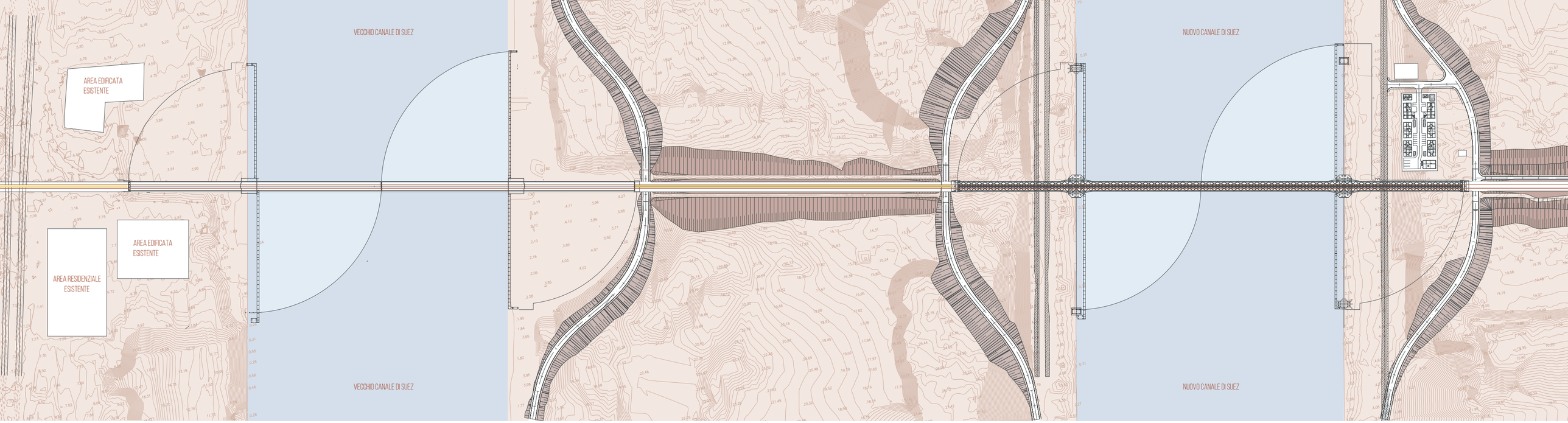
El Ferdan Bridge

Refurbishment of the railway line over the Suez Canal



1.

Area di intervento

El Ferdan Bridge, the longest railway swing bridge in the world, was built over the Suez canal in 2001. It fell into disuse in 2015 after the Canal was doubled. Today, it is undergoing important structural strengthening – loans obtained from the Egyptian government have enabled the refurbishment of the railway line due to the construction of a twin bridge and the doubling of the line. It is a very important project for the Egypt as the railway line using the El Ferdan Bridge is the only railway connection between Egypt and the Middle East.

The line could connect with the Jordanian railway network by crossing the Sinai, thus arriving in Saudi Arabia and then the United Arab Emirates and is part of a much wider project that aims at connecting all Arab countries together.

The project also has an important **impact on the social and environmental aspects** of the area. The Sinai peninsula is the poorest Egyptian region. Refurbishment of the railway would allow low-income families who without a car to travel long distances, promoting the start of local commerce. Therefore, refurbishment of the railway could encourage the population of the area, new businesses to prosper and so the development of the region.

Reactivation of the line would also generate significant environmental benefits. Since 2015, the Suez Canal has only been crossed by roads and therefore all goods moving from Egypt to the Arab peninsula and vice versa only move by road or by ship. **The railway would, therefore, be a specially important alternative for the more sustainable movement of goods over long distances.**

Planning the railway line

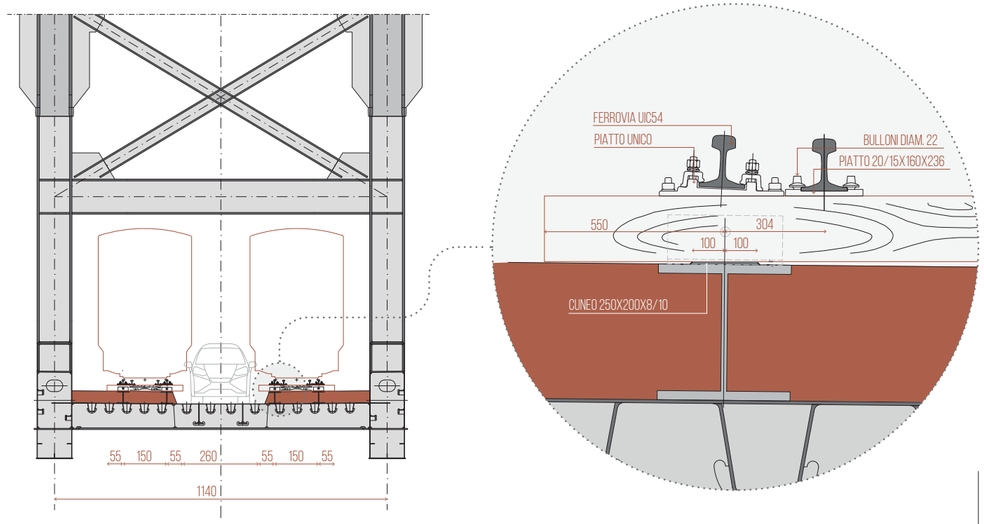
In this context, NET Engineering **designed the railway line that crosses the Suez Canal using both the new and old bridges** as well as the refurbishment and modernisation of the sidings for waiting trains. As they have been unused for a long time, they need to be renewed and the capacity increased. As there are often important time restrictions on use of the bridge, goods trains wait in the sidings east and west of the Canal in the hours before the opening ready to cross it.

NET Engineering also took care of the updating of the railway tracks of the existing bridge with the aim of planning a passable route with the two tracks and the optimisation of the structural reinforcement of the deck.

In detail, NET Engineering's work concerned the detailed design, railways tracks, earth movements, significant geotechnical operations and also assistance while the construction site is active (ongoing) until the work is completely finished. The study of the railways tracks on the two bridges was especially challenging – **the decks, designed according to specific Egyptian regulations integrated with the Eurocodes, are not conventional and different from each other.**

The old
Suez Canal

2.

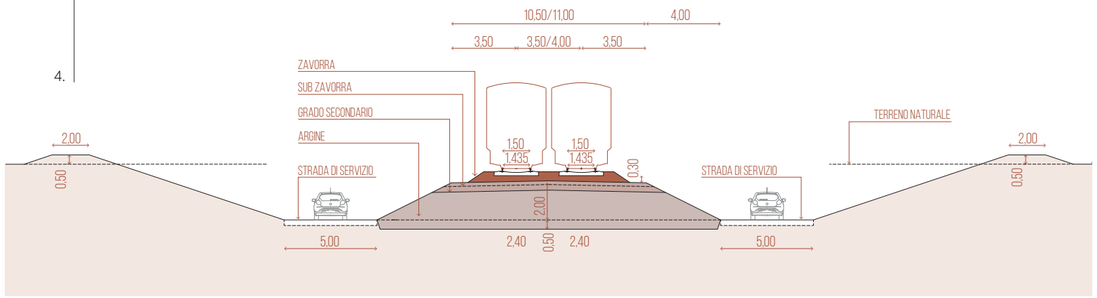


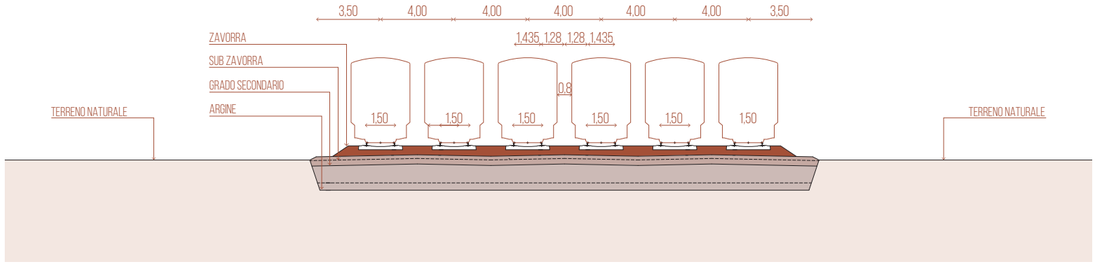
3.

Existing
swing bridge
equipment

Typical sections
in trenches and
embankments

4.





ScanMed Transport Market Study (TMS)

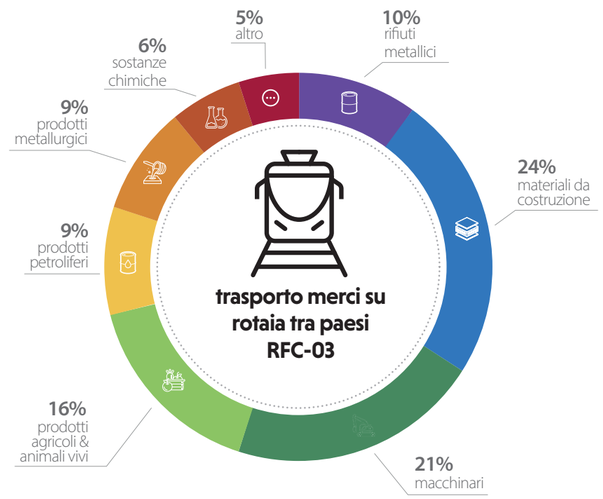
A study for the development of the European North-South commercial railway corridor

After recognising the relevance of the system of railway services for sustainable growth, the European Union implemented the first nine railway corridors for freight transport and a package of measures to improve the competitivity of railway freight transport on these corridors with Regulation EU 913/2010. The measures concerned technical, technological, infrastructural, legislative and regulatory aspects intended to facilitate the exchange of goods reducing the costs of movement, times and procedures.

The Transport Market Study is a tool that enables the analysis of the demand needs of the various stakeholders in the countries crossed by the corridors, the indication of the critical points from the technical, economic, social and political (meaning transport policy) points of view, the current system performance to be checked and new estimates made in relation to the reference time frames or when many of the large-scale works in progress have been completed.

Against this background, and in the sphere of an international group of sector experts, NET Engineering developed the market study of one of the most relevant, longest and most complex corridors, that also has more critical points – **Rail Freight Corridor no. 3 (RFC 3) 'Oslo/Stockholm-Malmö-Copenhagen-Hamburg-Innsbruck-Verona-Palermo'.**

Consistent with the requests of the tender, the group consisted of experts from each of the countries crossed – a German (who was also concerned with the Austrian section), a Dane, a Swede and an Italian. A unique discussion experience with different approaches, different methods and different ways of relating to others.



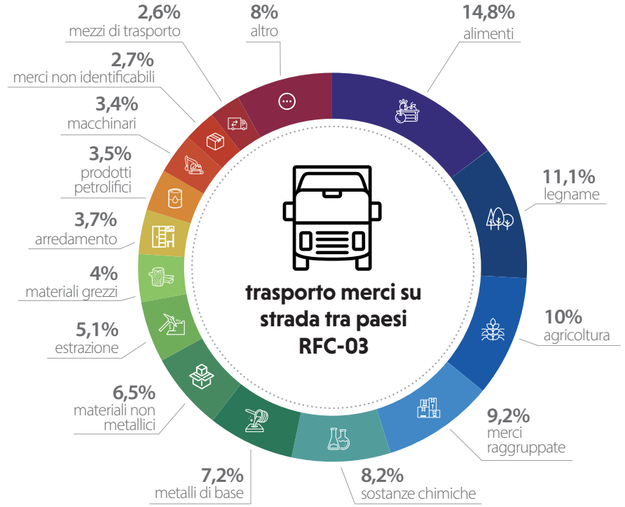
The study was essentially divided into various key topics:

- An assessment of the **current situation in the freight transport market and the forecast of development** for all methods of transport based on annual Eurostat data and social-economic trends (please note that the freight transport market, especially in Italy, is extremely fragmented and there are no sources of official data with enough detail for an in-depth study);
- Analysis of the strong and weak points, the opportunities and threats **(SWOT) of railway freight traffic in the corridor relating to how the implementation of alternative intervention scenarios could have marked railway freight traffic along it;**
- Definition of operational and **organisational action for railway freight traffic to improve the competitivity** of the railway sector and adequately satisfy the demands of the market.

The heart of the project was the organisation of **interviews** adapted to the stakeholders (logistic centres, port authorities and port operators, large production centres, logistic companies, railway companies, etc.) to understand their problems, needs and expectations. The interviews not only concerned aspects relating to current movement requirements and the needs and expectations for future time frames but also enabled a 'geography' of the choices, reasons, elements and criteria behind the dynamics of movement to be reconstructed.

These dynamics go far beyond the statistics and enable the numbers to be read from a new, wider standpoint which not only goes beyond national boundaries but sees the whole movement from the origins in the production sites of the Far East.

This was a profoundly Community project which explored the important topic of European mobility corridors including their dynamics, critical points and prospects for the future from the quality and quantity points of view.



Freight transport demand by road, rail and sea between RFC-03 countries (tons/year)

countries of discharge

loading countries	norvegia	svezia	danimarca	germania	austria	italia	totale	condiviso
norvegia	•	1.738	1	26	0	16	1781	3,1 %
svezia	342	•	118	2.497	168	398	3.523	6,1 %
danimarca	1	39	•	84	n/a	693	817	1,4 %
germania	85	2.346	631	•	8.370	16.652	28.084	48,4 %
austria	12	135	n/a	7.083	•	3.256	10.486	18,1 %
italia	31	242	503	10.968	1.541	•	13.285	22,9 %
totale	471	4.500	1.253	20.658	10.079	21.015	57.976	100 %
condiviso	0,8 %	7,8 %	2,2 %	35,6 %	17,4 %	36,2 %	100 %	

loading countries	norvegia	svezia	danimarca	germania	austria	italia	totale	condiviso
norvegia	•	3.767	539	290	n/a	n/a	4.596	5,2 %
svezia	4.168	•	1.299	1.173	108	92	6.840	7,7 %
danimarca	714	1.681	•	5.279	0	122	7.796	8,7 %
germania	375	1.350	5.839	•	18.020	9.538	35.122	39,4 %
austria	31	44	45	14.277	•	6.131	20.528	23,0 %
italia	n/a	n/a	110	10.470	3.733	•	14.313	16,0 %
totale	5.288	6.842	7.832	31.489	21.861	15.883	89.195	100 %
condiviso	5,9 %	7,7 %	8,8 %	35,3 %	24,5 %	17,8 %	100 %	

loading countries	norvegia	svezia	danimarca	germania	italia	totale	condiviso
norvegia	•	5.553	5.466	14.979	335	26.333	31,1 %
svezia	2.137	•	6.116	12.805	173	21.231	25,1 %
danimarca	2.054	7.965	•	5.916	84	16.019	18,9 %
germania	2.381	11.137	5.409	•	889	19.816	23,4 %
italia	263	133	241	600	•	1.237	1,5 %
totale	6.835	24.788	17.232	34.300	1.481	84.636	100 %
condiviso	8,1 %	29,3 %	20,4 %	40,5 %	1,7 %	100 %	

Total freight demand between RFC-03 countries per year