# Chapter 3 Short Term Development plan (Other Project)

# 3.1 Access Road

### 3.1.1 Access Road at North Port Area

As mentioned in Chapter 8 of Part I, the most serious issue at North Port Area is the heavy traffic and the acute-angled curve at Gate 5.

As for the above problems, the JICA study team has two solutions; one is a thorough solution, another is a partial solution, which was already studied by CMPA.

The former solution calls for the construct of a new gate between Gate 5 and Gate6. The project name of the latter is PORTUL CONSTANTA SISTEMATIZAREA ACCESULUI RUTIER IN ZONA PORTII NR.5 of which aimed at widening Gate5, including the approach road.

Figures 3.1.1 and 3.1.2 show the basic idea of the former solution and the general plan of the latter solution.





# 3.2 Capacity of Road and Railway in 2010

### (1) Transportation Mode

Three transportation modes are available at Port of Constantza: barge, railway and road transportation.

The cargo handling volume by transportation mode in the target years is estimated according to the following procedure:

- a) The ratio of the cargo volume for each transportation mode, namely barge, rail and road transportation in the target years, is estimated considering each mode's statistic data by commodity at Port of Constantza, the distance and transportation network between the port and origin/destination in Romania and the characteristics of each commodity.
- b) The cargo volume by each transportation mode in the target years is calculated by multiplying the estimated cargo handling volume at Constanta Port in the target year and the estimated ratio of each transportation mode in a).

Table 3.2.1 shows the origin/destination of major foreign trade cargo in Romania.

The result of the estimation is shown in Tables 3.2.2 and 3.2.3.

Cargo	Destination	Origin
Cereals	Bucharest(266), Constanta, Cluj(547)	counties, lalomita(110), Braila(460), Ilfov(266), Teleorman(230)
Food, beverage, tobacco	Bucharest(266), Brasov(385), Constanta	Ialomita(110), Tulcea(110), Constanta, Bucharest(266), Timisoara(821), Baia Mare(762)
<sup>-</sup> resh fruits and vegetables		Giurgiu( <b>330</b> ), Ilfov(266), Prahova( <b>300</b> )
Seeds, oils, fats	Constanta, Slobozia(110), Bucharest( <b>266</b> )	Constanta, Braila(460), Giurgiu( <b>330</b> ), Ilfov(266)
Nood, firewood	Timisoara(821), Baia Mare(763), Bucharest(266)	Neamt(488), Covasna(400), Harghita(530), Baia Mare(763), Sighet, Suceava(585)
Vatural and chemical fertilizers	Bucharest(266), Constanta, Cluj(647)	Fagaras(415), Buzau(220)
Raw mineral products (quarry)	Medgidia(35), Fieni(320), Comarnic(320), Alesd(760)	Prahova(300), Arad( <b>810</b> )
ron ore, scrap iron	Galati(241), Hunedoara(650)	
Von-ferrous ores	Slatina(410), Oradea( <b>799</b> ), Bucharest( <b>266</b> )	
Solid fuels (coal, coke)	Constanta, Arad(810), Craiova(485), Suceava(585)	Gorj(568), Huedoara(650), Arad(810), Sighet(810)
Crude oil	Prahova(300), Arges(381), Constanta, Neamt(488)	Prahova(380)
Dil products and gas		Medias(580), Arad( <b>810</b> ), Gorj( <b>568</b> )
Chemical products	Buzau(220), Bucharest <b>(266</b> ), Prahova(300)	Valcea(410), Neamt(488)
Chalk, cement, construction materials		Medgidia(35), Fieni(320), Comamic(320), Alesd(760)
-errous and non-ferrous metals	Slatina(410), Timisoara(821)	Titu(290), Zalau(760), Timisoara(821)
Metal manufactured products	Brasov(385), Bacau(428), Cluj(647), Timisoara(821)	Galati(241), Zalau(760), Roman(490)
Other products		
ivestock, sugar beet	Bucharest(266), lalomita(110), Slobozia(110), Timisoara(821), Bacau(428), Brasov(385)	Giurgiu(330), Cluj(674)
Coal and natural gas tars		
Fextiles and textile fibers	Focsani( <b>250</b> ), Buhusi(460), Zalau(460), Timisoara( <b>821</b> ), Braila(460)	Savinesti(555), Oradea(989)
<sup>5</sup> aper paste and scraps	Calarasi(140), Vrancea(250), Prahova(300), Brasov(385)	Tulcea(110), Prahova(300)
Blassware and ceramic products		Prahova(300), Buzau(300)
Cars, transport materials		ĒBrasov( <b>385</b> ), Craiova( <b>485</b> ), Arges(381)
/arious manufactured products		Baia Mare( <b>763</b> ), Timisoara( <b>821</b> )
Note: Numerical values in parenthesis au	re distance (km). Bold: actual distance by road's distance table. Non-bold: estimated distance	ce by the study team

Table 3.2.1 Origin/Destination of Major Foreign Trade Cargo in Romania

								(Unit: Mill	on tons)
		Railway			River			Road	(
Commodity	Export	Transit	Total	Export	Transit	Total	Export	Transit	Total
Cereals	1.224	0.390	1.614	0.450	2.210	2.660	0.126		0.126
Food products	0.032	ı	0.032	0.003	0.000	0.003	0.019	•	0.019
Timber, fire wood	1.017		1.017		1		0.113	•	0.113
Chemical products	1.233		1.233	0.069	1	0.069	0.069		0.069
Iron ore, scrap iron, concentrate	0.864	1	0.864	0.096	ı	0.096	•	ı	
Non ferrous ore	0.000	1	0.000	0.000	1	0.000		1	•
Gas and Oil Products	2.271	1	2.271	0.120	1	0.120		ı	•
Cement	0.321	1	0.321	0.589	1	0.589	0.161	ı	0.161
Iron / Non Iron Metals and Metal Products	0.800	ı	0.800	1.100	1	1.100	0.100	ı	0.100
Container	0.471	ı	0.471		ı		1.099	0.174	1.273
General cargo	0.290	ı	0.290	0.073	1	0.073	0.019	1	0.019
Total	8.523	0.390	8.913	2.498	2.210	4.708	1.705	0.174	1.879
Table 3.2.	3 Transp	ortation	Mode f	or Unlo	ading fr	om Ves	sel in 2	010	
					0	-		(Unit: Millio	n tons)
Commodity		Railway			River			Road	
	Import	Transit	Total	Import	Transit	Total	Import	Transit	Total
Cereals	0.150	0.000	0.150	0.050	0.000	0.050	ı		

Table 3.2.2 Transportation Mode for Loading to Vessels

								(UIII: MIIIIO	n tons)
Commodity		Railway			River			Road	
	Import	Transit	Total	Import	Transit	Total	Import	Transit	Total
Cereals	0.150	0.000	0.150	0.050	0.000	0.050	I	ı	ı
Food products	0.137	ı	0.137	0.015		0.015	0.031		0.031
Timber, fire wood	I	ı	ı	I	ı		I	ı	ı
Chemical products	0.125	ı	0.125	0.013		0.013	0.078		0.078
Iron ore, scrap iron, concentrate	ı	ı		7.730	ı	7.730	I		ı
Non ferrous ore	0.365	0.054	0.419	1.459	0.216	1.675	I		ı
Gas and Oil Products	1.368	ı	1.368	0.072		0.072	I		ı
Cement	ı	ı		I	ı	ı	I	ı	ı
Iron / Non Iron Metals and Metal Products	ı	ı		I		ı	I		ı
Container	0.284	ı	0.284	ı	ı	·	I	0.143	0.143
General cargo	0.091	ı	0.091	2.080		2.080	0.114	0.000	0.114
Total	2.520	0.054	2.574	11.419	0.216	11.635	0.223	0.143	0.366

(2) Capacity of Each Main Road

According to the interview with CMPA officers, the largest numbers of loaded trucks entering the port have to pass through No.5 gate and then must pass through No.6 gate to exit.

In the master plan in this study, container, general cargo, timber and steel products terminals are relocated or constructed by target year of each terminal.

If the present function of gates No.5 and 6 is continued until 2010, we can estimate the main transportation route of trucks at the North Port area by major commodity or packed style in the target years. Accordingly, it can determine whether the present road capacity will be sufficient in the target year.

Figures 3.2.1 shows the main routes of trucks between the gates and the terminals.

For the South Port area, CMPA plans to construct a new road along the south side boundary of the CMPA area. Capacity of roads at South Port area in the target year is estimated by the capacities of the present road and the new road.

The traffic volume of tracks for main routes except AZL cargoes is estimated by the cargo handling volume for each commodity.

The traffic volume of each road is calculated the following formulas:

 $V_{t} = [\{((((V_{c} + V_{RC})/12) \times P_{m})/30) \times P_{d}\}/24] \times P_{h}$ Where  $V_{t}$ : Number of vehicles per year (vehicles)  $V_{c}$ : Number of cargo vehicles per year (vehicles)  $V_{RC}$ : Number of non-cargo vehicles per year (vehicles)  $P_{m}$ : Monthly variation  $P_{d}$ : Daily variation  $P_{h}$ : Hourly variation

 $V_{RC} = V_c x \alpha$ Where  $\alpha$ : Ratio of the related vehicles

The ratio of the related vehicles and the hourly variation are estimated based on the result of "Road Traffic Survey in the Port of Constantza, in 2001, JICA study team". The monthly and daily variations are estimated based on the statistic data of cargo handling volume, which is issued by CMPA. Table 3.2.4 and 3.2.5 show the traffic volume and capacity of each main road at the port in the target years. Figure 3.2.2 shows the road number of each road which is taken in this report for the location of each road.

According to Tables 3.2.4 and 3.2.5, the capacity of the main roads at North Port and South Port is sufficient for the cargo handling volume at Constanta Port except AZL cargoes if the new road project between National Road 39 and M2S is completed by 2010.

Section	Lanes	Capacity	Number of	Number of
			vehicles per	vehicles per
	(Number)	(Vehicles/hour)	year in 2010	hour in 2010
7	2	1800	679,428	450
8	2	1800	69,401	46
9	2	500	732,110	485
10	2	1900	1,387,368	918
11	2	1800	1,456,769	964
12	2	1800	1,997,395	1,322
13	2	1800	1,700,676	1,126

Table 3.2.4 Evaluation of Road Capacity at North Port

Table 3.2.5 Evaluation of Road Capacity at South Port

Section	Lanes	Capacity	Number of	Number of
			vehicles per	vehicles per
	(Number)	(Vehicles/hour)	year in 2010	hour in 2010
1	2	1800	2 004 206	1.022
New road	2	1900	2,904,200	1,925





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### (3) Railway Capacity

CFR CONSTANTA has four marshaling yards (stations) at Constantza Port namely A, B and MOL 5 in the North Port area and Ferryboat in South Port area. There are two main railway entrances, one is located near Gate 6 in the North Port area and the other is located at the south side boundary of CMPAs' territory in the South Port area. The former entrance connects between Palas CFR zone and station B in the North Port area. The latter connects between Agigea Ecluza zone and Ferryboat station in the South Port area. (See Fig. 3.2.3 and 3.2.4)

The procedures for entering and leaving the port area are as follows:

[Entering the port area]

For North Port

- Entered wagons from outside the port area are reorganized at station B for their next destination such as A station, station B and station Mol 5.
- After moving to each station, wagons are reorganized suitable train length and cargo handling at the each station for their final destination such as each sideline in wharves.

- Then, the wagons are moved to each sideline for cargo handling at a suitable time.

For South Port

- Entered wagons from the inland are reorganized at Agigea Nord station for their next destination such as Ferryboat station.
- After moving to Ferryboat station, wagons are reorganized suitable train length and cargo handling at the station for their final destination such as each sideline in wharves.
- Then, the wagons are moved to each sideline for cargo handling at a suitable time.

[Leaving the port area]

For North Port

- After cargo handling at the wharf, the wagons are moved to station B.
- The wagons form a train at station B for consignee by each quarter.
- After forming, the train starts from station B to the destination.

For South Port

- After cargo handling at each wharf, the wagons are moved to Ferryboat station.
- Almost all wagons form at Ferryboat station for consignee by each quarter.
- After forming, the train starts from Ferryboat station to the destination through Agigea Nord station.

Capacities of each entrance and station are evaluated based on the above procedures according to CFR Standard.

The results of the evaluation are shown from Table 3.2.6 to Table 3.2.8.

According to the result, the capacities of each station (marshaling yard) and each entrance at the port area are sufficient in the target year of the Short Term Development Plan.

		Capacity		Number of
Location	Track capacity	Working ratio	Actual capacity	train per day
	(Train/day)		(Train/day)	in 2010
ConstantaVii-Port Zone B	86	0.75	65	44
Port Zone B-ConstantaVii	86	0.75	65	44
Agigea Ecluza-Ferry Boat (Single track)	45 per. train	0.75	34 per.train	14

Table 3.2.6 Evaluation of Railway Capacity at Entrance of the Port

Table 3.2.7 Evaluation of Storage Capacity for Wagon at each Marshaling Yard in North Port (2010)

Marshaling Yard	Storage Capacity	Number of Storage
	(wagons)	Wagons per Day
Zone A	2860	90
Zone B	4416	2962
Mol 5	2396	2190

Table 3.2.8 Evaluation of Storage Capacity for Wagon at Marshaling Yard in South Port (2010)

Marshaling Yard	Operation Capacity	Carg volum
	(Million tons/year)	(Million tons/year)
South Port Area	3.9	3.6



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