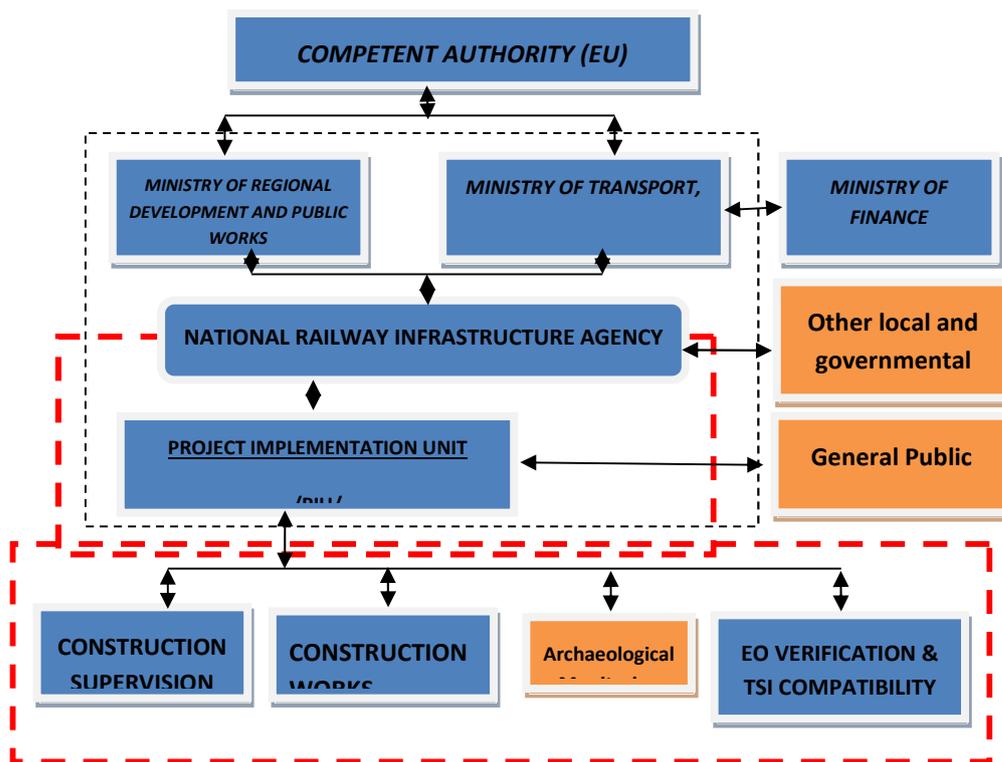
The following organizational structure shows the pre-identified stakeholders with the distribution of their roles and responsibilities as well as communication channels in-between.



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Figure 2 Project Implementation Organizational Structure



5. DETAILED BUDGET (EUR/\$)

| No. | Description | Investment (euro) | Financing | Co-Financing | Total |
|-----|---|-------------------|-----------|--------------|-------|
| 1. | Preparation of Detailed Development Plan and Technical Projects for Railways. Karnobat - Sindel | 3 500 000 | | | |



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| No. | Description | Investment (euro) | Financing | Co-Financing | Total |
|-----|---|-------------------|-----------|--------------|-------|
| 2. | Land acquisition | 1 900 000 | | | |
| 3. | Construction Works | 276 367 408 | | | |
| 3.1 | Middle repair works and construction of track, equipment and electrification of double railway line Kaspichan-Varna (including all stations and stops) and in Sindel - Varna railway section (with exception of Sindel railway station) | 56 616 884 | | | |
| 3.2 | Modernization of railway section Karnobat - Sindel | 199 716 431,26 | | | |
| 3.3 | Design, supply and installation of security equipment and railway transport. Sindel district – Varna | 14 921 173 | | | |



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| No. | Description | Investment (euro) | Financing | Co-Financing | Total |
|------|--|-------------------|-----------|--------------|-------|
| 3.4. | Design, delivery and installation for modernization of Traction substations and sections (TSS Varna) | 5 112 919 | | | |
| 4. | Assessment of the detailed design for compliance with the requirements to constructions and Works supervision; | 8 291 022.24 | | | |
| 5. | Author supervision during construction, under SDA | 35 000 | | | |
| 6. | Interoperability Assessment | 5 527 348.16 | | | |
| 7. | Archaeological studies and monitoring during construction works for rehabilitation | 200 000 | | | |



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| No. | Description | Investment (euro) | Financing | Co-Financing | Total |
|-----------------------|---------------------------|-------------------|-----------|--------------|-------|
| 8. | Information and publicity | 30 000 | | | |
| 9 | Project management (PMIU) | 5 527 340 | | | |
| Total: 577 745 525,66 | | | | | |



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6. RISK ASSUMPTIONS AND CONSTRAINTS

| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|---|--|---|--------------------------|---------------------------------|---|
| Activity N° 1 Preparation of Detailed design | Lack of Applicant (Contractors) meeting requirements | Delay in starting activities (High) | (Low) | Partially under control by NRIC | In depth prequalifying activity Well prepared tender documentation |
| | Appeal of tender procedure | Delay in starting activities (High) | (Low) | | Well prepared tender documentation Strict compliance with the requirements of the Bulgarian legislation during the procurement procedure |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|------------------------------|---|--|---|---|
| | Approval and permits | Delay in approval procedure and costs increasing due to local authorities requests. (Low) | Referred to the design and build process, without an approved Technical Design (Low) | Under control by NRIC | Synchronizing public statements concerning the project with the Consultant-Supervisor. Regular reporting and ongoing consultation in case of occurrence of a problem and need to change. |
| | Changes in technical rules | Delay in design development and costs overrun (High) | (Low) | Under control by NRIC, Contractor and Consultant - Supervisor | Detailed definition before starting the design of all the technical rules to be considered for the project. |
| | Inadequate quality of design | Delay in design development | | Under control by NRIC, Contractor and Consultant- | Adequate evaluation procedure for the choice of the Contractor. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|--|--|--------------------------|---|---|
| | | (High) | (Low) | Supervisor | Monthly progress check, regular coordination between Contractor, Contractor and Consultant-Supervisor. |
| | Unforeseen changes in connected projects and other unforeseen projects to consider | Delay in design development and costs overrun (High) | (Low) | Under control by NRIC and Consultant-Supervisor | Deep coordination between the existing projects. Management of the interface with other unforeseen new projects aimed to avoid unnecessary impacts on Sofia – Elin Pelin railway. Signing of contract for project management or including these services in the scope of Consultant-Supervisor. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|---|-----------------------------------|--|---------------------------------|--|
| | Hydro geological hindrances | Costs overrun (Low) | Referred to the design and build process, without an approved Technical Design (Low) | Under control by the Contractor | Technical solutions aimed to reduce coast overrun. |
| | Presence of polluted soil and/or groundwater and presence of buried waste | Costs overrun (Low) | Referred to the design and build process, without an approved Technical Design (Low) | Under control by the Contractor | Technical solutions aimed to reduce coast overrun. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|---|-----------------------------------|--|--------------------------|--|--|
| | Appeal of DZP | Delay (Low) | (Low) | Contractor | High publicity of the proposed action benefits. |
| Activity N° 2 Land acquisition | Delay of starting of procedure | Costs overrun and delay in building permit (Low) | (Low) | NRIC, Contractor and Consultant-Supervisor | Strict compliance with the requirements of the Bulgarian legislation Preventive agreements with owners in order to define a shared price. |
| Activity N° 3 Construction works | Delay of starting of construction | Delay (High) | (High) | Contractor | Early mobilization of the Contractor |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|--------------------------|--|--|--------------------------|--------------------------------------|---|
| for modernization | Hydrogeological hindrances | Cost overrun (High) | (Low) | Contractor and Consultant-Supervisor | Strong technical specification for geological investigations that has to be done by the General Contractor |
| | Polluted soil and groundwater/buried waste | Delay and cost overrun (Low) | (Low) | Contractor and Consultant-Supervisor | Correct management of wasted materials. |
| | Utilities hindrances | Delay and cost overrun (Low) | (Low) | Contractor and Consultant-Supervisor | Technical specification defining modalities of contacting utility Companies and field utilities investigation and localization. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|--|--|--------------------------|--------------------------------------|---|
| | Hydrogeological hindrances | Cost overrun (High) | (Low) | Contractor and Consultant-Supervisor | Strong technical specification for geological investigations that has to be done by the General Contractor |
| | Polluted soil and groundwater/buried waste | Delay and cost overrun (Low) | (Low) | Contractor and Consultant-Supervisor | Correct management of wasted materials. |
| | Utilities hindrances | Delay and cost overrun (Low) | (Low) | Contractor and Consultant-Supervisor | Technical specification defining modalities of contacting utility Companies and field utilities investigation and localization. |
| | Archaeological | Delay and cost | | Contractor and Consultant- | Strict compliance with the requirements of the Bulgarian |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|--|---|--------------------------|---|--|
| | hindrance | overrun (High) | (Low) | Supervisor | legislation |
| | Changing in time schedule of works due to the railway traffic organization | Delay and cost overrun (High) | (Low) | NRIC, Contractor, BDZ (operator of railway transport) | Regular update of construction and traffic organization schedule. |
| | Adverse weather conditions | Delay (Low) | (Low) | - | Construction schedule to be consistent with the winter weather conditions. |
| | Inadequate quality of construction works | Delay | | NRIC, Contractor and Consultant-Supervisor | Adequate evaluation procedure for the choice of the enterprise. Monthly progress check, regular |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|-------------|--|------------------------|--------------------------|---|--|
| | | (High) | (Low) | | coordination between Contractor, Enterprise and Consultant-Supervisor. |
| | Equipments and material's robberies | Delay (Low) | (Low) | Contractor | Adequate construction sites organization and security. |
| | Accidents involving people and/or trains | Delay (High) | (Low) | Contractor and Consultant-Supervisor | Adequate construction sites organization, detailed and updated safety plan |
| | Authorizations for extended times | Delay | | Under control by NRIC, Contractor and Consultant- | Regular update of schedule of works. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|--|----------------------------------|---|--------------------------|---|---|
| | | (Low) | (Low) | Supervisor | |
| | Claims | Delay and cost overrun (High) | (High) | Under control by NRIC, Contractor and Consultant-Supervisor | Regular coordination of the stakeholders. |
| Activity N° 4 Project management (PMIU) | There are no risks to activity 4 | - | - | - | - |
| Activity N° 5 Assessment of the | Approval and permits | Delay in obtaining of Building permit and | | Under control by Consultant- | Regular reporting and ongoing consultation in case of occurrence of a |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|--|--|--|--------------------------|---|--|
| detailed design for compliance with the requirements to constructions and works supervision | | Commissioning (High) | (Low) | Supervisor | problem and need to change. |
| | Lack of coordination between Consultant and Contractor | Delay in the project development (Low) | (Low) | Under control by the Consultant and the Consultant-Supervisor | Detailed definition before starting the design of all the technical rules to consider for the project. Regular reporting and communication. |
| | Lack of Consultant resources | Delay in the project development (Low) | (Low) | Under control by the Consultant and the Project Manager | Adequate evaluation procedure for the choice of the Consultant. Regular progress meetings. |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|--|---|---|--------------------------|--|---|
| 4 Interoperability assessment | Non-compliance with the requirements of the TSI | Low | Low | Under | Adequate procedures for ongoing monitoring of the compliance with the requirements of the TSI throughout project implementation |
| Activity N° 7 Archaeological monitoring during construction works | Detection of new archaeological sites during construction works | Delay in the project development (High) | (Low) | Monitoring team of archaeologists Ministry of culture | Strict compliance with the requirements of the Bulgarian legislation |
| Activity N° 8 Information and publicity | There are no risks to activity 8 | - | - | - | - |



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| Activity N° | Risk | Impact (High/Low) | Likelihood (High/Low) | Control (Under/Beyond) | Mitigating measure(s) |
|---|----------------------------------|----------------------|--------------------------|---------------------------|-----------------------|
| Activity N° 9 Author supervision during construction | There are no risks to activity 9 | - | - | - | - |

7. IMPLEMENTATION SCHEDULE

Phase 1 : Preparation activities

Phase 2: Construction work

8 ENVIRONMENT

The Kaspichan - Varna railway section from the Sofia - Varna railway line is part of the project "Restoration the design parameters of a railway line Ruse - Varna".

As a result of the conducted procedures for assessment of the necessity of the EIA implementation, the competent authority - Ministry of Environmental and Waters (MOEW) has issued Decision № 9-PR/2010, which stated that it is not necessary to carry out EIA for the mentioned project. The investment proposal does not leave the existing railway line alignment and no land acquisition is required. The project is not likely to have a significant negative impact on the components of the environment, human health, natural habitats, populations and habitats of species subject to conservation in protected areas.

According to Bulgarian legislation in the field of Environmental, the decision is in force for a period of five years. Therefore the procedure for assessment of the necessity of the EIA implementation should be carried out again.

In 2010, a contractor selection procedure was conducted to prepare an EIA report and assess compatibility with the subject and conservation objectives of the NATURA 2000 protected areas for railway section Karnobat – Sindel..

An EIA report and a compatibility assessment were submitted in February 2011. The same was sent to the MoEW for reconciliation.

A contract for termination of the contract with the Contractor was signed on 15.11.2012, after which a new procedure for selection of a contractor was launched to prepare an EIA report and an assessment of the compatibility with the subject and the purposes of conservation in the protected areas of "NATURA 2000 ". On 11.12.2013 a positive assessment of the quality of the report was received. On March 25, 2014, Decision No. 3-3 / 2014 of MOEW, with this respect, was issued.

9 RATES OF RETURN

9.1 FINANCIAL RATE OF RETURN (PERIOD OF ANALYSIS IN YEARS):



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Financial rate of return of the investments and the capital (IRR/C and IRR/K) and net present value (NPV) for railway section Sindel - Varna, part of railway line Ruse – Varna.

The financial analysis of the Global project is elaborated according to Working Document 4 and Guide to Cost-benefit Analysis of investment projects of DG Regional Policy, EC. An incremental approach is applied and the project’s financial indicators are defined with funding and without EU funding. For this purpose certain Internal rate of return on capital (FIRR/C) and Internal Rate of return on investment (FIRR/I), as well as their net present value (NPV) at a discount rate 5.00% have been defined. The results of the financial analysis for the selected alternative of the project are:

| | Scenario B1 | Scenario B2 | Scenario C1 | Scenario C2 |
|--------|--------------|--------------|-----------------|--------------|
| FNPV C | -366 625 411 | -359 394 849 | -586 448 210 | -648 969 823 |
| FIRR C | -1,88% | -1,78 | #DIV/0! | #DIV/0! |
| FNPV K | -74 658 059 | -67 150 950 | -120 881 701 | -133 552 899 |
| FIRR K | 2,44% | 2,51% | 1,74% | 1,39% |



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The index FNPV/C of a given project should have negative value, in order the project to be approved for financing by the Funds, and the value of the index FHB/C should be less than the one of the coefficient used for the analysis balance– 5%. The results show that all four regarded alternative scenarios comply to these criteria, whereas for scenarios C1 and C2 the values of FIRR/C are not assessable.

Financial stability and financial plan

The project's financial stability has been studied for scenarios B1 and B2, which are complying to the criteria for the indices in the economic analysis. The project may be considered financially stable, if the cumulative, not-balanced net cash flows have positive values for each and every year of the forecast period. The net cash flow, which must be used for this purpose, must include the investment costs, all financial resources (national and from the EU) and the net income. The residual value shall not be accounted, except if the asset had been really liquidated in the last year, included in the analysis.

For 72, 81% of the required financial resources or 446 207 118 BGN it would be admissible to look for financing from various grant programs.

The left part of 27, 19% or 166 667 416 BGN should be financed from other national sources – State Budget or loan. Two versions for providing of national financing for the project have been studied:

- Covering of the financial deficit from the State Budget or other sources without drawing a credit;
- Covering of the financial deficit, via State guaranteed credit, to be paid by the Beneficiary (NRIC).

The CBA will be revised in order to confirm (update) the funding gap rate. The shown financial source distribution is indicative. The precise distribution will be made on the basis of the revised CBA.



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Determination of IRR and NPV for the Karnobat - Sindel railway section

In theoretical literature and in practice, different approaches and methods can be found to determine the discount rate in financial analyzes. They all seek the right answer to the question of the cost of capital invested over time, and on the basis of these calculations, to determine the most objectively the benefit of a particular investment.

According to the Cost Benefit Analysis Guide used when channeling is drafted, a discount rate of 6% is proposed for public projects, which represents almost twice the IRR price of a European Investment Bank.

The results of the determination of IRR and NPV for the Karnobat - Sindel railway section are as follows:

Table № - 21-1: FIRR and FNPV at base scenario

| Funds needed | State budget | State budget | FNPV 5% | FIRR |
|---------------------|---------------------|---------------------|----------------|-------------|
|---------------------|---------------------|---------------------|----------------|-------------|



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| 000 lv | (%) | 000 lv | 000 lv | (%) |
|---------|------|---------|---------|-------|
| 221 653 | 25% | 55 413 | -58 695 | 1,03% |
| 221 653 | 75% | 166 240 | -15 579 | 3,3% |
| 221 653 | 85% | 188 405 | 1 668 | 4,9% |
| 221 653 | 90% | 199 488 | 10 291 | 6,0% |
| 221 653 | 100% | 221 653 | 27 537 | 10,4% |

This scheme is closest to the funding conditions and the least load on the SB.

Table № -21-2: FIRR and FNPV at the optimistic scenario

| Funds needed | State budget | State budget | FNPV 5% | FIRR |
|--------------|--------------|--------------|---------|------|
|--------------|--------------|--------------|---------|------|



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| 000 lv | (%) | 000 lv | 000 lv | (%) |
|---------|------|---------|---------|-------|
| 273 346 | 50% | 136 673 | -69 859 | 0,99% |
| 273 346 | 75% | 205 009 | -16 488 | 3,5% |
| 273 346 | 85% | 232 344 | 4 860 | 5,2% |
| 273 346 | 90% | 246 011 | 15 535 | 6,5% |
| 273 346 | 100% | 273 346 | 36 883 | 12,3% |

As can be seen from the results in the Table in this scenario, 85% of the funding from the free sources and 25% of the NRICs or the funds reimbursed by NRIC realizes IRR above 5%.

Table № - 21-3: FNPV и FIRR при песимистичния сценарий

| Funds needed | State | State | FNPV | FIRR |
|--------------|-------|-------|------|------|
|--------------|-------|-------|------|------|



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| | budget | budget | 5% | |
|---------------|---------------|---------------|---------------|------------|
| 000 lv | (%) | 000 lv | 000 lv | (%) |
| 241 381 | 50% | 120 690 | -61 801 | 1,08% |
| 241 381 | 75% | 181 036 | 14 868 | 3,5% |
| 241 381 | 85% | 205 174 | 3 905 | 5,1% |
| 241 381 | 90% | 217 243 | 13 292 | 6,3% |
| 241 381 | 100% | 241 381 | 32 065 | 11,4% |

So from the results in the Table in this scenario we have again achieved

IRR over 5% with 85% funding from the DB.

9.2 ECONOMIC INTERNAL RATE OF RETURN (PERIOD OF ANALYSIS IN YEARS):

For railway section Sindel – Varna:



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The current project has been evaluated by the means of Cost Benefit Analysis (CBA) in compliance with the guidance documents specific to the EU, two of which are focused solely on the requirements of the transport sector in Bulgaria. These documents have contributed towards the detailed approach to generating the financial and economic cost benefit analysis, including placing monetary values on air pollution, climate change and time savings as well as the processes for calculating costs. Methodology required by three documents was applied in the preparation of CBA for the selection of option for conceptual design development:

- Guide to Cost Benefit Analysis of Investment Projects – Structural Funds, Cohesion Fund and Instrument for Pre Accession – Final Report/ 16th June 2008 (European Commission Directorate General Regional Policy), http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf;
- Working Document No 4: Guidance on the Methodology for Carrying Out Cost Benefit Analysis– August 2006 (European Commission Directorate General Regional Policy), http://ec.europa.eu/regional_policy/sources/docoffic/2007/working/wd4_cost_en.pdf;
- Requirements for Preparation of CBA in transport sector – April 2010, JASPERS and Ministry of Finance, <http://www.eufunds.bg/bg/page/23>.

The financial and economic analysis was prepared by the incremental method, which calculates the difference in the value of the financial and economic parameters of the ‘without project’ and ‘with project’ alternatives.

The calculated values of the indices for the economic analysis for the alternative scenarios studied, are systematically presented in the table below:



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| Indices | Alt_B1 | Alt_B2 | Alt_C1 | Alt_C2 |
|---------|------------|-------------|-------------|--------------|
| ENPV C | 59 066 536 | -70 565 962 | -38 812 871 | -168 047 932 |
| EIRR C | 7,14% | 3,64% | 4,66% | 1,71% |
| B/C | 1,21 | 0,79 | 0,91 | 0,63 |

The economical net present value must be bigger than zero (ENPV>0), for being the project reasonable from the economic point of view.

The economical rate of return must be bigger than the social balance coefficient, in this case: 5, 5% (EIRR>5, 5%). The ratio benefits/costs must be bigger than one (B/C>1). If B/C > 1 the project would be suitable, since the benefits, measured as present value of the total incoming flows are bigger than the costs, measured as present value of the total outgoing flows.

The results from the analysis show that only scenarios B1 and B2 conforms to these criteria, as the results for the scenario B2 are higher than those for the scenario B1. On the basis of these results scenario B2 is recommended.

Determination of the socio - economic IRR and NPV and the coefficient of Costs and Benefits for Karnobat - Sindel railway line



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The economic evaluation of the project is done to prove and compare with the financial analysis the socio-economic benefits of this project for the country in which it is realized as a whole. Of course, each public project has considerably more social benefits for society than those that can be covered in one project and therefore there are adopted parameters and benefits that are valued according to the type of infrastructure in which they are invested.

The estimates of economic benefits and costs are given in the following Table.

Table № 22-1 Determination of the economic Costs and Benefits at base scenario

| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|-------------------------------|-------------|--------------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| 000 lv | | | | | | | | | | | | |
| Railway infrastructure | | | | | | | | | | | | |
| NRIC project costs | 253 603 | 125 802 | 24 074 | 31 630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 |
| Economic costs on investments | 211 336 | 104 835 | 20 062 | 26 358 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|------------------------------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|----------|
| 000 lv | | | | | | | | | | | | |
| VAT, income to SB | 42 267 | 20 967 | 4012,3 | 5271,6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 |
| Residual value of project assets | 23 195 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 133220,3 |
| NRIC Cost /no project case/ | 18 000 | 18 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 |
| Investments 500 000 lv yearly | 21 882 | 15 000 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| VAT, income to SB | 4 376 | 3 000 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| Residual value of project assets | 762 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4376,5 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|--------------------------------------|----------------|----------------|---------------|---------------|------------|------------|------------|-------------|-------------|-------------|-------------|-----------------|
| 000 lv | | | | | | | | | | | | |
| Net NRIC investments | 235 603 | 107 802 | 24 074 | 31 630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 |
| Net NRIC investments | 189 453 | 89 835 | 19 562 | 25 858 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500,0 |
| Net VAT, income to SB | 37 891 | 17 967 | 3912,3 | 5171,6 | -100,0 | -100,0 | -100,0 | -100 | -100 | -100 | -100 | -100,0 |
| Net residual value of project assets | 22 433 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 128843,9 |
| Maintenance costs | -684 | 0 | 0 | 0 | -19 | -24 | -29 | -128 | -134 | -141 | -154 | -161 |
| Financial costs, Total | 212 486 | 107 802 | 24 074 | 31 630 | -19 | -24 | -29 | -128 | -134 | -141 | -154 | -129 005 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|--|---------|--------|--------|--------|------|------|------|-------|-------|-------|-------|----------|
| 000 lv | | | | | | | | | | | | |
| Economic costs, Total | 166 337 | 89 835 | 19 562 | 25 858 | -519 | -524 | -529 | -628 | -634 | -641 | -654 | -129 505 |
| Benefit, 000 lv | | | | | | | | | | | | |
| Customers of transport services | | | | | | | | | | | | |
| Railway customers | | | | | | | | | | | | |
| Existing traffic | | | | | | | | | | | | |
| Reduced travel time | 142 133 | | 8380 | 8531 | 9217 | 9411 | 9609 | 13131 | 13367 | 13608 | 14102 | 14356 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|---|---------------|-------|---|---|------|------|------|------|------|------|------|------|
| 000 lv | | | | | | | | | | | | |
| Transferred traffic from auto-transport | | | | | | | | | | | | |
| Decreased costs in auto-transport | 30 263 | | 0 | 0 | 1803 | 1792 | 1801 | 5205 | 5433 | 5662 | 6120 | 6120 |
| <i>of passenger transport</i> | | | 0 | 0 | 798 | 793 | 797 | 2304 | 2405 | 2507 | 2709 | 2709 |
| <i>of freight transport</i> | | | 0 | 0 | 1005 | 999 | 1004 | 2900 | 3028 | 3155 | 3410 | 3410 |
| Reduced travel time | 9 296 | | 0 | 0 | 553 | 549 | 552 | 1595 | 1665 | 1735 | 1876 | 1876 |
| Increasing the | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|--|---------------|-------|-----|-----|-----|------|------|-------|-------|-------|-------|-------|
| 000 lv | | | | | | | | | | | | |
| safety | | | | | | | | | | | | |
| <i>Additional income to rail operators</i> | 3 575 | | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| <i>Reduction in petrol taxes</i> | 3 537 | | 236 | 236 | 248 | 248 | 260 | 271 | 271 | 271 | 271 | 271 |
| Generated additional traffic | | | | | | | | | | | | |
| Customer benefits | 59 985 | | 0 | 0 | 191 | 2456 | 3766 | 10267 | 10693 | 11128 | 12023 | 12454 |
| <i>Additional income to rail</i> | 1 437 | | 0 | 0 | 85 | 85 | 85 | 247 | 257 | 268 | 290 | 290 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|-----------------------------------|----------------|-------|---|---|-----|------|-------|-------|-------|-------|-------|-------|
| 000 lv | | | | | | | | | | | | |
| <i>operators</i> | | | | | | | | | | | | |
| <i>Additional VAT</i> | 56 691 | | 0 | 0 | 17 | 2281 | 3589 | 9661 | 10054 | 10454 | 11279 | 11702 |
| <i>from freight transport</i> | | | 0 | 0 | 0 | 2264 | 3572 | 9612 | 10002 | 10401 | 11221 | 11644 |
| Service providers | | | | | | | | | | | | |
| <i>rail operators</i> | | | | | | | | | | | | |
| <i>Additional operation costs</i> | 197 017 | | 0 | 0 | 377 | 7853 | 12213 | 33783 | 35181 | 36607 | 39542 | 41050 |
| <i>passenger</i> | | | 0 | 0 | 377 | 471 | 566 | 2443 | 2569 | 2695 | 2955 | 3085 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|--------------------------|----------------|----------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 000 lv | | | | | | | | | | | | |
| <i>freight</i> | | | 0 | 0 | 0 | 7382 | 11647 | 31340 | 32613 | 33911 | 36587 | 37965 |
| <i>Impact on revenue</i> | 287 030 | | 260 | 260 | 345 | 11665 | 18206 | 48565 | 50529 | 52531 | 56656 | 58770 |
| <i>from passenger</i> | 5 012 | | 260 | 260 | 345 | 345 | 345 | 506 | 517 | 528 | 550 | 550 |
| <i>from freight</i> | 282 018 | | 0 | 0 | 0 | 11320 | 17861 | 48059 | 50011 | 52003 | 56106 | 58220 |
| <i>infra charges</i> | -45 087 | | 0,0 | 0,0 | -95,1 | -1793,9 | -2786,3 | -7738,1 | -8059,3 | -8386,6 | -9060,5 | -9407,3 |
| <i>from passenger</i> | | | 0 | 0 | -95 | -120 | -145 | -630 | -663 | -696 | -763 | -797 |
| <i>from freight</i> | | | 0,0 | 0,0 | 0,0 | -1674,2 | -2641,5 | -7107,7 | -7396,4 | -7691,0 | -8297,8 | -8610,4 |
| Total economic | 228 567 | 0 | 8 380 | 8 531 | 11 387 | 13 737 | 15 163 | 27 754 | 28 591 | 29 438 | 31 166 | 31 721 |



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| INVESTMENTS | FNPV | TOTAL | 1 | 2 | 6 | 7 | 8 | 25 | 26 | 27 | 29 | 30 |
|-------------------------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|---------|
| 000 lv | | | | | | | | | | | | |
| benefits: | | | | | | | | | | | | |
| Economic benefits/costs | 62 230 | -89 835 | -11 182 | -17 327 | 11 906 | 14 261 | 15 692 | 28 382 | 29 225 | 30 078 | 31 820 | 161 226 |
| ERR = 8,2% | | | | | | | | | | | | |



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According to the estimates made in the Economic Analysis, in particular under Table № 22, the results of this project show:

- IMWD rate of 8.2%
- ANSI size of 265 386 000 lv
- Benefit and cost ratio 1.53

These results are in line with the practice of higher values ??of the economic benefits of purely financial implementation of infrastructure projects, taking into account the fact that a large number of social groups and institutions are affected. They are given by their contribution to the overall benefits in the so-called A matrix of socio-economic benefits and costs given in the following Table.

Table № 24- Matrix of socio-economic benefits

| | Rail customers | customers transferred from auto-trnpost | New passengers | Rail operators | Railway infrastructure | SB | Economic benefits |
|--------------------------|-----------------------|--|-----------------------|-----------------------|-------------------------------|-----------|--------------------------|
| SERVICE CUSTOMERS | | | | | | | |
| Travel time | 142 133 | 9 296 | | | | | 151 430 |
| Safety | | 0 | | | | | 0 |
| Additional traffic | | | 59 985 | | | | 59 985 |
| OPERATIONS | | | | | | | |
| Infrastructure charges | | | | -45 087 | 45 087 | | 0 |
| Automobile | | 30 263 | | | | | 30 263 |



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| | | | | | | | |
|----------------------------------|----------------|---------------|--------------|---------------|----------------|---------------|-----------------|
| operational costs | | | | | | | |
| Railway operational costs | | | | | -197 017 | | -197 017 |
| Tickets | -3 575 | -1 437 | 5 012 | | | | 0 |
| Income from freight | | | 282 018 | | | | 282 018 |
| Taxes (VAT) | 3 537 | -56 691 | | | 53 154 | | 0 |
| ASSETS | | | | | | | |
| Infrastructure | | | | | -189 453 | | -189 453 |
| Residual value | | | | | 128 844 | | 128 844 |
| Taxes (VAT) | | | | | -37 891 | 37 891 | 0 |
| Infrastructure maintenance costs | | | | | -684 | | -684 |
| ECONOMIC BENEFITS | 142 133 | 39 522 | 1 857 | 44 926 | -54 097 | 91 044 | 265 386 |

9.3 HAVE THE FEASIBILITY STUDIES BEEN COMPLETED AND WHEN:

For the railway section Sindel - Varna, which is a part of the Rousse - Varna railway line, there is a cost-benefit analysis of 2009. For the Karnobat - Sindel railway section there is a Cost-Benefit Analysis of 2007.



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9.4 ECONOMIC ASSESSMENT:

Interpretation of the results of economic analyzes:

- The economic net present value must be greater than zero ($ENPV > 0$) in order for the project to be economically feasible.
- The economic rate of return should be greater than the social discount rate, in this case 5.5% ($EIRR > 5.5\%$).
- The benefit / cost ratio must be greater than one ($B / C > 1$).

If the $B / C > 1$ project is appropriate because the benefits measured as the present value of the total inflows are higher than the costs measured as the present value of the total outflows.

As can be seen from the data presented in the previous paragraphs, the project corresponds to the described interpretations.

10 INVESTMENT CRITERIA

10.1 SOURCES OF FINANCING

Granting funds from the EU is of crucial importance for the development of project since the government of Bulgaria, MTITC and NRIC do not have sufficient funds available to implement this project using solely own resources.

10.2 CO-FINANCING

10.3 ADDITIONALITY

10.4 PROJECT READINESS AND SIZE

There is a technical project for the Sindel railway station in Varna.

Preliminary studies and conceptual design for the Karnobat - Sindel railway section.

10.5 SUSTAINABILITY

For Sindel Railway Station - Varna

- Financial sustainability, which determines whether there is a risk of cash shortages for the entire project implementation period, regardless of the availability of EU financial support. Sustainability is present if the cumulative net cash flow is positive for each of the years during the period considered.



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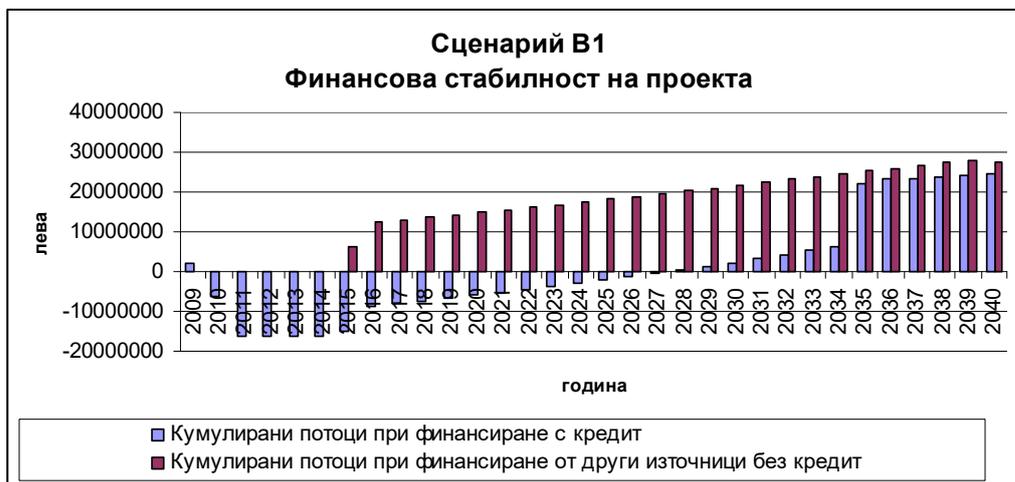
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In the financial analysis for the two options explored for securing the national financing of the project:

- to cover the financial deficit from the SB or other sources without using credit;
- to cover the financial deficit, through state-guaranteed credit, to be paid by the Beneficiary NRIC.

The findings of the analysis of a national financing option of 27.19% (BGN 166 667 416) and funding from EU funds amounting to 72.81% (BGN 446 207 118) are as follows:

- the values of the financial indicators (table) show that the project requires co-financing from the EU funds to be realized.
- the scenario B1 under consideration meets the financial stability criterion (Fig.)
- the project does not meet the requirements for return on capital, which makes it unprofitable for private investors and for realization through PPP.



| | |
|--------|--------------|
| | Scenario B1 |
| FNPV C | -366 625 411 |



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| | |
|--------|--------------------|
| FIRR C | -1,88% |
| FNPV K | -74 658 059 |
| FIRR K | 2,44% |

To determine the financial stability of the project, when using a loan, the calculations are made at an annual interest rate of 6% (negotiated interest rate on the current negotiations with the World Bank for a government guaranteed loan of BGN 360 million), the loan term 25 years with A grace period for the principal of 5 years. A repayment plan has been selected with equal annual annuities.

The financial indicators for the financial profitability of the (national) capital (FNPV / K, FIRR / K) for the selected B1 scenario when repaying a loan under the grant schemes' shortage is:

| | |
|---------|--------------------|
| | Alt_B1 |
| FNPV/ K | -66 256 034 |
| FIRR/ K | -3,46% |

The conclusions of the analysis of the loan financing option (41.72%) and the financing from EU funds (58.28%) are as follows:

- the cumulative cash flows are negative until the nineteenth year of the period and the project does not meet the financial stability criterion (Figure 29).

When financing a loan, the project does not meet the requirements for return on capital.

In addition, the benchmark analysis for the proposed option provides additional information on the options for realization of the chosen option and for developing a development strategy. The study shows that even in pessimistic forecasting variants (up to 50% of the predicted traffic), implementation of Line Rehabilitation B1 provides cost-effective operation over the projection period.



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10.6 CONDITIONALITY AND SEQUENCING

For consistency in the implementation of the project "Modernization of the Karnobat-Sindel-Varna railway line", the following should be followed:

- Policy priorities for the development of railway infrastructure

- Restoration and modernization of the railway infrastructure along the main directions;
- Development of the infrastructure needed for intermodal transport.

For the efficient implementation of the priorities in the railway infrastructure development policy, the following should be pursued:

- Accelerating the implementation of ongoing large-scale infrastructure projects;
- Development of a long-term investment program, ensuring that the state will provide the necessary funds for the financing and co-financing of the most important infrastructure projects;
- Full absorption of the EU Cohesion and Structural Funds;

Main actions to implement the priorities

Priority 1. Restoration and modernization of the railway infrastructure in the main directions

The objective of this priority is to build and develop the key transport infrastructure links of national, cross-border and European importance and to achieve the necessary interoperability of the main railways with the trans-European rail system as well as connecting the main railway network of the Republic of Bulgaria with that of Neighboring countries.

The main actions for realization of Priority 1:

- Modernization, rehabilitation and electrification of railway sections along the Pan-European transport corridors of national and European importance;
- Construction, modernization, rehabilitation and electrification of railway sections connecting the main railway network of the Republic of Bulgaria with the main railway network of the neighboring countries.



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- Reaching and maintaining the design parameters of the rest of the railway infrastructure in the country.

Priority 2. Development of the infrastructure needed for intermodal transport

The aim of this priority is to modernize existing infrastructure, optimize the capacity and efficiency of existing and newly built infrastructure and promote the development of intermodality.

The main actions for realization of Priority 2:

- Improvement of the technical, technological and operational parameters of the terminals;
- Construction of a new (terminals and freight villages) and reconstruction of the existing intermodal transport infrastructure;
- Modernization, rehabilitation and electrification of rail links between sea and inland port terminals.

The implementation of the priority infrastructure projects will increase the capacity of the railway network, achieve the necessary interoperability with the Trans-European Transport Network and eliminate the bottlenecks in the main directions. All of this will lead to increased design speed and shorter travel time.

The implementation of the projects will be in compliance with the current national and European environmental standards, with the requirements ensuring the achievement of a high level of safety and security of the network, as well as with the Bulgarian obligations under the international conventions to which Bulgaria is a party.